



Core Curriculum Assessment Report

2011_12

Department Biological Sciences

Representative Sharon Roberts

Course Name / number BIOL1000/1010

1. AGSC Content Area of Alignment: Area III: Science and Math

2. SLO(s) being assessed: Student will..

SLO 10: Students will understand and appreciate methods and issues of science and technology.

3. Assessment Method(s):

[Explain how assessment for the measures associated with this SLO - not grading for the course as a whole - was conducted. You may cut/paste rubrics for inclusion here, identify faculty reviewing committees, or identify specific kinds of test questions important to your method. Is this the method you initially planned to use? Provide a separate paragraph for each method].

SURVEYSurveys were administered in the first lab of BIOL 1001 and then in the last lab of BIOL 1011. The survey 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. CORE CURRICULUM ASSESSMENT QUESTIONSIn 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. The questions for each course are found below. LAB REPORTSStudents 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 Survey and Core Curriculum Assessment Questions are included in the findings document.

4. Findings: What assessment data did each assessment method produce?

See attached document

5. 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 results from our assessment indicate that students are learning valuable information in the course series that includes BIOL 1000 and BIOL 1010. Student knowledge of basic concepts increased, and their attitudes towards science and the application of science also improved. We will use these results to indicate areas in which we can continue to strengthen the course series. Communication between the faculty and instructors who teach the lectures, and the graduate students who teach the laboratories, will be vital to ensure that we continue to improve our abilities to enhance the student learning experiences in these courses.

6. Additional Comments:

[What else would you like the Committee to know about your assessment of this course or plans for the future?]

7. Committee Comments

Mean of rubric score = 3.67 (out of 4)A very thorough assessment of SLO 10 with varying types of assessment included. Understands the importance of strengthening communication amongst faculty and instructors to continue to enhance student learning competencies.

BIOL 1000 and 1010 Core Curriculum Assessment – Fall 11, Spring 12, Summer 12

BIOL 1000 and BIOL 1010 were assessed in the Fall Semester of 2011, the Spring Semester of 2012, and the Summer semester of 2012 using a survey, 5 assessment questions, and a lab report.

This report addresses SLO 10: Students will understand and appreciate methods and issues of science and technology.

ASSESSMENT METHODS

Survey

Surveys were administered in the first lab of BIOL 1001 and then in the last lab of BIOL 1011. The survey 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. The survey is found below.

Core Science Literacy Survey – Biology Emphasis

Please answer the following questions about yourself:

- A=Yes B=No**
1. Is this course part of your core science requirement? **A B**
 2. Is this course required for your major? **A B**
 3. Is this course the second of a two-semester sequence? **A B**
- Only answer 4 and 5 if you answered “yes” to #3.**
4. Did you take the first course in the sequence
somewhere other than Auburn? **A B**
 5. How much time elapsed between taking the courses in sequence (for determining your answer, include summer semester)?
A= I took them back to back C= 2 or 3 semesters gap between
B= 1 semester gap between D= 4 or more semesters gap between
 6. What year are you?
A=Freshman B= Sophomore C=Junior D= Senior E=Other

The following survey questions relate to scientific abilities.

Using the choices A to D (with A=a great extent, B=some extent, C=very little; D=not at all), how well do you think you are able to do the following.

- | | | | | |
|---|---|---|---|---|
| 7. Form a hypothesis | A | B | C | D |
| 8. Test a hypothesis | A | B | C | D |
| 9. Design an experiment | A | B | C | D |
| 10. Conduct an experiment | A | B | C | D |
| 11. Interpret the results of an experiment | A | B | C | D |
| 12. Analyze a data set | A | B | C | D |
| 13. Represent information in multiple ways | A | B | C | D |
| 14. Collect and represent data in a manner that enables you to find patterns and ask relevant questions | A | B | C | D |

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. The questions for each course are found below.

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

BIOL 1010

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 Reports

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".

