

Supplemental Material

CBE—Life Sciences Education

Jackson *et al.*

Supplemental Information for: "Broadening Perspectives Activities" Improve both LGBTQ+ Student Experiences and non-LGBTQ+ Students' Content Comprehension

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Supplemental Table 1: Demographics

Counts of student responses by demographic category as to pre- and post-course surveys. Counts differ between pre- and post- course surveys because students did not always express the same identity in both surveys. Students were coded as the marginalized identity in all analyses if they expressed a marginalized identity in either the pre- or post- course survey.

Identity Category	Subcategory	Course			
		BPA-		BPA+	
		Count	Percent	Count	Percent
LGBTQ+ Identity	Yes	17	24.64%	31	24%
	No	49	71.01%	91	71%
	Decline to state	3	4.35%	7	5%
Gender Identity	Man	11	15.90%	30	23%
	Woman	56	81.60%	91	71%
	Nonbinary	2	2.90%	3	2%
	Other	4	5.79%	1	1%
	Decline to state	0	0%	4	3%
Religious Identity	Christian – Catholic	9	13.04%	17	13%
	Christian - Church of Jesus Christ of Latter-day Saints	3	4.35%	3	2%
	Christian - Protestant (e.g. Baptist, Lutheran, Methodist, Nondenominational, Presbyterian)	17	24.64%	15	12%
	Muslim	1	1.45%	4	3%
	Jewish	1	1.45%	0	0%
	Buddhist	0	0%	2	2%
	Hindu	1	1.45%	1	1%
	Agnostic (does not have a definite belief about whether God exists or not)	20	28.99%	38	29%
	Nothing in particular	5	7.24%	15	12%
	Atheist (believes that God does not exist)	7	10.14%	14	11%
	Other (please describe)	2	2.90%	12	9%
	Decline to state	3	4.34%	8	6%
	Racial Identity	White/Caucasian	42	60.87%	76
Hispanic, Latinx, or Spanish origin		13	18.84%	24	19%
Asian		6	8.69%	14	11%

Decline to state	2	2.90%	6	5%
Black or African American	3	4.35%	3	2%
Other (please describe)	2	2.89%	3	2%
American Indian or Alaska Native	1	1.45%	1	1%
Pacific Islander	0	0%	2	2%

Supplemental Table 2: Pre-Course Survey Question Summary Statistics

Summary statistics for all questions in the pre-course survey, grouped by category. N values vary because not all students answered every question. We used skew and kurtosis to evaluate normality following the suggested “conservative” cutoff of an absolute kurtosis < 2.0 and “liberal” cutoff of < 7.0 from Hancock et al. (2018). We had very little skew across our content questions (absolute values range from 0.11 to 1.76) and somewhat higher skew in our sense-of- belonging questions (absolute values range from 1.95 to 3.17). We had moderate kurtosis in the content questions (absolute values range from 0.07 to 5.45) and much higher kurtosis in the sense-of-belonging questions (absolute values range from 7.62 to 16.70). We used a robust maximum likelihood estimator with the Satorra-Bentler correction in the Confirmatory Factor Analyses.

Category	Question	n	mean	sd	median	min	max	skew	kurtosis
Sex	1	200	0.82	1.82	2	-3	3	-0.57	-1.05
	2	200	1.14	1.47	2	-3	3	-0.89	-0.07
	3	200	1.23	1.46	2	-3	3	-1	0.07
	4	200	0.15	1.72	0	-3	3	-0.11	-1.32
	5	199	0.17	0.21	0.05	0	0.8	1.61	2.07
Sexuality	1	200	1.52	1.4	2	-3	3	-1.21	0.91
	2	200	-0.39	1.57	-1	-3	3	0.35	-0.8
	3	200	0.66	1.8	1	-3	3	-0.48	-0.99
	4	199	0.35	0.33	0.33	0	1	0.51	-1.2
	5	200	-0.83	1.49	-1	-3	3	0.71	-0.3
	6	199	-1.67	1.43	-2	-3	3	1.45	1.53
	7	200	0.38	1.72	1	-3	3	-0.22	-1.23
	8	200	-0.3	1.61	-1	-3	3	0.33	-1.1
	9	200	0.19	1.67	0	-3	3	-0.18	-1.13
	10	200	0.78	1.8	1	-3	3	-0.5	-1.1
	11	200	0.7	1.63	1	-3	3	-0.55	-0.75
Normativity	1	200	1.67	1.48	2	-3	3	-1.39	1.19
	2	200	1.75	1.33	2	-2	3	-1.38	1.49
	3	200	-1.29	1.76	-2	-3	3	0.99	-0.18
	4	200	1.54	1.53	2	-3	3	-1.46	1.63
	5	200	0.25	1.91	1	-3	3	-0.33	-1.3
	6	200	1.55	1.18	2	-3	3	-1.37	2.38
	7	199	0.9	1.73	1	-3	3	-0.52	-0.78
	8	199	-0.96	1.69	-1	-3	3	0.61	-0.57
	9	200	2.13	0.94	2	-3	3	-1.76	5.45
Belonging in the Course	1	196	2.29	1.01	2	-2	3	-2.95	10.21
	2	194	2.48	0.6	2.5	-2	3	-2.12	14.01
	3	194	2.55	0.59	3	-2	3	-2.42	15.33
	4	197	2.38	0.66	2	-2	3	-2.68	16.6
	5	195	2.43	0.59	2	-2	3	-1.95	13.72

