# Learning Outcome

Quantitative Reasoning, Critical Thinking, Scientific Method

<table>
<thead>
<tr>
<th>Measure 1 Type:</th>
<th>Direct</th>
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</table>

Please select

<table>
<thead>
<tr>
<th>Measure 1 Description:</th>
<th>A pre-test/post-test question aimed at testing the students' ability to comprehend and apply the scientific method. (Data Point #1)</th>
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<table>
<thead>
<tr>
<th>Measure 1 Sample Size:</th>
<th>70</th>
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<table>
<thead>
<tr>
<th>Measure 1 Benchmark</th>
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</table>

1) Describe the benchmark for this measure.

A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?

Students' learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

<table>
<thead>
<tr>
<th>Measure 2 Type:</th>
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Please select

Measure 2 Description:

Measure 2 Sample Size:

Measure 2 Benchmark

1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met
Missed benchmark

Measure 1 Results:
Decrease of 10% pre to post test (data point #1)

Measure 2 Results:

graph1.jpg

1) How did unit/department performance compare to the benchmark?
Missed benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?
1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?
Met benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?

Further Action:
Further Action Planned

Describe the action plan:
The question itself was found to possibly be faulty; the question has been re-worded what we believe is a more accurate means of measuring our students' understanding of the scientific method.

Person/ Group responsible for action
Larry Taylor/ Biology Department

Target Date for implementation of the action
01/20/2014

Priority
High

Describe any additional resources needed (Leave blank if no additional resources are needed.)

Learning Outcome
Information Management, Biological Organization, Scientific Literacy

Measure 1 Type:
Direct

Pre-Post tests

Measure 1 Description:
A pre-test/post-test question aimed at testing the students' ability to comprehend biological organization. (Data Point #2)

Measure 1 Sample Size:
70

Measure 1 Benchmark

1) Describe the benchmark for this measure.
A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?
Students' learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

Measure 2 Type:

Please select

Measure 2 Description:

Measure 2 Sample Size:

Measure 2 Benchmark

1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met
Measure 1 Results:
There was a 10% increase in understanding pre to post test (data point #2).

Measure 2 Results:

1) How did unit/department performance compare to the benchmark?
Met benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?
Met benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?

Further Action:
Further Action Unnecessary

Describe the action plan:
Person/ Group responsible for action

Target Date for implementation of the action

Priority

Describe any additional resources needed (Leave blank if no additional resources are needed.)

Learning Outcome

Quantitative Reasoning, Data Analysis, Scientific Method

Measure 1 Type:

Direct

Pre-Post tests

Measure 1 Description:

A question aimed at measuring students' ability to create and analyze data.

Measure 1 Sample Size:

70

Measure 1 Benchmark

1) Describe the benchmark for this measure.

A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?

Students learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.
Measure 2 Type:
Please select

Measure 2 Description:

Measure 2 Sample Size:

Measure 2 Benchmark
1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met
Missed benchmark

Measure 1 Results:
Student comprehension increased 9% pre to post test (data point #3).

Measure 2 Results:

1) How did unit/department performance compare to the benchmark?
Missed benchmark by 1%.

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?
1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?
Missed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?

Further Action:
Further Action Planned

Describe the action plan:
We will stress proper analysis of data to our students in our introductory courses (105 and 111). We will also reformat the layout of these questions so as to require students to graph their data before attempting analysis, as this may skew results.

Person/ Group responsible for action
Biology Department

Target Date for implementation of the action
01/20/2014

Priority
Low

Describe any additional resources needed (Leave blank if no additional resources are needed.)

Learning Outcome
Quantitative Reasoning, Data Analysis, Critical Thinking, Scientific Method
**Measure 1 Type:**
Direct

**Pre-Post tests**

**Measure 1 Description:**
A questioned aimed at measuring students' ability to organize and analyze scientific data and form conclusions.

**Measure 1 Sample Size:**
70

**Measure 1 Benchmark**

1) Describe the benchmark for this measure.
A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?
Students learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

**Measure 2 Type:**
Please select

**Measure 2 Description:**

**Measure 2 Sample Size:**

**Measure 2 Benchmark**

1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?
Outcomes Met/not met
Missed benchmark

Measure 1 Results:
Student comprehension increased 0.2% (data point #4)

Measure 2 Results:

graph1.jpg

1) How did unit/department performance compare to the benchmark?
Missed benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?
Missed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?

Further Action:
Further Action Planned

Describe the action plan:
We will stress proper analysis of data to our students in our introductory courses (105 and 111). We will also reformat the layout of these questions so as to require students to graph their data before attempting analysis, as this may skew results.

Person/Group responsible for action
Biology Department

Target Date for implementation of the action
01/20/2014

Priority
High

Describe any additional resources needed (Leave blank if no additional resources are needed.)

Learning Outcome
Quantitative Reasoning, Data Analysis, Scientific Method, Critical Thinking

Measure 1 Type:
Direct

Pre-Post tests

Measure 1 Description:
A question aimed at measuring students' ability to analyze and interpret data and predict future outcomes based on the available data.