FINDINGS

Survey

Survey Questions Relating to Scientific Abilities and Knowledge

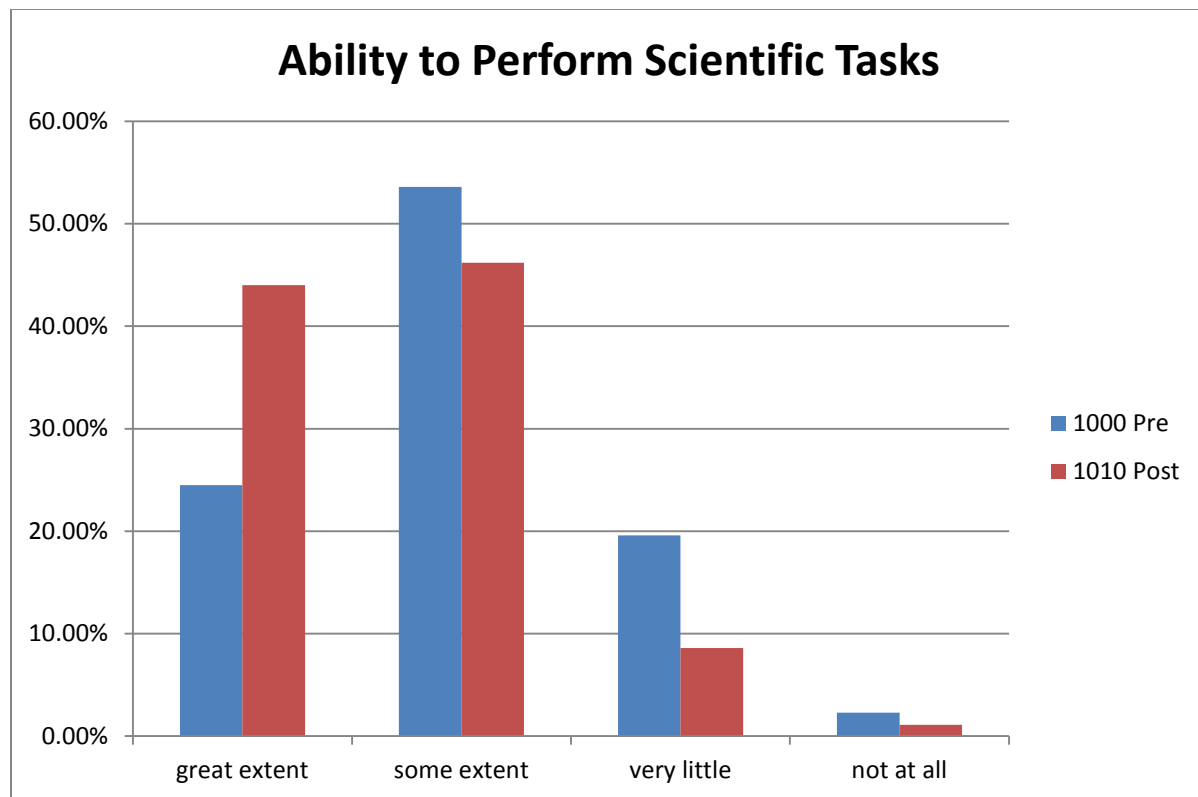
Students rated their scientific abilities and knowledge as higher at the end of BIOL 1010 than they did at the start of BIOL 1000.

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.

The 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 24.5% at the start of BIOL 1000 to 44% at the end of BIOL 1010. The results from all student responses from each category are found in the chart below.