Belonging in Biology	1	198	2.3	0.91	2	-2	3	-3.07	12.56
	2	196	2.18	1.13	2	-2	3	-2.69	7.62
	3	196	2.46	0.75	3	-2	3	-3.17	16.7
	4	197	2.2	1.04	2	-2	3	-2.85	9.33
	5	197	2.29	0.85	2	-2	3	-3.09	13.9

Supplemental Table 3: Post-Course Survey Question Summary Statistics

Summary statistics for all questions in the post-course survey, grouped by category. N values vary because not all students answered every question. We used skew and kurtosis to evaluate normality following the suggested “conservative” cutoff of an absolute kurtosis < 2.0 and “liberal” cutoff of < 7.0 from Hancock et al. (2018). We had very little skew across our content questions (absolute values range from 0.03 to 2.04) and somewhat higher skew in our sense-of-belonging questions (absolute values range from 1.76 to 3.1). We had moderate kurtosis in the content questions (absolute values range from 0.01 to 5.91) and much higher kurtosis in the sense-of-belonging questions (absolute values range from 1.63 to 12.60). We used a robust maximum likelihood estimator with the Satorra-Bentler correction in the Confirmatory Factor Analyses.

Category	Question	n	mean	sd	median	min	max	skew	kurtosis
Sex	1	197	0.15	2.13	1	-3	3	-0.04	-1.6
	2	198	0.96	1.54	1	-3	3	-0.78	-0.5
	3	197	0.81	1.73	1	-3	3	-0.75	-0.72
	4	198	0.33	1.7	1	-3	3	-0.34	-1.16
	5	198	0.24	0.25	0.2	0	0.8	1.02	-0.08
Sexuality	1	197	1.57	1.25	2	-3	3	-1.43	2.27
	2	195	-0.82	1.68	-1	-3	3	0.84	-0.45
	3	198	0.46	1.88	1	-3	3	-0.25	-1.36
	4	196	0.36	0.31	0.33	0	1	0.26	-1.38
	5	196	-1.05	1.6	-2	-3	3	1.02	-0.04
	6	197	-2.07	1.28	-2	-3	3	2.05	4.23
	7	198	-0.08	1.91	0	-3	3	0.05	-1.43
	8	198	-0.66	1.69	-1	-3	3	0.51	-0.85
	9	198	0.42	1.78	1	-3	3	-0.34	-1.23
	10	197	0.14	2.08	1	-3	3	-0.13	-1.58
	11	198	0.85	1.68	1	-3	3	-0.62	-0.84
Normativity	1	198	2.16	0.89	2	-2	3	-1.94	6.19
	2	198	1.91	1.24	2	-3	3	-1.67	2.94
	3	198	-1.57	1.68	-2	-3	3	1.3	0.62
	4	198	1.65	1.55	2	-3	3	-1.61	2.01
	5	198	0.23	2.03	1	-3	3	-0.25	-1.48
	6	198	1.67	1.26	2	-3	3	-1.58	2.68
	7	198	1.15	1.79	2	-3	3	-0.82	-0.48
	8	197	-1.25	1.82	-2	-3	3	1.07	0.01
	9	198	2.17	0.99	2	-3	3	-2.02	6.01
Belonging in the Course	1	198	1.93	1.65	2	-3	3	-1.92	2.37
	2	197	2.15	1.33	2	-3	3	-2.49	5.7
	3	197	2.1	1.44	2	-3	3	-2.2	3.83
	4	195	1.8	1.82	2	-3	3	-1.79	1.76
	5	196	2.21	1.25	2	-3	3	-2.78	7.76

