Biology

FELOs in Biology Courses, Sp2024

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 (average for all of the questions). 60% was chosen since these are introductory courses. BIO2010 and BIO2011 are freshmen courses for all Biology Department majors and also service courses for Allied Health majors. The other courses are GE courses for all other majors. Questions were chosen that addressed critical thinking and were appropriate for the course content.

Longitudinal Data:

	SPRING, 2024		FALL, 2023		SPRING, 2023		FALL, 2022		FALL, 2021	
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.)**	**n**	**% of Students Answering TOSLS Questions Correctly (Ave ± S.D.)**
BIO1001	28	69±16	32	72±13	28	74±11	44	73 ±15	43	81±13
BIO1002		Not offered	78	71±5		Not offered	79	70±5	76	68± 6
BIO1003	47	70±13	47	73±12	45	73±13	46	71±12	45	72±16
BIO1005	45	55±4	44	72±13	43	72±7	47	72±11	NA	Not tested
BIO2010	94	81±9	71	78±16	76	83±10	90	77±16	91	76±15
BIO2011	40	78±11	64	76 ± 11	63	78±13	41	73± 10	46	72± 4

Conclusions Drawn from Data: The students in the various GE courses are generally meeting the criteria for critical thinking.

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 (average 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 addressed information literacy and were appropriate for course content.

Longitudinal Data:

	FALL, 2022		FALL, 2019		SUMMER, 2019	
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.)**
BIO1004	23	82 ± 20	43	83 ± 15	16	88 ± 13

Conclusions Drawn from Data: The students in BIO1004 were not assessed in Fall, 2023-24, due to an adjunct teaching the class. Previously, however, these students were meeting the criteria for information literacy. (These data were not collected in 2020 - 2021 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).

BIO1004: Questions 5, 9, 10, 17, 22, 27