

PhD Biological Sciences 2019-20 Learning Outcome Assessment Report

Learning Outcome 1 – Mastery of Field

Methods

We assessed students' mastery of their field using a survey distributed to the dissertation committee within 10 days of the dissertation defense. Questions on the survey addressing this learning outcome included "Mastery of Field" and "Mastery of Current Literature in Field", with students scored on a range of 1 (unsatisfactory) to 4 (outstanding).

The 2019-20 assessment for Learning Outcome #1 included survey results for five students who graduated between May 2019 and April 2020. Scores were averaged across respondents for each of the two questions for each student; the percentage of students exceeding the minimum criteria (3.0) are reported here.

Results

Acknowledging a small sample size, 100% of PhD students completing their dissertations in Biological Sciences in 2019 and 2020 obtained a minimum mean score of 3.0 from their dissertation committee members on the "Mastery of Field" and 80% on the "Mastery of Current Literature in the Field" question. Notably, the average score across the five students was 3.80 for "Mastery of Field" and 3.73 for "Mastery of Current Literature". The proportion of students (80%) meeting the minimum standard for "Mastery of Current Literature" falls below our stated goal of 90%, but that for "Mastery of Field" (100%) exceeds our stated goal.

2019-20 Biological Sciences PhD Program Learning Outcome Assessment - Mastery of Field						
Student	1	2	3	4	5	Mean
Mastery of Field	4.00	3.67	4.00	3.33	4.00	3.80
Mastery of Current Literature	4.00	3.67	4.00	3.00	4.00	3.73
				5		
				5		
				100%		
				4		
				80%		

Learning Outcome 2 – Mastery of Research Design and Methods

Methods

We assessed students' mastery of research design and methods using a survey distributed to the dissertation committee within 10 days of the dissertation defense. Questions on the survey addressing this learning outcome included "Mastery of Research Design" and "Mastery of

Research Design and Execution”, with students scored on a range of 1 (unsatisfactory) to 4 (outstanding).

The 2019-20 assessment for Learning Outcome #2 included survey results for five students who graduated between May 2019 and April 2020. Scores were averaged across respondents for each of the two questions for each student; the percentage of students exceeding the minimum criteria (3.0) are reported here.

Results

In 2019 and 2020, 100% of PhD students completing their dissertations in Biological Sciences obtained a mean score of at least 3.0 from their dissertation committee members on the “Mastery of Research Design” and “Mastery of Research Design and Execution” questions. The average score across the eight students was 3.73 for “Mastery of Research Design” and 3.60 for “Mastery of Research Design and Execution”. The proportion of students (80%) meeting the minimum standard for “Mastery of Research Design” falls below our stated goal of 90%, but that for “Mastery of Research Design and Execution” (100%) exceeds our stated goal.

2019-20 Biological Sciences PhD Program Learning Outcome Assessment - Mastery of Research Design and Methods						
Student	1	2	3	4	5	Mean
Mastery of Research Design	4.00	3.67	4.00	3.00	4.00	3.73
Mastery of Research Design and Execution	3.50	3.67	4.00	3.33	3.50	3.60
Total number of students						5
Students scoring > 3.0 on Q1						4
Percent of students, Q1						80%
Students scoring > 3.0 on Q2						5
Percent of students, Q2						100%

Learning Outcome 3 – Mastery of Communication

Methods

We assessed students’ mastery of research design and methods using a survey distributed to the dissertation committee within 10 days of the dissertation defense. Questions on the survey addressing this learning outcome included “Mastery of Communication” and “Mastery of Written Communication”, with students scored on a range of 1 (unsatisfactory) to 4 (outstanding). We also distributed an exit survey will be given to each student to report the number of national or regional conferences they attended, the number of posters or oral presentations given, and the number of publications they had submitted or accepted in peer-reviewed journals at the time of their defense.

The 2019-20 assessment for Learning Outcome #3 included survey results for five students who graduated between May 2019 and April 2020. Scores were averaged across respondents for each of the two questions for each student; the percentage of students exceeding the

minimum criteria (3.0) are reported here. The percent of students meeting the minimum criteria for meetings attended, presentations given, and publications submitted or accepted in peer-reviewed journals will be reported.

Results

All (100%) PhD students completing their dissertations in Biological Sciences obtained a mean score of at least 3.0 from their dissertation committee members for all four of the communication questions, which exceeded our stated goal for these questions. The average score across the eight students was 3.72 for “Mastery of Communication”, 3.72 for the methodology portion of the “Mastery of Written Communication” and 3.87 and 3.75 for the goals and results portions of the “Mastery of Written Communication” questions, respectively.