Belonging in Biology	1	197	2.3	0.96	2	-2	3	-3.02	11.32
	2	197	2.34	0.91	2	-2	3	-3.09	12.52
	3	197	2.37	0.97	3	-2	3	-3.09	11.48
	4	197	2.26	1.03	2	-3	3	-3.04	10.97
	5	197	2.32	0.91	2	-2	3	-3.08	12.51

Supplemental Table 4: Reliability and Validity Assessments for Collective Analyses of Survey Categories

We analyzed construct validities using confirmatory factor analyses (CFAs) as a correlated five-factor model, in which all categories are treated as a single factor (Sex, Sexuality, Normativity, Belonging in Course, and Belonging in Biology). We also analyzed reliability of individual categories with McDonald's Omega.

Course	Analysis	Fit Indices	Data-Model Fit	Acceptable Fit Guidelines*
Pre	All	CFI	0.813	≥ 0.950
		TLI	0.796	≥ 0.950
		RMSEA (90% CI)	0.063 [0.055-0.071]	≤ 0.080
	Sex	CFI	0.983	≥ 0.950
		TLI	0.949	≥ 0.950
		RMSEA (90% CI)	0.093 [0.000-0.208]	≤ 0.080
		McDonald's Omega	0.668	≥ 0.800
	Sexuality	CFI	0.596	≥ 0.950
		TLI	0.481	≥ 0.950
		RMSEA (90% CI)	0.125 [0.102-0.149]	≤ 0.080
		McDonald's Omega	0.670	≥ 0.800
	Normativity	CFI	0.825	≥ 0.950
		TLI	0.767	≥ 0.950
		RMSEA (90% CI)	0.093 [0.064-0.122]	≤ 0.080
		McDonald's Omega	0.078	≥ 0.800
	Belonging Course	CFI	0.976	≥ 0.950
		TLI	0.952	≥ 0.950
		RMSEA (90% CI)	0.103 [0.000-0.299]	≤ 0.080
		McDonald's Omega	0.827	≥ 0.800
	Belonging Biology	CFI	0.980	≥ 0.950
TLI		0.961	≥ 0.950	
RMSEA (90% CI)		0.092 [0.000-0.268]	≤ 0.080	
McDonald's Omega		0.859	≥ 0.800	
Post	All	CFI	0.837	≥ 0.950
		TLI	0.823	≥ 0.950
		RMSEA (90% CI)	0.071 [0.064-0.079]	≤ 0.080
	Sex	CFI	0.987	≥ 0.950
		TLI	0.960	≥ 0.950
		RMSEA (90% CI)	0.086 [0.000-0.184]	≤ 0.080
		McDonald's Omega	0.702	≥ 0.800
	Sexuality	CFI	0.797	≥ 0.950
		TLI	0.740	≥ 0.950
		RMSEA (90% CI)	0.114 [0.090-0.138]	≤ 0.080
		McDonald's Omega	0.792	≥ 0.800
	Normativity	CFI	0.715	≥ 0.950
		TLI	0.620	≥ 0.950
		RMSEA (90% CI)	0.146 [0.117-0.177]	≤ 0.080
		McDonald's Omega	0.038	≥ 0.800
	Belonging Course	CFI	0.933	≥ 0.950
		TLI	0.865	≥ 0.950
		RMSEA (90% CI)	0.221 [0.090-0.361]	≤ 0.080
		McDonald's Omega	0.919	≥ 0.800
	Belonging Biology	CFI	0.994	≥ 0.950
TLI		0.987	≥ 0.950	
RMSEA (90% CI)		0.073 [0.000-0.198]	≤ 0.080	
McDonald's Omega		0.944	≥ 0.800	

Supplemental Table 5: Pre-Course Raw ANCOVA p-values

Raw p-values from the ANCOVA models in Table 3.