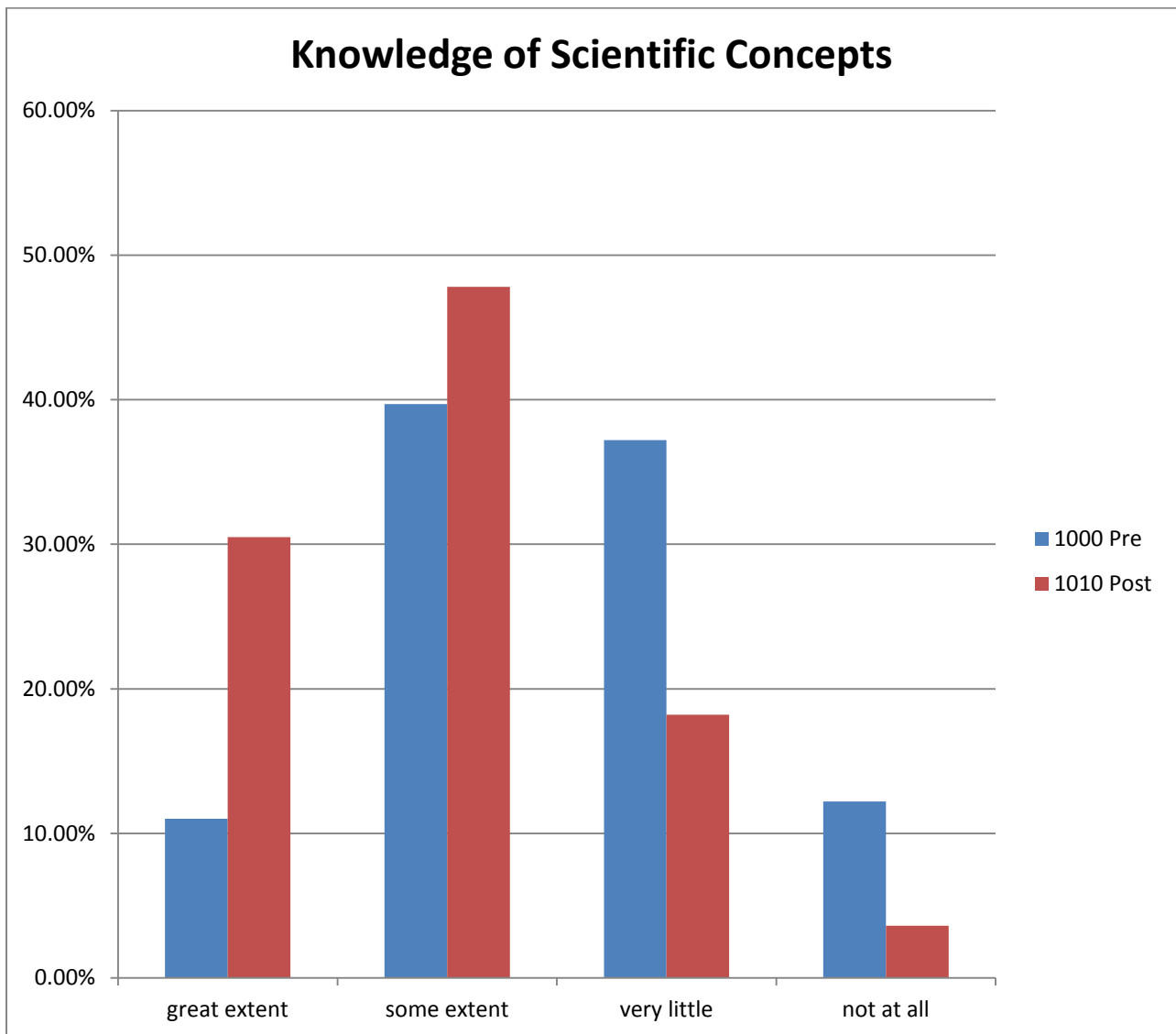


Knowledge of Scientific Concepts

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 11.0 % at the start of BIOL 1000 to 30.5% at the end of BIOL 1010. The results from all student answers are found in the chart below.

