1. **What student learning outcomes were assessed this year and why?**

During the 2010 – 11 AY the Department of Biological Sciences assessed written communication for the General Education Program. The applicable General Education Outcomes which we assessed include:

- Students will achieve fluency in **writing**.
- Students will master the basic principles of **scientific reasoning**.
- Students will develop an appreciation of the breadth and depth of **scientific knowledge**.
- Students will develop a sense of the **interconnectedness of knowledge**.

2. **How were they assessed?**

   a. **What methods were used?** We assessed writing in our capstone course, BIOL 499S Senior Seminar. This course allows us to gather our seniors together in an intimate setting (enrollment in this course ranges from 15 – 20). Students were given a seminal paper from Biology the week prior to the final exam and told they would have to write an essay on some aspect of the reading when they came to the computer lab on the final exam day. They were allowed 500 words to answer the prompt an example of which is included here:

   **Instructions:** Use MS Word to write your essay for this exam. Do not use any internet resources or the original paper to help write the essay. The essay should be no longer than 500 words and when you have completed your essay, please print it and turn it in.

   **Essay Assignment:** Similar to how Theodosius Dobzhansky provided examples from biology to justify how the theory of evolution is a unifying concept in biology, I would like you to choose a biological ‘fact’ that you are familiar with (a behavior, physiological process, morphological adaptation, biochemical process, etc) and explain the ‘fact’ in sufficient detail prove that you know the ‘fact’ well. Then explain how this fact only makes sense (or can be explained) “in the light of evolution.”

   This example is particularly apropos because the Theory of Evolution informs **everything** that we do as biologists. Student mastery of the outcomes was determined based on the CWU Writing Rubric.

   - fluency in **writing** was indicated by the **Conventions and Presentation** portion of CWU Writing Rubric.
   - Mastery of the basic principles of **scientific reasoning** was indicated by their performance in the **Reasoning** portion of the Rubric.
   - An appreciation of the breadth and depth of **scientific knowledge** was indicated by the **Content** portion of the Rubric.
   - A sense of the **interconnectedness of knowledge** was indicated by the **Rhetoric of the Discipline** portion of the Rubric.

   b. **Who was assessed?** We assessed all students enrolled in our capstone course BIOL 499S, Senior Seminar during Winter and Spring of 2011. These 53 students are
those who have substantially met the requirements for graduation with either a B.S. or a B.A. in biology.

c. **When was it assessed?** Students were assessed in the final week of both Winter and Spring Quarters, 2011.

3. **What was learned?** The results from this assessment are listed in Table 1. The majority of our students passed all of the outcomes assessed. The **Content** section measured whether the students’ topic was appropriate, the writing had a clear sense of purpose, and that information presented was relevant, accurate, necessary, and complete. In general our students have a good grasp of content in the biological sciences, and this shows in their writing. The **Reasoning** section measured student abilities to make statements and present ideas that are significant or important to the thesis. This section had the second lowest outcome and probably stemmed from undeveloped skills in making assumptions explicit. Our assessment of their depth of thinking was negatively influenced when they were not skilled at putting their ideas into a conclusion (see Conventions). **Organization** of the essay was the most difficult for the students. A number of them seemed unaware of conventions such as stating their thesis and then presenting information supporting it. We’re not sure whether this was because we did not specifically state that they should pay attention to conventions, however it does indicate a lack of integration of what they have learned in writing courses into writing in another department. The element **Rhetoric of the Discipline** demonstrates the students’ knowledge of the subject, use of specialized concepts and demonstrates understanding. They performed adequately in this, and in general they were able to link multiple aspects of biology to evolution. The final element, **Conventions and Presentation**, involved crafting a complete essay and, coupled with **Organization**, was perhaps the major problem for the students. Some of the students did not clearly conclude their essay, nor did they pull together a concluding paragraph that restated their argument’s main points.

Table 1. Results from use of the Writing Rubric for General Education assessment, Winter and Spring Quarters, 2011. The writing test was given to BIOL 499S, Senior Seminar. Numbers indicate the number of students achieving a Pass, and that number as a percentage of the total.

<table>
<thead>
<tr>
<th>Rubric Element</th>
<th>Pass</th>
<th>Non-Pass</th>
</tr>
</thead>
<tbody>
<tr>
<td>content</td>
<td>50/94%</td>
<td>3/6%</td>
</tr>
<tr>
<td>reasoning</td>
<td>43/81%</td>
<td>10/19%</td>
</tr>
<tr>
<td>organization</td>
<td>39/74%</td>
<td>14/26%</td>
</tr>
<tr>
<td>rhetoric</td>
<td>47/89%</td>
<td>6/11%</td>
</tr>
<tr>
<td><strong>Conventions &amp; Presentation</strong></td>
<td>47/89%</td>
<td>6/11%</td>
</tr>
</tbody>
</table>

4. **What will the department or program do as a result of that information?** Faculty in the Department of Biological Sciences will receive a copy of this assessment. We will discuss the problems we observed in the assessment and attempt to see whether the writing convention and organizational difficulties we saw can be solved primarily by emphasizing
that whenever a writing assignment is made, students should remember the techniques learned in other courses, such as English 101.

5. **What did the department or program do in response to last year's assessment information?** There was no equivalent assessment last year.

6. **Questions or suggestions concerning Assessment of Student Learning at Central Washington University:**