Commented [DJ1]: revised up to here

Category	Question	LGBTQ	Gender	Religion
Sex	1	<0.001		
Sex	2	<0.001		
Sex	3	<0.001		
Sex	4			0.008
Sex	5		0.101	
Normativity	1	0.125		
Normativity	2			
Normativity	3	0.004		0.029
Normativity	4		0.091	0.140
Normativity	5	0.115		0.015
Normativity	6		0.103	
Normativity	7	0.003	0.101	0.002
Normativity	8	0.002		0.006
Normativity	9			0.008
Sexuality	1	<0.001	0.111	
Sexuality	2			0.011
Sexuality	3	<0.001		0.085
Sexuality	4	<0.001		
Sexuality	5	0.016		
Sexuality	6			0.003
Sexuality	7	0.072	0.049	
Sexuality	8		0.064	0.103
Sexuality	9		0.024	0.100
Sexuality	10		0.079	
Sexuality	11	0.107		

Category	Question	LGBTQ	Gender	Religion	Race
Belonging	C1	0.126		0.046	0.149
Belonging	C2	0.133			

Supplemental Table 6: Pre-Course FDR-Corrected ANCOVA p-values
 FDR-corrected p-values from the ANCOVA models in Table 3.

Category	Question	LGBTQ	Gender	Religion
Sex	1	0.002		
Sex	2	0.002		
Sex	3	0.002		
Sex	4			0.019
Sex	5		0.111	
Normativity	1	0.125		
Normativity	2			
Normativity	3	0.006		0.044
Normativity	4		0.111	0.140
Normativity	5	0.124		0.026
Normativity	6		0.111	
Normativity	7	0.005	0.111	0.018
Normativity	8	0.004		0.019
Normativity	9			0.019
Sexuality	1	0.002	0.111	
Sexuality	2			0.022
Sexuality	3	0.002		0.112
Sexuality	4	0.002		
Sexuality	5	0.022		
Sexuality	6			0.018
Sexuality	7	0.092	0.111	
Sexuality	8		0.111	0.112
Sexuality	9		0.111	0.112
Sexuality	10		0.111	
Sexuality	11	0.124		

Supplemental Table 7: Post-Course Raw ANCOVA p-values

Raw p-values from the ANCOVA models in Table 4.

Category	Question	Course	LGBTQ	Gender	Religion	Course X LGBTQ	Course X Gender	Course X Religion
Sex	1	<0.001	0.012		0.081	0.104		
Sex	2	0.049		0.051				
Sex	3	0.009	0.006	0.002				
Sex	4	<0.001	0.006	0.075		0.011		
Sex	5	0.001						
Normativity	1	0.992	0.072		0.608			0.140
Normativity	2	0.654	0.147	0.152	0.006			0.016
Normativity	3		0.014					
Normativity	4		0.007					
Normativity	5							
Normativity	6							
Normativity	7	0.881	0.001		0.852			0.113
Normativity	8	0.607	0.007		0.199			0.016
Normativity	9	0.098	0.765	0.633		0.030	0.151	
Sexuality	1			0.053	0.124			
Sexuality	2	0.974	0.007		0.001	0.025		0.006
Sexuality	3	0.029	0.017					
Sexuality	4	0.002	0.047		0.156	0.098		
Sexuality	5	0.156	0.011	0.022		0.099	0.050	
Sexuality	6	0.001		0.043	0.067		0.016	0.129
Sexuality	7	0.022			0.003			0.007
Sexuality	8				0.137			
Sexuality	9			0.086				
Sexuality	10	0.355	0.020		0.072			0.018
Sexuality	11	0.011			0.527			0.133

Category	Question	Course	LGBTQ	Gender	Religion	Race	Course X LGBTQ	Course X Gender	Course X Religion	Course X Race
Belonging	C1									
Belonging	C2	0.146	0.217		0.093		0.057		0.128	