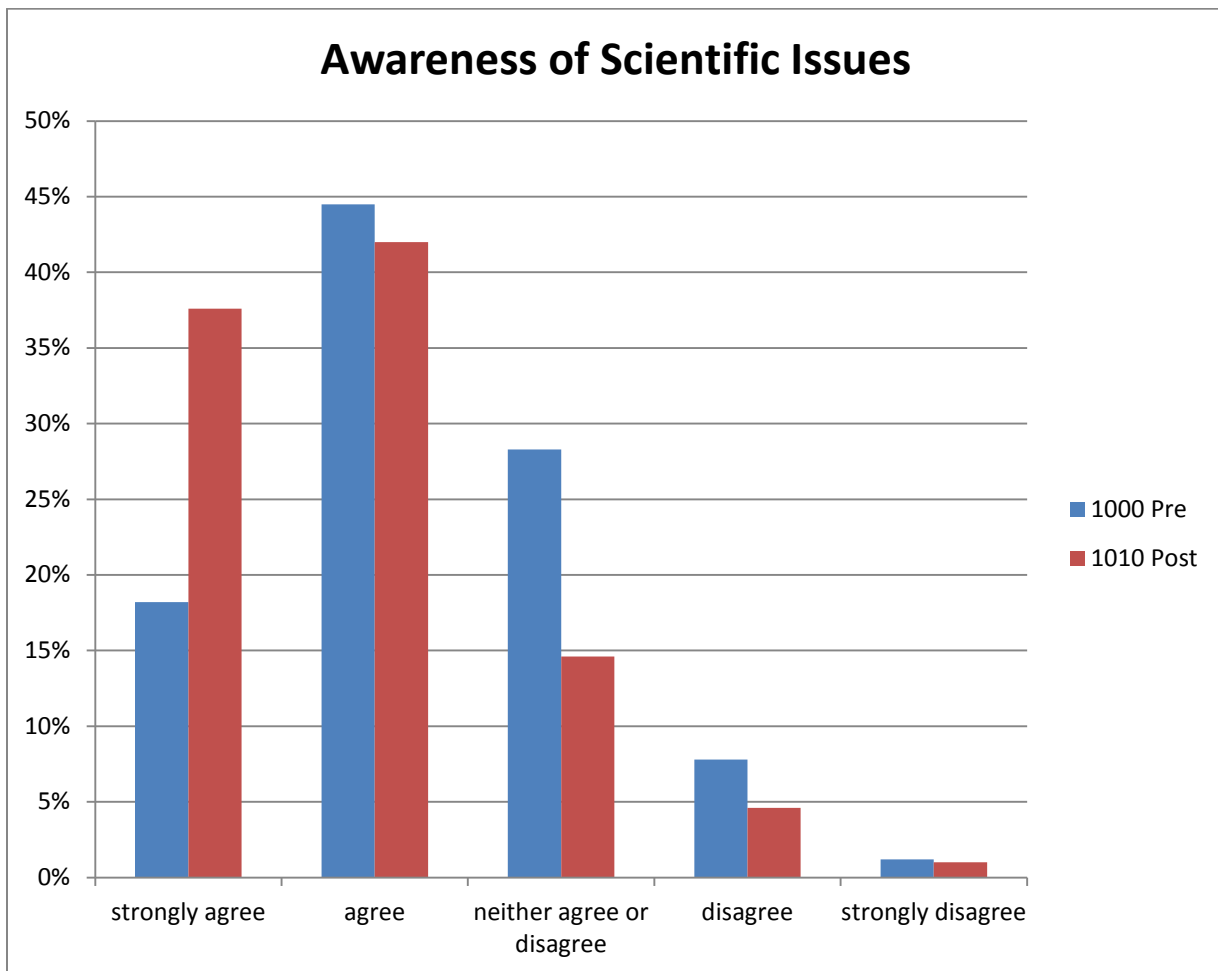


Awareness of Current Scientific and Technological Issues and Their Broader Impact on Society

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.

