Core Curriculum Assessment Annual Report

General Information

1. Name / Number of Course / Sequence:
   BIOL 1000/1010

2. SLO(s) being assessed:
   Student will understand and appreciate methods and issues of science and technology.

3. Department:
   Biological Sciences

4. Department Representative:
   Sharon Roberts

5. AGSC Content Alignment:
   AREA III: Science and Math

Assessment Information

6. Assessment Method: [Explain how assessment for the measures associated with this SLO – not grading for the course as a whole was conducted.]
   See information at end of report.

7. Findings: [What assessment data did each assessment method produce?]
   See information at end of report.
8. **How did you or will you use the findings for improvement:** [What questions / issues/ concerns did your data raise for the faculty teaching the course? What discussion did the faculty have about the findings? What future actions to improve student attainment of this outcome will the department / program take as a result of this analysis?]

   The faculty have considered the revision of our Biology sequences for the last couple of years. This information will be used to identify the strengths and weaknesses of our program as well as student attitudes towards the subject and the courses. This will be a lengthy process but again this information provides a starting point.

9. **Additional comments:** [What else would you like the Committee to know about your assessment of this course or plans for the future?]

   None

10. **Core Curriculum General Education Committee Comments:**

    Very similar comments to BIOL 1020-1030. Data collection good-- but they did not relate to SLO outcomes. The current assessment is referred to as "a starting point to a lengthy process." Moving forward, the Department should work to more explicitly link data collection to the outcomes and demonstrate how the resulting findings are leading to instructional change.
BIOL 1000 and 1010 Core Curriculum Assessment – Fall 10, Spring 11, Summer 11

BIOL 1000 and BIOL 1010 were assessed in the Fall Semester of 2010, the Spring Semester of 2011, and the Summer semester of 2011 using a survey, 5 assessment questions, and a lab report.

SURVEY

The survey given to students consisted of 6 demographic questions, 10 questions that related to scientific abilities, 11 questions that related to knowledge of concepts, and 5 questions that related to their awareness of current scientific and technological issues. Surveys were given to students in the first lab of BIOL 1000 semester and then again in the last lab of the semester for BIOL 1010.

Survey Results

Demographics

BIOL 1000 differed significantly from 1010 in that the majority of students (58%) enrolled in the class were freshman. In BIOL 1010, sophomores represented the largest percentage of students (39.8%) followed by juniors (29.7%).

Survey Questions Relating to Scientific Abilities and Knowledge

In all courses students rated their scientific abilities and knowledge as higher at the end of BIOL 1010 than they did at the start of BIOL 1000.

Scientific Abilities

Students had the chance to rate their scientific ability to perform tasks using the choices below on 10 questions on the survey.

A – great extent  B- some extent  C – very little  D – not at all.

Students rated their ability to perform scientific tasks as much higher at the end of BIOL 1010 than they did at the start of BIOL 1000. This increase in student confidence in their ability to perform scientific tasks is most evident in the increase in the % of students who answered that
they felt they could perform scientific tasks at the highest rating (great extent). The percentage of student answers in this category increased from 24.7% at the start of BIOL 1000 to 43.2% at the end of BIOL 1010.

Knowledge of Scientific Concepts

Students used the same choices to rate their knowledge of scientific concepts. 11 questions on the survey addressed their knowledge of scientific concepts.

A – great extent  B- some extent  C – very little  D – not at all

Students rated their knowledge of scientific concepts as higher at the end of BIOL 1010 than they did at the start of BIOL 1000. Student confidence in their knowledge of concepts was once again most evident in the increase in the % of student answers for the highest category (great extent). The percentage of student answers in this category increased from 11.2 % at the start of BIOL 1000 to 26.4% at the end of BIOL 1010.
Awareness of Current Scientific and Technological Issues and Their Broader Impact on Society

Students were offered the following choices to rate their awareness of current scientific and technological issues and their broader impact on society with five questions on the survey.