Measure 1 Sample Size:
70

Measure 1 Benchmark

1) Describe the benchmark for this measure.
A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?

Students learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

Measure 2 Type:

Please select

Measure 2 Description:

Measure 2 Sample Size:

Measure 2 Benchmark

1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met

Missed benchmark

Measure 1 Results:

Student comprehension increased only 4% (data point #5).

Measure 2 Results:

[graph1.jpg]

1) How did unit/department performance compare to the benchmark?
Missed benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?

Missed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?

Further Action:
Further Action Planned

Describe the action plan:
We will stress proper analysis of data to our students in our introductory courses (105 and 111). We will also reformat the layout of these questions so as to require students to graph their data before attempting analysis, as this may skew results.

Person/ Group responsible for action
Biology Department

Target Date for implementation of the action
01/20/2014

Priority
High

Describe any additional resources needed (Leave blank if no additional resources are needed.)
# Learning Outcome

Information Management, Concepts in Evolution/ Natural Selection, Scientific Literacy

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**Measure 1 Type:**
Direct

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**Pre-Post tests**

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**Measure 1 Description:**
A question aimed at measuring students' comprehension of basic principles of evolution and natural selection.

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**Measure 1 Sample Size:**
70

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**Measure 1 Benchmark**

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1) **Describe the benchmark for this measure.**
A 10% increase pre to post test was expected.

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2) **What is the rationale for choosing this benchmark?**
Students learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

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**Measure 2 Type:**

Please select

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**Measure 2 Description:**

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**Measure 2 Sample Size:**
Measure 2 Benchmark

1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met

Surpassed benchmark

Measure 1 Results:

Student comprehension increased 27% pre to post test (data point #6).

Measure 2 Results:

1) How did unit/department performance compare to the benchmark?

Surpassed benchmark.

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?

Surpassed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational
support unit planning, and assessment planning?

Further Action:

- Further Action Unnecessary

Describe the action plan:

Person/ Group responsible for action:

Target Date for implementation of the action:

Priority:

Describe any additional resources needed (Leave blank if no additional resources are needed.)

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**Learning Outcome**

Information Management, Energy Transformation, Scientific Literacy

**Measure 1 Type:**

Direct

Pre-Post tests

**Measure 1 Description:**

A question aimed at measuring students' comprehension of basic energy transfer and transformation in living cells.

**Measure 1 Sample Size:**

**Measure 1 Benchmark**
1) Describe the benchmark for this measure.
A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?
Students learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

Measure 2 Type:
Please select

Measure 2 Description:

Measure 2 Sample Size:

Measure 2 Benchmark

1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met
Surpassed benchmark

Measure 1 Results:
Student comprehension increased 52% pre to post test (data point #7).

Measure 2 Results:

graph1.jpg
1) How did unit/department performance compare to the benchmark?
- Surpassed benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?
- Surpassed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?

Further Action:
- Further Action Unnecessary

Describe the action plan:

Person/ Group responsible for action

Target Date for implementation of the action

Priority

Describe any additional resources needed (Leave blank if no additional resources are needed.)
Learning Outcome
Information Management, Mechanisms of Heredity/ Principles of Genetics, Critical Thinking

Measure 1 Type:
Direct

Pre-Post tests

Measure 1 Description:
A question aimed at measuring students' comprehension of basic genetic principles and mechanisms of heredity and apply critical thinking to presented information.

Measure 1 Sample Size:
70

Measure 1 Benchmark

1) Describe the benchmark for this measure.
A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?
Students learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

Measure 2 Type:

Please select

Measure 2 Description:

Measure 2 Sample Size:

Measure 2 Benchmark
1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met
Surpassed benchmark

Measure 1 Results:
Student comprehension increased 17% pre to post test (data point #8).

Measure 2 Results:

graph1.jpg

1) How did unit/department performance compare to the benchmark?
Surpassed benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?
Surpassed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?
Further Action:

Further Action Unnecessary

Describe the action plan:

Person/ Group responsible for action

Target Date for implementation of the action

Priority

Describe any additional resources needed (Leave blank if no additional resources are needed.)

Learning Outcome

Information Management, Molecular and Cellular Function, Scientific Literacy

Measure 1 Type:

Direct

Pre-Post tests

Measure 1 Description:

A question aimed at measuring students' comprehension of basic molecular and cellular function and their scientific literacy of biological molecules.

Measure 1 Sample Size:

70

Measure 1 Benchmark

1) Describe the benchmark for this measure.
A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?
Students learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

Measure 2 Type:

Please select

Measure 2 Description:

Measure 2 Sample Size:

Measure 2 Benchmark

1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met
Surpassed benchmark

Measure 1 Results:
Student comprehension increased 50% pre to post test (data point #9).

Measure 2 Results:

graph1.jpg

1) How did unit/department performance compare to the benchmark?
Surpassed benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?

