Report:	Summary of the Assessment Cycle Results in : 2020-2021 Assessment Cycle: Assessment Plan and Assessment Findings
	Report Generated by Taskstream
Workspace:	Academic Program Assessment and Planning Workspace
Assessment Plan Template :	IU Kokomo Academic Assessment Template [
Report Generated :	Tuesday, July 20, 2021

Organizational Area

Indiana University System AMS » Indiana University: Kokomo » Academic Affairs » School of Sciences

Biology

Summary Results

Overall Statistics

- **33%** (4/12) outcomes were included
- **50%** (2/4) of outcomes included have at least one measure specified
- **50%** (2/4) of outcomes included have measures with findings specified

5 Total Measures
(Includes measures that do not have findings)

5 Total Measures with Findings

Measure Type/Method

Student Artifact	3 (60%)
Exam	1 (20%)
Portfolio	0 (0%)
Other	1 (20%)
Total Direct	**5 (100%)**
Survey	0 (0%)
Focus Group	0 (0%)
Interview	0 (0%)
Other	0 (0%)
Total Indirect	**0 (0%)**
Unspecified	**0 (0%)**

Measure Level

Course	5 (100%)
Program	0 (0%)
Institution	0 (0%)
Other	0 (0%)
Unspecified	0 (0%)

Acceptable Target Achievement

Not Met	1 (20%)
Met	4 (80%)
Exceeded	0 (0%)
Unspecified	0 (0%)

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Measures and Findings

Biology Program Goals and Outcomes

Outcome

Goal 1 (Content) 3. Students will describe the biological world and its relationship to basic human needs and activities.

Components: measurement, data collection, observation, evaluation, calculation.

Mapped to:

No Mapping

No measures specified

Goal 1 (Content) 5. Students will describe the cellular and molecular basis of genetics.

Components: measurement, data collection, observation, evaluation, calculation.

Mapped to:

No Mapping

No measures specified

Goal 2 (Methodology) 1: Students will apply the methods biologists use to

Measure

BIOL-L 474 Ecology Lab ANOVA exercise

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explore living organisms.

Components: observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, employment of mathematical analysis.

Mapped to:

No Mapping

COURSE LEVEL; DIRECT - STUDENT ARTIFACT

Details/Description:
Students performed a several month experiment on the effects of nutrient addition and competition on plant growth. As part of their final assignment for the project, they analyzed 4 of the variables from their data using 2-way ANOVAs using the SPSS statistical software. The analysis included not just the statistical test, but also required student to visualize their data and interpret the results.

Acceptable Target:
70%

Implementation Plan (timeline):
Fall 2019 and future semesters.

Key/Responsible Personnel:
Drs. T.J. Sullivan

Supporting Attachments:

Findings

for BIOL-L 474 Ecology Lab ANOVA exercise

Summary of Findings:
The average score on the assignment was 45.6 / 50 (91%) with n = 15.

Acceptable Target Achievement:
Met

Reflections/Notes:

Substantiating Evidence:

Measure

Pipetting assessment in BIOL-L 105 laboratory. (Fall 2019)

COURSE LEVEL; DIRECT - OTHER

Details/Description:
One of my goals as a biology lab instructor at the 100 and 200 levels is to be sure that students understand and are comfortable with laboratory tools and equipment. I focus especially on micro pipettors in the Introduction to Biology lab because I know they will be using them in their next semester with Molecular Biology and later in their Biochemistry labs. For the goal of methodology, outcome 1 we want students to apply the methods biologists use to explore living organisms with the components of observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence and employment of mathematical analysis.
In this assessment I have students use the micro pipettor once early in the semester. They make four spots of a food dye and buffer solution on a piece of filter paper using 8 microliters of solution. I have the students measure the spots. If done correctly the spots should measure between 1.2 and 1.4 cm across.
The students encounter the micro pipettors again a few weeks later when they use larger

volume pipettors (500 and 1000 microliters) for an enzyme assay. On the first lab exam I ask them to tell me how much volume a pipettor will deliver, and provide either a 500 microliter pipettor or a 1000 microliter pipettor. They are to give their answer in milliliters.
A week before the second lab exam, about 4 weeks after their enzyme lab activity, they repeat the first pipetting activity, making 4 spots on a piece of filter paper using 8 microliters of food dye solution and measuring across the spots in centimeters. I can then compare the results of this activity to their results at the beginning.
These two assessments can be included in the components of measurement and data collection, experimentation, and evaluation of evidence.