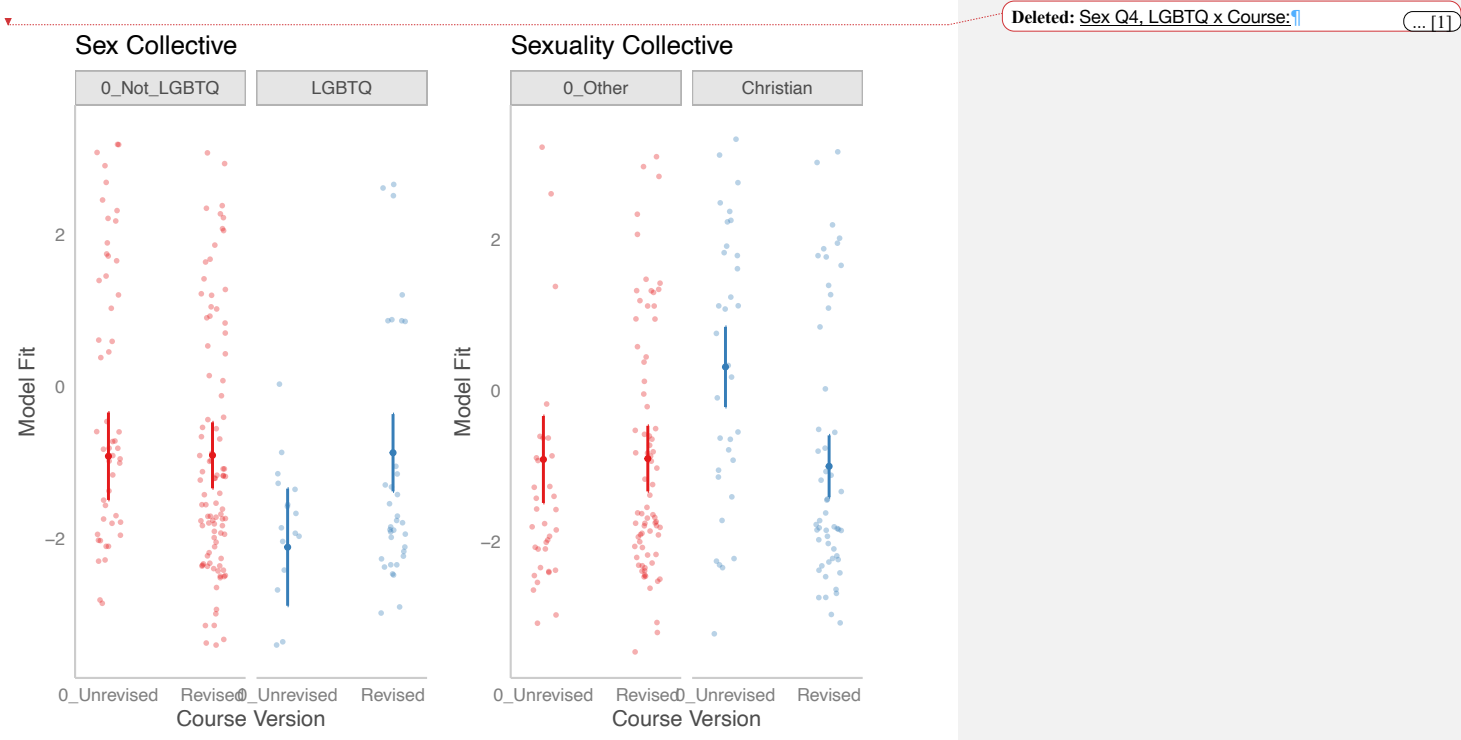
Supplemental Table 8: Post-Course FDR-Corrected ANCOVA p-values

FDR corrected p-values from the ANCOVA models in Table 4.

Category	Question	Course	LGBTQ	Gender	Religion	Course X LGBTQ	Course X Gender	Course X Religion
Sex	1	0.005	0.023		0.176	0.104		
Sex	2	0.088		0.095				
Sex	3	0.027	0.018	0.018				
Sex	4	0.005	0.018	0.111		0.060		
Sex	5	0.005						
Normativity	1	0.992	0.083		0.659			0.140
Normativity	2	0.785	0.158	0.171	0.026			0.032
Normativity	3		0.023					
Normativity	4		0.018					
Normativity	5							
Normativity	6							
Normativity	7	0.991	0.015		0.852			0.140
Normativity	8	0.780	0.018		0.259			0.032
Normativity	9	0.160	0.765	0.633		0.060	0.151	
Sexuality	1			0.095	0.223			
Sexuality	2	0.992	0.018		0.013	0.060		0.032
Sexuality	3	0.058	0.026					
Sexuality	4	0.007	0.059		0.225	0.104		
Sexuality	5	0.234	0.023	0.095		0.104	0.075	
Sexuality	6	0.005		0.095	0.176		0.048	0.140
Sexuality	7	0.050			0.020			0.032
Sexuality	8				0.223			
Sexuality	9			0.111				
Sexuality	10	0.492	0.027		0.176			0.032
Sexuality	11	0.028			0.623			0.140

Supplemental Figure 1: Interaction boxplots for collective survey analyses

Boxplots depicting model fits for interactive effects of course and identities on **collective** post-course survey responses **by category**. We show only the boxplots for terms where the interaction was significant.



