

M620: Designing Grading Rubrics

March 2, 2007

Criteria for Abstract of Biology Laboratory Report

Background

- Identifies objectives of study (what did you want to study?)
- Provides rationale for study (why is this research important to do?)

Methods

- Summarizes protocols used to conduct study
- Reader can picture experimental design based on brief description

Results

- Summarizes major findings of study
- Makes connections among various treatments or variables using appropriate connecting words

Discussion

- Identifies realistic scientific applications for research
- Identifies realistic real-world applications for research

General writing

- Uses complete sentences
- No citations in abstract
- No spelling errors
- No grammatical errors
- 150-200 words maximum

Writing Sample #1

Grade: _____

The Hammond Pond Woods Reservation is a nature reservation located in the metro-Boston area. Within its boundaries lives multiple species of birds that may or may not be competing for resources. The objective of this study is to observe the behaviors of three species of birds that visit a number of feeder locations and to note aggression levels in an effort to find if there is any niche overlap and resource partitioning present within Hammond Woods. The data taken does show that there is a significant difference in feeder preference for the birds present at the site and that niche overlap and resource partitioning is present. Analysis of this particular study will further our understanding of competition for resources among bird species.

Writing Sample #2**Grade:** _____

Conducted in this laboratory, was the study of animal behavior. The purpose is to see how different avian species, which are common to Massachusetts, get their resources in the event of competition from other species. This was done by observing the avian species in their natural environment. By giving variation in seed size and the location on where the feeders are located will show what type of birds and what type of interaction among the different birds for the same type of food. This information is useful because by understanding the avian species of birds and the way they react with one another when it comes to foraging, give the observer some basis to know the social behaviors within these species.

Writing Sample #3**Grade:** _____

Niche partitioning is a process through which species in the same environment only fulfill part of their fundamental niche. Niche partitioning has been observed in a variety of ecosystems. The feeding habitats of species in Hammond Woods in Newton, Massachusetts were studied in order to determine whether niche partitioning had occurred. A number of bird feeders were set up and preference for seed size, feeding height, and percent cover was documented. Instances of aggression, and the level of the aggression in each instance, was recorded. *Parus atricapillus*, *Sitta carolinensis*, and *Parus bicolor* were the three species this study focused on. It was found that *Parus atricapillus* prefer open and high feeding sites with big seeds, that *Sitta carolinensis* prefer closed and high feeding sites with big seeds, and that *Parus bicolor* prefer open and low feeding sites with big seeds. *Sitta carolinensis*, was found to be the most dominant and *Parus atricapillus* was found to be the least dominant. The variety in feeding preferences showed that niche partitioning did occur. This information is important to local conservation efforts. By understanding a species exact niche, conservationists are better able to create a plan that will protect it.

Primary Trait Analysis for Abstract of Biology Laboratory Report

Component	Score	Qualities
Background	2	<ul style="list-style-type: none"> Identifies objectives of study (what did you want to study?) Provides rationale for study (why is this research important to do?)
	1	<ul style="list-style-type: none"> One missing or incomplete item from 2 above
	0	<ul style="list-style-type: none"> Two missing or incomplete items from 2 above
Methods	2	<ul style="list-style-type: none"> Summarizes protocols used to conduct study Reader can picture experimental design based on brief description
	1	<ul style="list-style-type: none"> One missing or incomplete item from 2 above
	0	<ul style="list-style-type: none"> Two missing or incomplete items from 2 above
Results	2	<ul style="list-style-type: none"> Summarize major findings of study Make connections among various treatments or variables using appropriate connecting words
	1	<ul style="list-style-type: none"> One missing or incomplete item from 2 above
	0	<ul style="list-style-type: none"> Two missing or incomplete item from 2 above
Discussion	2	<ul style="list-style-type: none"> Identifies realistic scientific applications for research Identifies realistic real-world applications for research
	1	<ul style="list-style-type: none"> One missing or incomplete item from 2 above
	0	<ul style="list-style-type: none"> Two missing or incomplete items from 2 above
General writing	2	<ul style="list-style-type: none"> Uses complete sentences No citations in abstract No spelling errors No grammatical errors 150-200 words maximum
	1	<ul style="list-style-type: none"> Error in any one item in 2 above
	0	<ul style="list-style-type: none"> Error in any two items in 2 above

Total score: _____

Case Study on Grading

For 3 semesters, Virginia asked first-year students in Biology 101 to answer this test question: “In a coherent paragraph, compare and contrast prokaryotic and eukaryotic cells in four ways.” Each semester, a large number of students did poorly on this fifteen-point question designed to measure vocabulary usage, concept mastery, and information integration. So Virginia ordered a better movie on the cell than she had been using and beefed up her lecture coverage, but still there was no significant improvement. Then an indignant student in lab – armed with a pen and a textbook – demanded to know why he only got half credit when all four of his answers were right. When Virginia looked over his paper, she saw her critiques about the student’s poor spelling, lack of topic sentences, and inability to both compare and contrast items.

Questions:

- What did the instructor perceive to be the initial problem with this exam?
- How did she attempt to fix this problem?
- Why do you think the student received only half credit on his exam essay?
- How could she improve student learning concerning this concept?