Surpassed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?

Further Action:

Further Action Unnecessary

Describe the action plan:

Person/ Group responsible for action

Target Date for implementation of the action

Priority

Describe any additional resources needed (Leave blank if no additional resources are needed.)

Learning Outcome
Information Management, Ecological Relationships, Societal Impact of Biology, Critical Thinking

Measure 1 Type:
Direct

Pre-Post tests

Measure 1 Description:
A question aimed at measuring students' ability to comprehend ecological relationships and apply uses of biology to socially relevant situations.

Measure 1 Sample Size:
70

Measure 1 Benchmark

1) Describe the benchmark for this measure.
A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?
Students learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

Measure 2 Type:

Please select

Measure 2 Description:

Measure 2 Sample Size:

Measure 2 Benchmark

1) Describe the benchmark for this measure.
2) What is the rationale for choosing this benchmark?

Outcomes Met/not met
Missed benchmark

Measure 1 Results:
Student comprehension increased 0.9% pre to post test (data point #10).

Measure 2 Results:

[graph1.jpg]

1) How did unit/department performance compare to the benchmark?
Missed benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?
Missed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?

Further Action:
Further Action Planned

Describe the action plan:
Application of biology to socially relevant situations will be stressed in our introductory courses (105 and 111), and ecological relationships and the considerations that must be made due to those relationships will be emphasized in these courses as well.

Person/ Group responsible for action
Biology Department

Target Date for implementation of the action
01/20/2014

Priority
Medium

Describe any additional resources needed (Leave blank if no additional resources are needed.)

Learning Outcome
Information Management, Energy Transformations, Critical Thinking

Measure 1 Type:
Direct

Pre-Post tests

Measure 1 Description:
A question aimed at measuring students' understanding of energy transformations and organism growth, and to use that information in a critical thinking exercise.

Measure 1 Sample Size:
70
Measure 1 Benchmark

1) Describe the benchmark for this measure.
A 10% increase pre to post test was expected.

2) What is the rationale for choosing this benchmark?
Students learning during the semester should be reflected in the post-test outcomes. The Biology Department believes that at least a 10% increase in understanding of these concepts is a realistic goal for our students to attain.

Measure 2 Type:

Please select

Measure 2 Description:

Measure 2 Sample Size:

Measure 2 Benchmark

1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met
Surpassed benchmark

Measure 1 Results:
Student comprehension increased 21% pre to post test (data point #11).

Measure 2 Results:

graph1.jpg
1) How did unit/department performance compare to the benchmark?
   Surpassed benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?
   Surpassed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational support unit planning, and assessment planning?

Further Action:
   Further Action Unnecessary

Describe the action plan:

Person/ Group responsible for action

Target Date for implementation of the action

Priority

Describe any additional resources needed (Leave blank if no additional resources are needed.)
Learning Outcome

All Outcomes

Measure 1 Type:
Indirect

Survey or questionnaire

Measure 1 Description:
Five questions polling students on how well they believe the course improved their critical thinking, provided them with skills and information they will use in the future, strengthened their ability to understand of biology, improved their understanding of the technologies and techniques use in biology, and challenged them academically.

Measure 1 Sample Size:
70

Measure 1 Benchmark

1) Describe the benchmark for this measure.
Students were asked to rate their agreement with these measure on a scale of 1-5 (1 = strongly agree, 5 = strongly disagree). Our goal was to have an average of 2 rating for all measures.

2) What is the rationale for choosing this benchmark?
We wanted to make the survey easy to answer via categorical options and allow students to provide feedback of their experiences.

Measure 2 Type:

Please select

Measure 2 Description:

Measure 2 Sample Size:
Measure 2 Benchmark

1) Describe the benchmark for this measure.

2) What is the rationale for choosing this benchmark?

Outcomes Met/not met
Missed benchmark

Measure 1 Results:
Students across all sections answered an average of 2.2-2.5, leaning towards a neutral interpretation of their experiences. The last question ("challenging") met expectations with a 1.8 rating.

Measure 2 Results:

1) How did unit/department performance compare to the benchmark?
Missed benchmark

2) How does the data compare to the previous year, if applicable?

3) If multiple measures were used, how do they compare to each other?

1) Based on the findings, how does the unit/department rate performance in regards to this outcome (strong – exceeds benchmark, neutral – meets benchmark, or weak – misses benchmark)?
Missed benchmark

2) How does this assessment affect plans for this coming year in terms of strategic planning, budget planning, administrative and educational
support unit planning, and assessment planning?

Further Action:
Further Action Planned

Describe the action plan:
We will attempt to make our courses more relevant as well as explain topics to students in more depth. We also recognize that averages across all courses are highly influenced by large deviations in particular sections, and thus will evaluate if a change of instructors leads to significantly higher marks from students in coming semesters.

Person/ Group responsible for action
Biology Department

Target Date for implementation of the action
01/20/2014

Priority
Medium

Describe any additional resources needed (Leave blank if no additional resources are needed.)