Qualtrics Survey

Start of Block: Consent

We are interested in improving biology here at ASU and we need your help! By gathering students' thoughts and opinions about their experiences we hope to improve the biology curriculum taught here in the School of Life Sciences.

You are free to decide whether you wish to participate. As part of the study, you will complete a survey during the first week of class and a survey during the final week of class. Each survey should take less than 15 minutes to complete. We will use your responses from this survey as data for our research. Your responses will be confidential. In exchange for participating in each survey, you will receive 2 points in your BIO 331 Animal Behavior Course. If you do not wish to participate in the study, the instructor will provide an alternative assignment. We will ask for your name on the survey so that the instructor can award you credit, although the instructor will never see your responses. After, your name will immediately be separated from your responses and replaced with a unique identifier.

You can leave the research at any time and it will not be held against you. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. The results of this study may be used in reports, presentations, or publications but your name will not be used.

If you have questions, concerns, or complaints, please contact Dr. Katelyn Cooper at 480-727-9093 or at katelyn.cooper@asu.edu. This research has been reviewed and approved by the Social Behavioral IRB. You may talk to them at 480-965-6788 or by email at research.integrity@asu.edu if:

- Your questions, concerns, or complaints are not being answered by the research team. · You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

If you agree to participate in this study, please "digitally sign" in the box below and provide today's date.

By typing your first and last name you are indicating that you are 18 years or older and agree to participate in this study and give consent for your survey responses to be accessed and used for research purposes.

First name (1) _____

Last name (2) _____

Date (3) _____

End of Block: Consent

Start of Block: Block 6

What, if anything, about this course, BIO 331, made you feel included as part of the biology community?

What, if anything, about this course, BIO 331, made you feel excluded from the biology community?

End of Block: Block 6

Start of Block: Content questions for outcomes 1-6

Please answer the following questions based on your knowledge of each topic. You will not be graded on the correctness of your response, just the completion of the survey. However, please try your best to answer each question as accurately as possible.

Q16

Any animal would be better off if it were raised by their biological parents than by other members of the same species.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q21

Polygyny (1 male mating with multiple females) is always more evolutionarily advantageous than polyandry (1 female mating with multiple males).

By evolutionarily advantageous, we mean will have higher fitness or produce more offspring.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q1 The sex of an animal can be categorized as either male or female.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q3 In any given pair of a male and a female, the female will have higher levels of estrogen.

- Strongly agree (1)
- Agree (2)

- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q58 What proportion of sexual animal species exhibit homosexual behaviors?

- 0%, I do not think that homosexual behaviors occur outside of humans (1)
- 5% (2)
- 20% (3)
- 33% (4)
- 66% (5)
- 80% (6)
- 95% (7)
- 100% (8)
- I am unsure (9)

Q9

Homosexual behaviors are not evolutionary advantageous.

The term homosexual behavior refers to mating with another animal of the same sex.

- Strongly agree (1)
- Agree (2)

- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q7 Heterosexual behaviors, defined as mating with another animal of a different sex, are inherently more evolutionarily advantageous than homosexual behaviors.

By "evolutionarily advantageous" we mean the animal will have higher fitness or produce more offspring.

By "homosexual behaviors" we mean mating with another animal of the same sex

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q8

Species that stay the same sex throughout their entire lives have more evolutionary advantage (*have higher fitness or will produce more offspring*) than species that changes sexes throughout their entire lives.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q10

Monogamous species have a greater evolutionary advantage compared to non-monogamous species.

By monogamous we mean having only one mate at a time.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q11

Two males of different species will have more in common with each other than a male and a female of different species.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q13 Excluding insects, what proportion of animal species exist as more than one sex during their life?