2019-20 Biological Sciences PhD Program Learning Outcome Assessment - Mastery of Communication						
Student	1	2	3	4	5	Mean
Mastery of Communication	3.75	3.67	3.50	3.67	4.00	3.72
Mastery of Written Communication: Goals	4.00	3.67	4.00	3.67	4.00	3.87
Mastery of Written Communication: Methods	3.75	3.67	3.50	3.67	4.00	3.72
Mastery of Written Communication: Results	3.75	3.67	4.00	3.33	4.00	3.75
Total number of students					5	
Students scoring > 3.0 on Q1					5	
Percent of students, Q1					100%	
Students scoring > 3.0 on Q2.1					5	
Percent of students, Q2.1					100%	
Students scoring > 3.0 on Q2.2					5	
Percent of students, Q2.2					100%	
Students scoring > 3.0 on Q2.3					5	
Percent of students, Q2.3					100%	

2019-20 Biological Sciences PhD Program Learning Outcome Assessment - Mastery of Communication						
Student	1	2	3	4	5	Mean
# Meetings Attended	8	16	2	5	3	6.8
# Posters + Talks	6	16	2	4	3	6.2
# Publications Accepted + Submitted	3	2	3	0	3	2.2
Total number of students					5	
Students with 2 meetings attended					5	
Percent of students, meetings					100%	
Students with 3 presentations					4	
Percent of students, presentations					80%	
Students with 2 papers					4	
Percent of students, papers					80%	

Students reported an average of 7 meetings attended during the course of their PhD program, and all of the 5 students met our minimum standard of two meetings attended. Only 80% of students presented at least 3 times, which fell below our stated goal, and the average number of presentations given was 6.2. Only 80% of the students surveyed met our stated goal of 2 publications accepted or submitted at the time of the dissertation defense, although the average number of publications was 2.2.

Learning Outcome 4 – Mastery of Work

Methods

We assessed students’ mastery of their work using a survey distributed to the dissertation committee within 10 days of the dissertation defense. The question on the survey addressing this learning outcome included “Mastery of Work”, with students scored on a range of 1 (unsatisfactory) to 4 (outstanding).

The 2019-20 assessment for Learning Outcome #4 included survey results for five students who graduated between May 2019 and April 2020. Scores were averaged across respondents for each of the two questions for each student; the percentage of students exceeding the minimum criteria (3.0) are reported here.

Results

Only 80% of PhD students completing their dissertations in Biological Sciences in 2019 and 2020 obtained a minimum mean score of 3.0 from their dissertation committee members on the “Mastery of Work” question; the average score across the five students was 3.63. The proportion of students (80%) meeting the minimum standard falls below our stated goal of 90%.

2019-20 Biological Sciences PhD Program Learning Outcome Assessment - Mastery of Work						
Student	1	2	3	4	5	Mean
Mastery of Work	4.00	3.67	4.00	3.00	3.50	3.63
Total number of students				5		
Students scoring > 3.0 on Q1				4		
Percent of students, Q1				80%		

2019-20 Action Plan

As a consequence of the 2019-20 assessment results, three actions are planned for the 2020-21 academic year:

1. Continued and improved emphasis on student familiarity with the current literature and the major issues in their fields. Emphasis will take place in coursework where possible but also within individual laboratories.

2. Continued emphasis on communication of research by students, particularly written communication in the form of publications submitted and accepted. We note that achieving our stated goal of 2 publications accepted or submitted may be too difficult for students at the time of their dissertation defense.
3. Continued and improved emphasis students' mastery of their work, including research and study design, as evidenced by their ability to openly reason and answer probing questions of their research.

Timeline for Action Plan

A timeline for the implementation of the action plan for the 2020-21 academic year follows:

1. Student familiarity with the current literature and the major issues in their fields will continue to be emphasized in courses and individual laboratories. The department will emphasize the importance of these issues to all PIs, with significant improvements expected within 3 years.
2. The department will emphasize the importance of student publications, beginning in Fall 2020 (with the condition of potentially working remotely in the environment of COVID-19, and the issues that situation presents).
3. Student mastery of their work will continue to be emphasized in courses and individual laboratories. The department will emphasize the importance of PhD students' abilities to reason and answer questions about their research, with significant improvements expected within 3 years.