Acceptable Target:
70%

Implementation Plan (timeline):
Fall 2019 and future semesters

Key/Responsible Personnel:
Carrie Kinsey, Lab instructor

Supporting Attachments:

Findings

for Pipetting assessment in BIOL-L 105 laboratory. (Fall 2019)

Summary of Findings:
I determined that for the pipetting activity about 54% of students (13 out of 24) improved and about 17% (4 out of 24of students did not improve but continued to do a good job pipetting. In all about 71% of students (17 out of 24) continued to do well or improved. About 25% (6 out of 24) of students did worse and 1 student (4%) did not participate in both activities.
For the test questions 79% (19 out of 24) got the correct answer, 12% (3 out of 24) did not get the correct answer, and 2 students did not participate in the exam (8%).

Pipetting Activity
Total number of students: 24
Number Improved: 13 (54%)
Number stayed the same, but still did well: 4 (17%)
Total who either improved or continued to do well: 17 (71%)

Number did not improve: 6 (25%)
Number who did not participate in both assessments: 1 (4%)

Pipette Test Question
Total number of students: 24
Number who got the correct answer: 19 (79%)
Number who did not get the correct answer: 3 (12%)
Number who did not participate in the exam question 3 (12%)

The results of this assessment are on target or slightly above our goal of a 70% success rate.

Acceptable Target Achievement:
Met

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Reflections/Notes:

I continue to work with students to improve their pipetting expertise in BIOL L213 molecular biology lab to prepare them for their upper level lab courses. I would like to add an additional pipetting activity early in the semester for BIOL L105 to help their confidence, since use of the micro pipettor is an essential skill for the biology lab.

Substantiating Evidence:

Goal 2 (Methodology) 2. Students will evaluate the outcomes of scientific experiments.

Components: observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, employment of mathematical analysis.

Mapped to:

No Mapping

Measure

BIOL-L 473 Ecology - marmot hibernation experiment

COURSE LEVEL; DIRECT - STUDENT ARTIFACT

Details/Description:

Students were asked to interpret data correlated the date yellow-bellied marmots ended their hibernation with the year. Correct answers not only described the relationship between the variables, but also described how the results could be interpreted to support the hypothesis that the climate is warming.

Acceptable Target:

70%

Implementation Plan (timeline):

Fall 2019 and future semesters.

Key/Responsible Personnel:

Dr. T.J. Sullivan

Supporting Attachments:

Findings

for BIOL-L 473 Ecology - marmot hibernation experiment

Summary of Findings:

The average score on the exam question was 5.7 / 6 (96%) with n = 23.

Acceptable Target Achievement:

Met

Reflections/Notes:

Substantiating Evidence:

Measure

BIOL-L 473 Ecology stable isotope analysis

COURSE LEVEL; DIRECT - EXAM

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Details/Description:

Students were asked to interpret data (presented graphically) related to the use of stable-isotope analysis to determine an animal's feeding habits based on hair samples on an exam. Correct answers explained not only the results, but how the results explained the animal's diet over time.

Acceptable Target:

70%

Implementation Plan (timeline):

Fall 2019 and future semesters.

Key/Responsible Personnel:

Dr. T.J. Sullivan

Supporting Attachments:

Findings

for BIOL-L 473 Ecology stable isotope analysis

Summary of Findings:

The average score on the exam question was 7.4 (92%) with n = 23.

Acceptable Target Achievement:

Met

Reflections/Notes:

Substantiating Evidence:

Measure

BIOL-L 473 Interpretation of simulated data

COURSE LEVEL; DIRECT - STUDENT ARTIFACT

Details/Description:

Students were asked to interpret a simulated data (based on an actual dataset we studied in class) related to how the actual number of species compares to the cumulative number of species compare overtime on an island post-volcanic eruption. Correct answers explained how this data informs our understanding of ecological succession.

Acceptable Target:

70%

Implementation Plan (timeline):

Fall 2019 and future semesters

Key/Responsible Personnel:

Dr. T.J. Sullivan

Supporting Attachments:

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Findings

for BIOL-L 473 Interpretation of simulated data

Summary of Findings:

The average score on the exam question was 1.6 / 6 (26%) with n = 23.

Acceptable Target Achievement:

Not Met

Reflections/Notes:

Students clearly struggled with this question. Based on their answers, the confusion came from 2 sources: 1) understanding what the cumulative species curve represented, and 2) understanding that pioneer species are often driven out of communities as better competitors establish themselves.

We will need to work on these skills in Fall 2021 when the course is offered next.

Substantiating Evidence:

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