- 0%, I do not think this occurs outside of humans (1)
- 5% (2)
- 20% (3)
- 33% (4)
- 66% (5)
- 80% (6)
- 95% (7)
- 100% (8)
- I am unsure (9)

Q14

All animals are cared for by their parents when they are young.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q17

Any nonhuman animal that is raised by their biological parents is better off than another animal that isn't raised by their biological parents.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q18

In animals, males are more likely to cheat on their partner than females.

By "cheating" we mean mating with an animal outside of a pair-bond.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q19

More aggressive males produce more offspring than less aggressive males.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q2 In any given pair of a male and a female, the male will have higher levels of testosterone than the female.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)

Slightly disagree (4)

Disagree (5)

Strongly disagree (6)

I am unsure (8)

End of Block: Content questions for outcomes 1-6

Start of Block: Content questions for Outcome 7.

Q22

The language that we use affects our ability to understand the natural world.

Strongly agree (1)

Agree (2)

Slightly agree (3)

Slightly disagree (4)

Disagree (5)

Strongly disagree (6)

I am unsure (8)

Q24

Our cultural biases limit our ability to understand the natural world.

Strongly agree (1)

Agree (2)

Slightly agree (3)

Slightly disagree (4)

- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q25

Sex and gender mean the same thing.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q27

It is important to distinguish between sex and gender when talking about biology.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)

I am unsure (8)

Q28

The scientific understanding of sex includes social norms, behaviors, and roles associated with being a particular sex.

Strongly agree (1)

Agree (2)

Slightly agree (3)

Slightly disagree (4)

Disagree (5)

Strongly disagree (6)

I am unsure (8)

Q30

The scientific understanding of gender includes norms, behaviors, and roles associated with a particular gender.

Strongly agree (1)

Agree (2)

Slightly agree (3)

Slightly disagree (4)

Disagree (5)

Strongly disagree (6)

I am unsure (8)

Q31

LGBTQ+ identities and associated behaviors are natural in a biological sense.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q33

The behaviors associated with LGBTQ+ identities are exclusive to humans, and are not represented in the animal world.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q34

Studying the natural world influences my understanding of myself and other humans.

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Slightly disagree (4)
- Disagree (5)
- Strongly disagree (6)
- I am unsure (8)

Q35 In your own words, please define the word "gender"

Q36 In your own words, please define the word "sex"

End of Block: Content questions for Outcome 7.

Start of Block: Belonging

Q37 Please indicate the extent to which you agree with the following statements about **your BIO 331 Animal Behavior Class**

	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
I feel comfortable in BIO 331 (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a part of BIO 331 (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am committed to BIO 331 (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- I am supported by BIO 331 (4)
- I am accepted in BIO 331 (5)

Q38 Please indicate the extent to which you agree with the following statements about the broader **Biology community**

- | | Strongly agree (1) | Agree (2) | Disagree (3) | Strongly disagree (4) |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| I feel comfortable in the Biology community (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am a part of the Biology community (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am committed to the Biology community (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am supported by the Biology community (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am accepted by the Biology community (5) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

End of Block: Belonging

Start of Block: Demographics

Q40 I most closely identify as

- Woman (1)
- Man (2)
- Non-binary (3)
- Other (please describe) (4) _____
- Decline to state (5)

I most closely identify as

- American Indian or Alaska Native (1)

- Asian (2)
- Black or African American (3)
- Hispanic, Latinx, or Spanish origin (4)
- Pacific Islander (5)
- White/Caucasian (6)
- Other (please describe) (7) _____
- Decline to state (8)

Q44 Are you an international student?

- Yes (which country are you from?) (1) _____
- No (2)
- Decline to state (3)

Q46 What is your parent's highest completed level of education? If you have more than one parent with differing levels of education, choose the higher of the two.

