Appendix B. Post-implementation Data Summary

Post-implementation Data Summary for Chapter 7 - The Working Cell: Energy From Food

n=62

Grade Level	N
9th grade only	18
10th grade only	30
9th and 10th grade	13
10th, 11th , and 12th grade	1
Total	**62**

Student Population Type	N
Regular level biology	34
Honors biology	10
Applied biology	6
Mixed regular level and honors students	15
Other	1
Total	**75**

Other noted: Botany class of 11th and 12th grade students

	N	Mean	St. Dev.
Number of classroom days you used the chapter materials	62	8.23	4.27
Length of classroom period in minutes	62	64.40	20.64
Amount of time (in days) students are in front of computers			
One student using one computer	38	4.56	3.21
Group using one computer	31	3.84	2.90
Whole class demonstration	19	1.47	0.65
Learning station or activity center use	3	3.67	3.06
Other: Review work at station Report writing/summary Smart board No response (2)	5	4.40	4.28

In the past, approximately how many **days** would you devote to this topic?	N
No Response	2
1-3 days:	7
4-6 days:	29
7-10 days:	17
11-15 days:	7
16-20 days:	0
Total	**62**

Method of instruction. Please assign a percentage to your use of the Exploring Life chapter materials in your classroom. For example, if you used the Exploring Life Website activities on the computer for 50% of your classroom instruction time, enter 50. The total should be 100%.

ACTIVITY	Mean	St. Dev.
Exploring Life Website activities on computer	46.25	15.65
Laboratories	22.01	11.42
Lecture	22.73	18.22
Discussion	18.94	9.38
Demonstration	8.33	2.89
Textbook	27.08	13.87
Other	17.28	14.20

Other noted(15): Working board game, Review activities, Quiz and Review, Lab on yeast respiration, Explanation, Pre/Post tests, exam, and survey, Group review and instruction, Concept reviews from text, Labs from other sources, Chapter Activities, Textbook, some brief discussions (no percentage assigned), pre/post lab testing, Guided Notes, role play, Test review, testing, own test, Direct Instruction (2 responses)

Web-based Material	Used	Did Not Use	Minutes Used Mean	Minutes Used St.Dev.	Reason for Not Using Web-based activity
CalorieQuest	41 (66.1%)	21 (33.9%)	49.67	26.64	Time constraint/Lack of instructional time (5) Concept covered in another topic (4) Internet access was to slow or unreliable at the school (3) Difficulty obtaining access to computer lab (2) Used as extra credit or optional assignment (2) Students were instructed to view at home (1) Used a different caloric activity (1)

Concept 7.1 – Sunlight powers life.	62 (100.0%)	0	26.80	16.75	
Concept 7.2 - Food stores chemical energy.	62 (100.0%)	0	25.50	17.18	
Lab 7.1 - Investigating Chemical Energy Stored in Food	36 (58.1%)	26 (41.9%)	78.93	48.70	Time constraint/Lack of instructional time (13) Use with a different topic (5) Safety concerns (3) Lack of supplies (1) Website not used to assist in lab activity (1) Concept covered in previous grade (1) Other activities used (1)
Concept 7.3 - A molecule called ATP powers work in your cells.	61 (98.4%)	1 (1.6%)	27.18	16.94	Previously discussed (1)
Concept 7.4 - Electrons "fall" from food to oxygen during cellular respiration.	57 (91.9%)	5 (8.1%)	28.55	15.82	Too complex or too much detail for my students (3) Quicktime movie would not work (1) Included in discussion of Concept 7.5 (1)
Concept 7.5 - Electrons "fall" from food to oxygen during cellular	59 (95.2%)	3 (4.8%)	29.07	16.84	Too complex or too much detail for my students (3)