A – Strongly agree    B – Agree    C – Neither Agree or Disagree  D – Disagree  E – Strongly Disagree

Students rated their awareness of current scientific and technological issues as higher at the end of BIOL 1010 than they did at the start of BIOL 1000. This was most evident in the increase in the % of student answers that indicated that they “strongly agreed” that their knowledge of biology increased their awareness of current issues. This percentage increased from 20.5% as the start of BIOL 1000 to 37.3% at the end of BIOL 1010.

CORE CURRICULUM ASSESSMENT QUESTIONS

In both BIOL 1000 and 1010 students were given 5 general knowledge questions at the start of the semester and the end of the semester to assess their knowledge. In all semesters, a greater percentage of students answered each question correctly at the end of the semester. The questions for each of the classes and the results are found below and in the pages following.

BIOL 1000
1. Active transport across a biological membrane requires _______ and moves a substance ______ its concentration gradient
   A) energy and transport proteins; against
   B) energy; down
   C) energy and transport proteins; down
   D) transport proteins; down
   E) transport proteins but not energy; against
2. Which of the following is produced in cellular respiration?  
A. NADPH   B. ATP   C. oxygen  D. glucose  E. chlorophyll

3. Mitosis is used for _______ in humans.  
A. production of haploid cells  
B. production of egg cells  
C. cell replacement  
D. production of gametes  
E. production of sperm cells

4. Organisms reproduce sexually because:  
A) sexual reproduction is the only kind of reproduction there is  
B) it produces genetic variety among offspring  
C) eggs and sperm must join to make a haploid gamete  
D) mitosis is not capable of forming genetically identical cells  
E) it preserves in the offspring the exact genetic makeup of the parents

5. The theory of natural selection states that:  
A) some live and some die in each generation  
B) only the largest and strongest survive  
C) individuals that mutate in response to their environment will survive at the expense of those individuals who are genetically stable  
D) the best adapted individuals survive and reproduce, contributing the most genes to the next generation  
E) individuals that live the longest are best adapted and selected for survival in the next generation

The chart shows the percentage of correct answers for each question from 1000 start to 1000 end.

- Q1: %correct 1000 start: 40%, 1000 end: 70%  
- Q2: %correct 1000 start: 40%, 1000 end: 70%  
- Q3: %correct 1000 start: 40%, 1000 end: 70%  
- Q4: %correct 1000 start: 40%, 1000 end: 70%  
- Q5: %correct 1000 start: 40%, 1000 end: 70%
1. ____________ is the term that refers to stable internal operating conditions within the body.  
A. metabolism  B. apoptosis  C. homeostasis  D. exocytosis  E. catabolism

2. Enzymes produced by the pancreas hydrolyze which of the following types of food?  
A. lipids  B. proteins  C. nucleic acids  D. carbohydrates  E. all of the above

3. If an oocyte is fertilized by a sperm, fertilization will take place in the ________, and then the ovum will implant in the ___________, where the embryo will develop.  
A. uterus, cervix  B. ovary, oviduct  C. ovary, uterus  D. oviduct, uterus  E. uterus, oviduct

4. Which of the following growth curves most closely represent the way the human population has grown on earth?  
A. exponential  B. logarithmic  C. logistic  D. unilateral  E. latent

5. Which of the following represents an example of utilizing "throughput" to reduce waste?  
A. reducing the amount of packaging on products  
B. incinerating garbage  
C. utilizing solar power  
D. recycling aluminum  
E. utilizing wind power
LAB REPORT

Students were assessed based on their ability to construct a hypothesis, present data, and form a conclusion in BIOL 1001 and BIOL 1011. Both exercises were designed to fit in with their respective course’s current grading scheme. Students performed well on these activities. 100 lab reports were selected randomly from each course and were graded by GTAs teaching the courses. Students were rated on 2 sections for BIOL 1001: “Hypothesis”, and “Data Presentation and Conclusion”. In BIOL 1011, students were rated on 3 sections: “Hypothesis”, “Data Presentation”, and “Conclusion”. The percentage of the reports found to be satisfactory in each category is illustrated below.

% of Lab Reports Found to be Satisfactory

![Bar chart showing the percentage of lab reports found to be satisfactory in each category for BIOL 1001 and BIOL 1011. The categories are Hypothesis, Data presentation and conclusion, Data presentation, and Conclusion.]