

COURSE SLO ASSESSMENT REPORT, SCC

Department: **Biology**

Course: **Biol-229 General Microbiology**

Year: 2012

Semester: Fall

<p>1) Outcome to be assessed</p> <p>Demonstrate a coherent understanding of the diversity of microorganisms and their role in the biosphere.</p>	<p>2) Means of assessment and criteria of success</p> <p>Pre/Post test developed with another community college microbiology instructor. 40 questions assessing 18 “objectives” under this broad SLO</p> <p>10 multiple choice questions covering respiration (topic of special title V funded workshop). Also some short answer question offered (students had some choice so may opt not to answer these)</p>	<p>2) Summary of data collected</p> <p>Overall, analysis of only students completing the course showed that the mean pre test score was 33% correct and the post test mean was 49% correct (a 16% improvement).</p> <p>3) 74% correct vs 58% correct workshop attendees vs non-attendees</p>	<p>4) Analysis of data</p> <p>I was expecting a larger improvement in the post test score. I need to more deeply analyze the data and see which questions are universally missed. I may also want to rethink the timing and length of the test</p> <p>Workshop attendees scored better on multiple choice, attempted the respiration short answers more often and answered these questions better than non-attendees. For detailed respiration workshop analysis- see attached sheet.</p>	<p>5) Plan of action/what to do next</p> <p>Clearly, there are major gaps which need addressing. I will tease apart the data and analyze further before deciding on action. The assessment itself may need to be shortened and modified.</p> <p>Workshop does help, continue to offer to help students master this difficult topic</p>
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<p>4) Outcome to be assessed</p> <p>Employ the principles of the scientific method to both laboratory and conventional investigations.</p>	<p>2) Means of assessment and criteria of success</p> <p>Rubric used to score unknown reports. The expectation is that greater than 80% of the students will be scored as successfully meeting the expectations</p>	<p>3) Summary of data collected</p> <p>36/42 students demonstrated an unflawed, logical progression from their hypothesis to their conclusion</p>	<p>4) Analysis of data</p> <p>Students understand the process of the scientific method and can apply logical reasoning.</p> <p>1/40 students made a major error which lead to a faulty conclusion.</p>	<p>5) Plan of action/what to do next</p> <p>The identification of an unknown microorganism is still a successful undertaking with the vast majority of students successfully employing scientific investigation. This project will continue to be utilized.</p>
<p>1) Outcome to be assessed</p> <p>Conduct laboratory investigations according to given experimental procedure, collect and analyze resulting experimental data, and formulate valid conclusions based on the results</p>	<p>2) Means of assessment and criteria of success</p> <p>Rubric used to score unknown reports. The expectation is that greater than 80% of the students will be scored as successfully meeting the expectations</p>	<p>3) Summary of data collected</p> <p>38/40 students interpreted all the experimental results correctly and 33/40 documented ALL necessary evidence for their conclusion</p>	<p>4) Analysis of data</p> <p>4/40 students made an error in test interpretation; 8/40 students made minor errors in providing evidence to support their conclusions. One student made a major omission.</p>	<p>5) Plan of action/what to do next</p> <p>This project is almost ideal in engaging students in the scientific process. I will continue to use this project.</p>

F 12 Respiration Workshop Microbiology exam analysis

- I. 10 multiple choice questions covering the topic of the workshop were embedded in exam 1. The students were grouped into workshop attendees (19/61) and non-attendees (42/61). Of note, all 6 students earning A's on the exam did NOT attend the workshop. 3 students attending the workshop earned either a D or an F on the exam. Below are the numbers by question. The % of students answering correctly was higher (except for one question) than for non-attendees. The overall average for all 10 questions was also higher (7.5/10 for attendees and 6.6 for non attendees). Although this is not a huge point difference, it does reflect the difference between a "C" and a "D" level overall.

Multiple choice analysis

topic	workshop attendees % right	non-attendees % right	difference
atp/glycolysis	0.95	0.55	0.40
NAD+	0.89	0.76	0.13
redox rxn	0.53	0.45	0.07
ATP synthase	0.63	0.48	0.16
ATP/FADH2	0.79	0.67	0.12
CO2/pyruvate	0.26	0.29	-0.02
Krebs turns/glucose	0.89	0.71	0.18
Products of glycolysis	0.95	0.67	0.28
glycolysis			
invest/payoff	1.00	0.83	0.17
fermentation			
function	0.63	0.52	0.11
	n=19	n=42	

overall ave of 10 7.5 6.6

In comparison last Fall (F11), I asked 8 multiple choice questions on the exam and the results were similar

If went to workshop	5.9/8 correct	74%	n = 34
did not go	4.7/8 correct	58%	n=24

When there was not a workshop (previous Spring), the average was 5.1/8 multiple choice questions correct (64% correct). N=54.

- II. In addition to the multiple choice, students had to answer 5 of 7 posed short essay questions. Two of the 7 dealt with topics covered in the workshop (ATP payoff in glycolysis and alcoholic fermentation). Workshop attendees attempted these questions more often than the non-attendees and they scored better overall when they did attempt to answer it. The question was worth 6 points each.

Short answer analysis

attempts	75		ave pts		77		ave pts
workshop	12/19	57.89%	3.25		14/19	73.68%	3.89
non-attendee	16/42	38.10%	1.75		23/42	54.76%	1.87
75	how arrive at 4 atp if invest 2 P from ATP						
77	explain alcoholic fermentation						

Class Scoring Rubric for Unknown Report Biology 229

- Employ the principles of the scientific method to both laboratory and conventional investigations.
- Conduct laboratory investigations according to given experimental procedure, collect and analyze resulting experimental data, and formulate valid conclusions based on the results

Goal	Excellent performance	Satisfactory performance	Unsatisfactory performance
Required test results interpreted correctly total students analyzed: 42	All tests interpreted correctly students in this category= 38	Most tests interpreted correctly students in this category= 4	More than two tests not interpreted correctly students in this category= 0
Elements of report provide necessary support for conclusion total student analyzed: 42	Unflawed students in this category= 33	Minor flaw students in this category= 8	Several small or a major flaw students in this category=1
Logical progression from hypothesis to conclusion total student analyzed: 42	Unflawed: Provides solid and convincing evidence for the conclusion students in this category= 36	Minor flaw: the evidence for conclusion may be missing a minor element or contain a minor mistake students in this category= 5	Major flaw. Evidence for conclusion is lacking or contains major flaw type of flaw:
			<u>Faulty assumptions</u> students in this category= 0
			<u>Incomplete analysis</u> students in this category= 1
			<u>Incorrect analysis</u> students in this category= 0
			<u>Other:</u>