respiration.					
Lab 7.2 - Guided Research: Cellular Respiration in FastPlants®	19 (30.6%)	43 (69.4%)	83.61	59.86	Time constraint/Lack of instructional time (20) Difficulty with lab materials (9) Did not receive lab material in time (8) Lab too complicated or not appropriate for students (5) Used a different CO2 production lab (2) Lab conducted earlier in school year (1)
Explore!: Aerobic Exercise and Dietary Supplements	26 (41.9%)	36 (58.1%)	42.86	37.80	Time constraint/Lack of instructional time (25) Used as extra credit assignment (4) Concept covered in another topic (4) Activity partially completed/lack of instructional time (2) Appeared long and boring (1)
Closer Look - Cellular respiration converts food energy to ATP energy.	45 (72.6%)	17 (27.4%)	25.88	18.31	Time constraint/Lack of instructional time (9) Too advanced for my students (5) Used as extra credit assignment (1) Students very tired of computer (1)
Concept 7.6 - Some cells can harvest food energy without oxygen.	58 (93.5%)	4 (6.5%)	28.19	17.42	Time constraint/Lack of instructional time (1) Too detailed for my students (1) Students very tired of computers (1) Don't like pinball (1)

Closer Look - Fermentation	42 (67.7%)	20 (32.3%)	21.63	14.97	Time constraint/Lack of instructional time (6) Too advanced or detailed for my students (4) Discussed topic in class (2) Concept covered in another topic (1) Conducted a lecture on fermentation instead (1) Conducted a lab using yeast instead (1) Students tired of computers (1) Students were encouraged to look at this section (1)
Chapter 7 Quiz	47 (75.8%)	15 (24.2%)	24.09	12.90	A written quiz was used instead (5) Time constraint/Lack of instructional time (2) Assigned as a homework review (2) Used the text assessment as a review instead (1) Lack of computers for individual use (1) Questions seemed confusing (1) Assigned as optional work (1) Students tired of computer (1)

I found enough diverse activities that I could pick and choose what I needed in this chapter.

Response	**N**	**%**
Strongly disagree	1	1.67%
Somewhat disagree	5	8.33%
Neutral	5	8.33%
Somewhat agree	21	35.00%
Strongly agree	28	46.67%
No response	2	
Total	**62**	**100%**

*NOTE: Percentages above and in other comparable tables in the appendix represent percentage of those who responded.

The topics in this chapter and the modes of instruction were developmentally appropriate for my students.

Response	N	%
Strongly disagree	4	6.45%
Somewhat disagree	6	9.68%
Neutral	3	8.06%
Somewhat agree	23	37.10%
Strongly agree	26	41.94%
Total	**62**	**100.00%**

Post-implementation Data Summary for Chapter 8 - The Working Cell: Energy from Sunlight

n=54

Grade Level	**N**
9th grade only	13
10th grade only	26
9th and 10th grade	9
10th and 11th grade	2
9th - 12th grade	2
11th and 12th grade	1
9th and 11th grade	1
Total	**54**

Student Population Type	**Total**
Regular level biology	35
Honors biology	6
Applied biology	7
Mixed regular level and honors students	15
Other	2
Total	**65**

Other noted: Botany class of 11th and 12th grade students; All three levels including special education students.

	N	Mean	St.Dev.
Number of classroom days you used the chapter materials	54	7.76	3.51
Length of classroom period in minutes	54	67.13	34.54
Amount of time (in days) students are in front of computers			
One student using one computer:	37	3.89	2.35
Group using one computer:	21	3.45	2.31
Whole class demonstration:	18	1.85	1.23
Learning station or activity center use:	1	0	0
Other: Notes Outlining	2	1.00	0.00

In the past, approximately how many **days** would you devote to this topic?	N
1-3 days:	19
4-6 days:	17
7-10 days:	15
11-15 days:	3
16-20 days:	0
Total	**54**

Method of instruction. Please assign a percentage to your use of the Exploring Life chapter materials in your classroom. For example, if you used the Exploring Life Website activities on the computer for 50% of your classroom instruction time, enter 50. The total should be 100%.