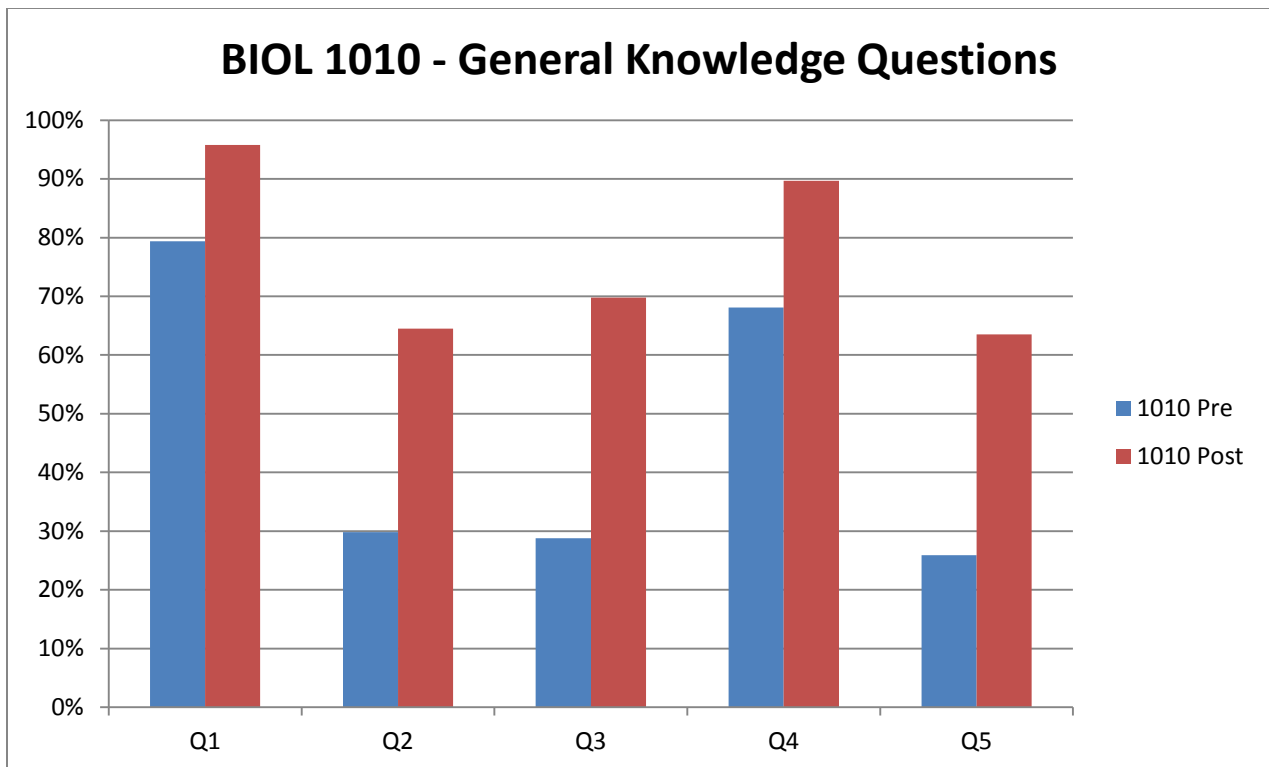
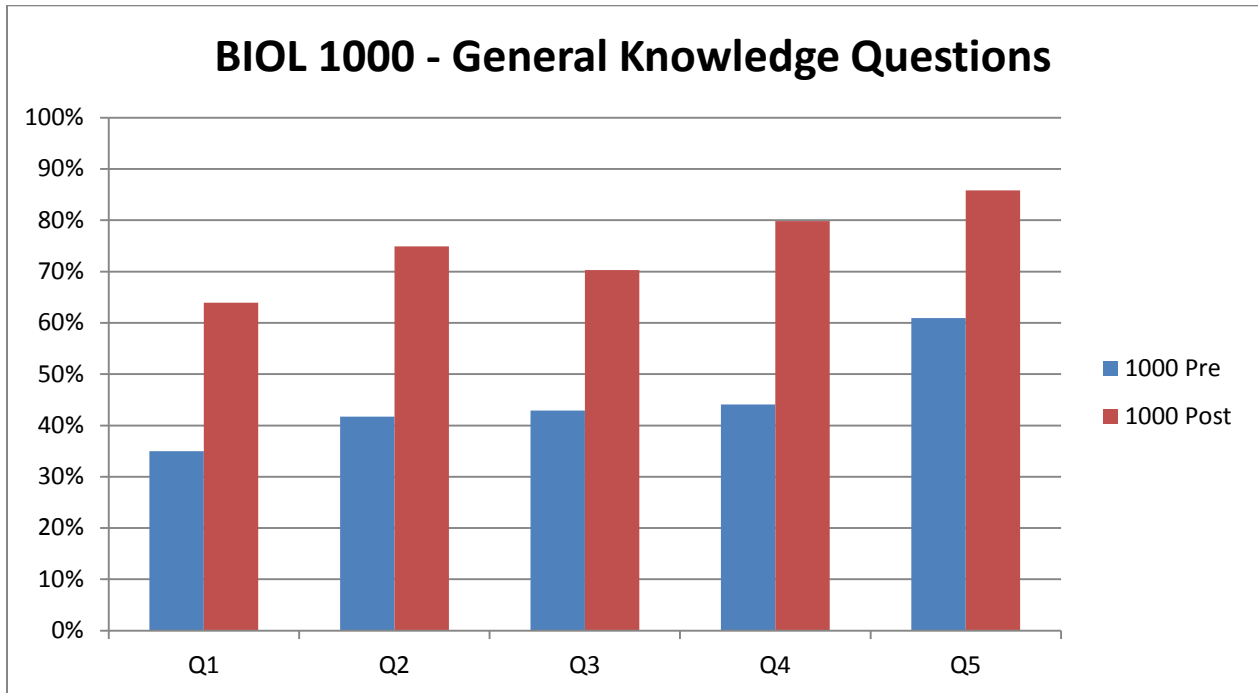
A – Strongly agree B – Agree C – Neither Agree or Disagree D – Disagree E – Strongly Disagree

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 18% at the start of BIOL 1000 to 37.6% at the end of BIOL 1010. The results from all student answers are found in the chart below.



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. 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.



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 found in the chart below.