- Did not complete high school (1)
- High school diploma or GED (2)
- Some college but no degree (3)
- Associate degree (for example: AA, AS) (4)
- Bachelor's degree (for example: BA, AB, BS) (5)
- Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA) (6)
- Higher than a Master's degree (for example: PhD, MD, JD) (7)
- Other (please describe) (8) _____

Decline to state (9)

Q48 Growing up, I most closely identified as

Lower class (1)

Middle class (2)

Upper class (3)

Decline to state (4)

Q52 I most closely identify as

Agnostic (does not have a definite belief about whether God exists or not) (1)

Atheist (believes that God does not exist) (2)

Buddhist (3)

Christian - Catholic (4)

Christian - Church of Jesus Christ of Latter-day Saints (5)

Christian - Protestant (e.g. Baptist, Lutheran, Methodist, Nondenominational, Presbyterian) (6)

Hindu (8)

Jewish (9)

Muslim (10)

Nothing in particular (11)

Other (please describe) (12) _____

Decline to state (13)

Q54 Do you identify as a member of the LGBTQ+ community?
**lesbian, gay, bisexual, transgender, queer/questioning, etc...*

- Yes (1)
- No (2)
- Decline to state (3)

Display This Question:

*If Do you identify as a member of the LGBTQ+ community? *lesbian, gay, bisexual, transgender, queer...
= Yes*

Q56 Please select the word or words that best describe your identity

- Lesbian (1)
- Gay (2)
- Bisexual (3)
- Queer (4)
- Transgender (5)
- Intersex (6)
- Asexual (7)
- Other, please describe (8) _____
- Decline to state (9)



Q58 Please indicate your political identity:

- Very Liberal (1)

- Liberal (2)
- Moderate (4)
- Conservative (6)
- Very Conservative (7)
- Decline to state (8)

Q60 Do you serve as a primary caregiver for someone other than yourself? (e.g. children, sick parent, other dependents)

- Yes (1)
- No (2)
- Decline to state (3)

Q62 How old are you?

Q64 Please indicate the option that most closely reflects your college experience.

- I transferred to my undergraduate institution from a 2-year college, a community or junior college, or a technical college. (1)
- I transferred to my undergraduate institution from another 4-year institution. (2)
- I started my college career at the institution I graduated from with my undergraduate degree. (3)
- If none of the above reflect your experience, please describe your experience below. (4)

- Decline to state (5)

Q66 I most closely identify as a(n)

- Military veteran (1)
- Active Duty service member (2)
- Military reserve (7)
- None of the above (5)
- Decline to state (6)

Q68 I most closely identify with

- Currently or having previously struggled with anxiety or an anxiety disorder (1)
- I have never struggled with an anxiety disorder (2)
- Decline to state (3)

Q70 I most closely identify with

- Currently or having previously struggled with depression or a depressive disorder (1)
- I have never struggled with depression (2)
- Decline to state (3)

Q72

Someone is considered to have a disability if they have a physical impairment, mental impairment, or medical condition that substantially limits a major life activity, or if they have a history of an impairment or medical condition.

Disabilities include but are not limited to: Blindness, Autism, Bipolar disorder, Orthopedic or physical impairment, Deafness, Cerebral palsy, Major depression, Obsessive compulsive disorder, Cancer, HIV/AIDS, Multiple Sclerosis (MS), Learning or intellectual disability, Diabetes, Schizophrenia, Missing limbs or partial missing limbs, Epilepsy, Muscular dystrophy, Post-traumatic stress disorder (PTSD)

- Yes, I have a disability (or previously had a disability) (1)
- No, I do not have a disability (15)

Decline to state (16)

Display This Question:

*If Someone is considered to have a disability if they have a physical impairment, mental impairment,... =
Yes, I have a disability (or previously had a disability)*

Q74

Please select the choice that most closely reflects your disability status. Select all that apply.

- Blindness (2)
- Deafness (15)
- Cancer (16)
- Diabetes (17)
- Epilepsy (18)
- Autism (19)
- Cerebral palsy (20)
- HIV/AIDS (21)
- Schizophrenia (22)
- Muscular dystrophy (23)
- Bipolar disorder (24)
- Major depression (25)
- Multiple Sclerosis (MS) (26)

- Missing or partially missing limbs (27)
- Post-traumatic stress disorder (PTSD) (28)
- Orthopedic or physical impairment (29)
- Obsessive compulsive disorder (30)
- Learning or intellectual disability (31)
- Decline to state (33)
- Other, please describe (32) _____

End of Block: Demographics

Start of Block: Block 7

Q63 If you would be interested in participating in an interview about your experience in this course in exchange for a \$20 gift card, please provide your email below.

End of Block: Block 7

Start of Block: Block 4

Q75

- First name (1) _____
- Last name (2) _____

End of Block: Block 4