ACTIVITY	Mean	St. Dev.
Exploring Life Website activities on computer	52.84	16.62
Laboratories	17.69	10.60
Lecture	23.50	15.72
Discussion	13.09	4.72
Demonstration	9.00	5.29
Textbook	22.86	15.17
Other	15.82	11.31

Other noted (16): Notes (4), Group activities (2), Direct Instruction (2), Role Play, Movie, Homework, activity, Testing, Test/Pre-test, Explanation, Outlining, Hands on with biomes, climatograms, Other lab, Handout,

Web-based Material	Used	Did Not Use	Minutes Used Mean	Minutes Used St. Dev.	Reason for Not Using Web-based activity
Chocolate Quest	32 (59.3%)	22 (40.7%)	52.96	32.82	Time constraint/ Lack of instructional time (8) Technical problems/Slow Internet connection (4) Activity is too long (3) Not related or relevant to school curriculum (3) Sites were difficult to move from one to another (1) Not specific enough to content (1) Used as an extra credit assignment (1) Used as a homework assignment (1)
Concept 8.1 - Photosynthesis uses light energy to make food.	54 (100.0%)	0 (0.0%)	46.86	23.92	
Concept 8.2 - The light reactions convert solar energy to chemical energy.	53 (98.2%)	1 (1.8%)	49.34	27.21	Too difficult of material (1)
Closer Look - The light reactions convert solar energy to chemical	34 (63.0%)	20 (37.0%)	40.69	27.90	Too complex or too much detail for my students (10) Time constraint/ Lack of instructional time (3) Technical problems (2) Felt material was already covered (1) Used my lecture notes instead (1)

energy.					
Concept 8.3 - The Calvin cycle makes sugar from carbon dioxide.	50 (92.6%)	4 (7.4%)	44.92	25.89	Too complex or too much detail for my students (2) Used my lecture notes instead (1)
Lab 8.1 - Photo Finish	28 (51.8%)	26 (48.2%)	76.00	56.22	Time constraint/ Lack of instructional time (13) Did not have materials (6) Experienced difficulty getting lab to work (6) Used different lab (2) Modified as a demo, using a beaker instead of syringes (1)
Concept 8.4 - Photosynthesis has a global impact.	48 (88.9%)	6 (11.1%)	35.18	18.71	Time constraint/ Lack of instructional time (2) Concept covered in another topic (2) Difficulty obtaining access to computers (1) Topic covered in earth science curriculum, not biology (1)
Explore!: Effects of Increasing Carbon Dioxide Levels	32 (59.3%)	22 (40.7%)	30.69	20.13	Time constraint/ Lack of instructional time (11) Concept covered in another topic (5) Topic not covered in biology curriculum (3) Used as an extra credit assignment (2) Didn't seem worth it (1)
Chapter 8 Quiz	37 (68.5%)	17 (31.5%)	38.31	18.92	Time constraint/ Lack of instructional time (7) A written quiz was used instead (4) Used the text assessment as a review instead (2) Used as a homework assignment (1) Did not cover whole unit. I don't use many quizzes (1)

I found enough diverse activities that I could pick and choose what I needed in this chapter.

Response	N	%
Strongly disagree	4	7.41%
Somewhat disagree	8	14.81%
Neutral	3	5.55%
Somewhat agree	20	37.04%
Strongly agree	19	35.19%
Total	**54**	**100.00%**

The topics in this chapter and the modes of instruction were developmentally appropriate for my students.

Response	N	%
Strongly disagree	6	11.11%
Somewhat disagree	7	12.96%
Neutral	3	5.56%
Somewhat agree	24	44.44%
Strongly agree	14	25.93%
Total	**54**	**100.00%**

Post-implementation Data Summary for Chapter 36 – The Biosphere

n=34

Grade Level	**N**
8th grade only	1
9th grade only	9
10th grade only	17
11th grade only	1
9th and 10th grade	4
9th-11th grade	1
9th –12th grade	1
Total	**34**

Student Population Type	**Total**
Regular level biology	23
Honors biology	3
Applied biology	4
Mixed regular level and honors students	9
Total	**41**

