Biology

FELOs in Biology Courses, F2019-S2020

A. PLNU General Education courses (BIO 1001, 1002, 1003, 1005, 2010 & 2011)

FELO 1d: Critical Thinking

Students will be able to examine, critique and synthesize information in order to arrive at reasoned conclusions. This outcome will be measured yearly via direct, summative assessment.

Outcome Measure: Signature Assignment: Multiple choice questions on the final exam taken from the Test of Scientific Literacy Skills (TOSLS). The whole class was assessed.

Criteria for Success: For BIO1001, 1002, 1003, 1005, 2010, and 2011, at least 60% of the students will answer the questions correctly (an average of 60% for all of the questions). 60% was chosen since these are all introductory courses. BIO2010 and BIO2011 are freshmen courses for all Biology Department majors and also service courses for Allied Health majors. BIO1001, 1002, 1003, and 1005 are General Biology courses for all other majors. Questions from the TOSLS were chosen that specifically addressed critical thinking and were appropriate for the content of each course.

Longitudinal Data:

	FALL, 2019		SPRING, 2019		FALL, 2018		SPRING, 2018	
Class	**n**	**% of Students Answering TOSLS Questions Correctly (Ave ± S.D.)**	**n**	**% of Students Answering TOSLS Questions Correctly (Ave ± S.D.)**	**n**	**% of Students Answering TOSLS Questions Correctly (Ave ± S.D.)**	**n**	**% of Students Answering TOSLS Questions Correctly (Ave ± S.D.)**
BIO1001	42	79 ± 13	NA	NA	NA	NA	45	79 ± 14
BIO1002	NA	NA	NA	NA	69	56 ± 8*	NA	NA
BIO1003	48	72 ± 15	47	74 ± 13	46	72 ± 17	47	73 ± 10
BIO1005	45	76 ±10	60	82 ± 8	41	78 ± 12	NA	NA

BIO2010	93	80 ±14	88	83 ± 10	87	79 + 15	37	84 ± 12
BIO2011	38	75 ± 7	58	78 ± 10	45	78 ± 5	62	88 ± 3

Conclusions Drawn from Data: The students in the various GE courses are meeting the criteria or close to meeting the criteria (*) for critical thinking. These data were not collected in 2020 due to COVID.

Changes to be Made Based on Data: We will continue to use these questions for summative assessment in our GE courses.

Rubric:

Gormally, C., Brickman, P., and Lutz, M. "Developing a Test of Scientific Literacy Skills (TOSLS): Measuring Undergraduates' Evaluation of Scientific Information and Arguments." C.B. E. Life Science Education 11(4): 364–377 (2012).

BIO1001: Questions 1, 4, 6, 7, 8, 11, 12, 13, 14, 18, 28
BIO1002: Questions 2, 6, 18, 28
BIO1003: Questions 4, 6, 7, 8, 11, 12, 13, 14, 18, 28
BIO1005: Questions 2, 6, 18, 28
BIO2010: Questions 1, 2, 7, 8, 11, 18, 19, 24, 25
BIO2011: Questions 2, 6, 18, 28

B. PLNU General Education course (BIO 1004)

FELO 1c: Information Literacy

Students will be able to access and cite information as well as evaluate the logic, validity, and relevance of information from a variety of sources. This outcome will be measured yearly via direct, summative assessment.

Outcome Measure: Signature Assignment: Multiple choice questions on the final exam taken from the Test of Scientific Literacy Skills (TOSLS). The whole class was assessed.

Criteria for Success: At least 60% of the students will answer the questions correctly (an average of 60% for all of the questions). 60% was chosen since this is an introductory course for non-science majors. Questions from the TOSLS were chosen that specifically addressed information literacy and were appropriate for the content of each course.

Longitudinal Data:

	FALL, 2019		SUMMER, 2019		SUMMER, 2018	
Class		**% of Students Answering TOSLS Questions Correctly (Ave ± S.D.)**	**n**	**% of Students Answering TOSLS Questions Correctly (Ave ± S.D.)**	**n**	**% of Students Answering TOSLS Questions Correctly (Ave ± S.D.)**
BIO1004	43	83 ± 15	16	88 ± 13	22	79 ± 12

Conclusions Drawn from Data: The students in BIO1004 are meeting the criteria for information literacy. These data were not collected in 2020 due to COVID.

Changes to be Made Based on Data: We will continue to use these questions for summative assessment in our GE courses.

Rubric: Gormally, C., Brickman, P., and Lutz, M. "Developing a Test of Scientific Literacy Skills (TOSLS): Measuring Undergraduates' Evaluation of Scientific Information and Arguments." C.B. E. Life Science Education 11(4): 364–377 (2012).

BIO104: Questions 5, 9, 10, 17, 22, 27