	N	Mean	St. Dev.
Number of classroom days you used the chapter materials	34	7.63	5.36
Length of classroom period in minutes	34	66.25	23.27
Amount of time (in days) students are in front of computers			
One student using one computer:	23	4.13	3.07
Group using one computer:	19	3.79	2.69
Whole class demonstration:	13	2.08	1.64
Learning station or activity center use:	2	2.00	0.00
Other: Reading	1	.5	0.00

In the past, approximately how many **days** would you devote to this topic?	N
No Answer	2
1-3 days:	8
4-6 days:	13
7-10 days:	6
11-15 days:	5
16-20 days:	0
Total	**34**

Method of instruction. Please assign a percentage to your use of the Exploring Life chapter materials in your classroom. For example, if you used the Exploring Life Website activities on the computer for 50% of your classroom instruction time, enter 50. The total should be 100%.

ACTIVITY	Mean	St. Dev.
Exploring Life Website activities on computer	57.85	20.44
Laboratories	18.21	6.68
Lecture	25.00	22.91
Discussion	13.21	10.48
Demonstration	7.50	0.00
Textbook	25.74	14.65
Other	19.09	5.39

Other noted (11): Constructed diagrams or mobiles to show food chains, habitats and niches, Worksheets I prepared to supplement the chapter and Web site, Research, Essays, research assignments, activities relating to materials, My supplemental worksheets/activities, Pre/post tests, study sheets, puzzles, brochure creation, My worksheets, Notes/Worksheets, (No description of other=2)

Web-based Material	Used	Did Not Use	Minutes Used Mean	Minutes Used St. Dev	Reason for Not Using Web-based activity
ThermalventQuest	25 (73.5%)	9 (26.5%)	52.80	22.28	Time constraint/Lack of instructional time (5) Internet access to links was unreliable at the school (1) LCD not available -substituted another activity (1) Didn't think students would be interested (1)
Concept 36.1 - The Biosphere is the global ecosystem.	34 (100.0%)	0 (0.0%)	51.83	35.24	
Lab 36 - You Are a Pond Organism.	22 (64.7%)	12 (35.3%)	80.26	113.12	Time constraint/Lack of instructional time (8) Did not have lab materials (2) Used a different lab (2) Modified lab due to time (1) Modified lab due to pond organism availability (1) Previously conducted a similar lab (1) Didn't think students would be interested (1)
Concept 36.2 - Climate determines global patterns in the biosphere.	33 (97.1%)	1 (2.9%)	56.72	39.77	Used a different activity instead (1)
Concept 36.3 - Biomes are the major types of terrestrial ecosystems.	34 (100%)	0 (0.0%)	74.20	94.74	

Concept 36.4 – Aquatic ecosystems make up most of the biosphere.	34 (100.0%)	0 (0.0%)	52.93	40.52	
Career: Meet an Ecologist	14 (41.2%)	20 (58.8%)	17.18	10.55	Time constraint/Lack of instructional time (12) Lack of computer access (1) Students could look at during own time (1) Didn't see the need to include this (1) Didn't think students would be interested (1) Assigned as extra credit (1) Did not align to state curriculum (1)
Chapter 36 Quiz	22 (64.7%)	12 (35.3%)	29.50	20.45	A written assessment/quiz was used instead (6) Time constraint/Lack of instructional time (4) Computers were slow (1) Too easy (1) Students regulated on pace (1)

I found enough diverse activities that I could pick and choose what I needed in this chapter.

Response	**N**	**%**
Strongly disagree	3	9.37%
Somewhat disagree	3	9.37%
Neutral	1	3.13%
Somewhat agree	14	43.75%
Strongly agree	11	34.38%
No Response	2	
Total	**34**	**100.00%**

The topics in this chapter and the modes of instruction were developmentally appropriate for my students.

Response	**N**	**%**
Strongly disagree	4	12.12%
Somewhat disagree	2	6.06%
Neutral	0	0.00%
Somewhat agree	13	39.40%
Strongly agree	14	42.42%
No Response	1	
Total	**34**	**100.00%**