



*Carl Wieman Science
Education Initiative
UBC Life Sciences*

Student Satisfaction and Skill Development Study

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Goals

The goal of this study was to investigate what UBC students consider effective and worthwhile for their career development and general education in the Biology Program.

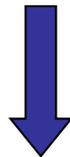
Specifically, we wanted to know:

- Which parts of the biology program served the needs and interests of students and why?
- What did/did not meet their expectations in the program?



Proposed Project Outcomes

- Identify program goals that are understood and make sense to students
- Identify program goals and course contents that suit students with a wide range of career goals and interests
- Identify matches and mismatches between program goals and expectations of potential employers



Informs Curricular Reform

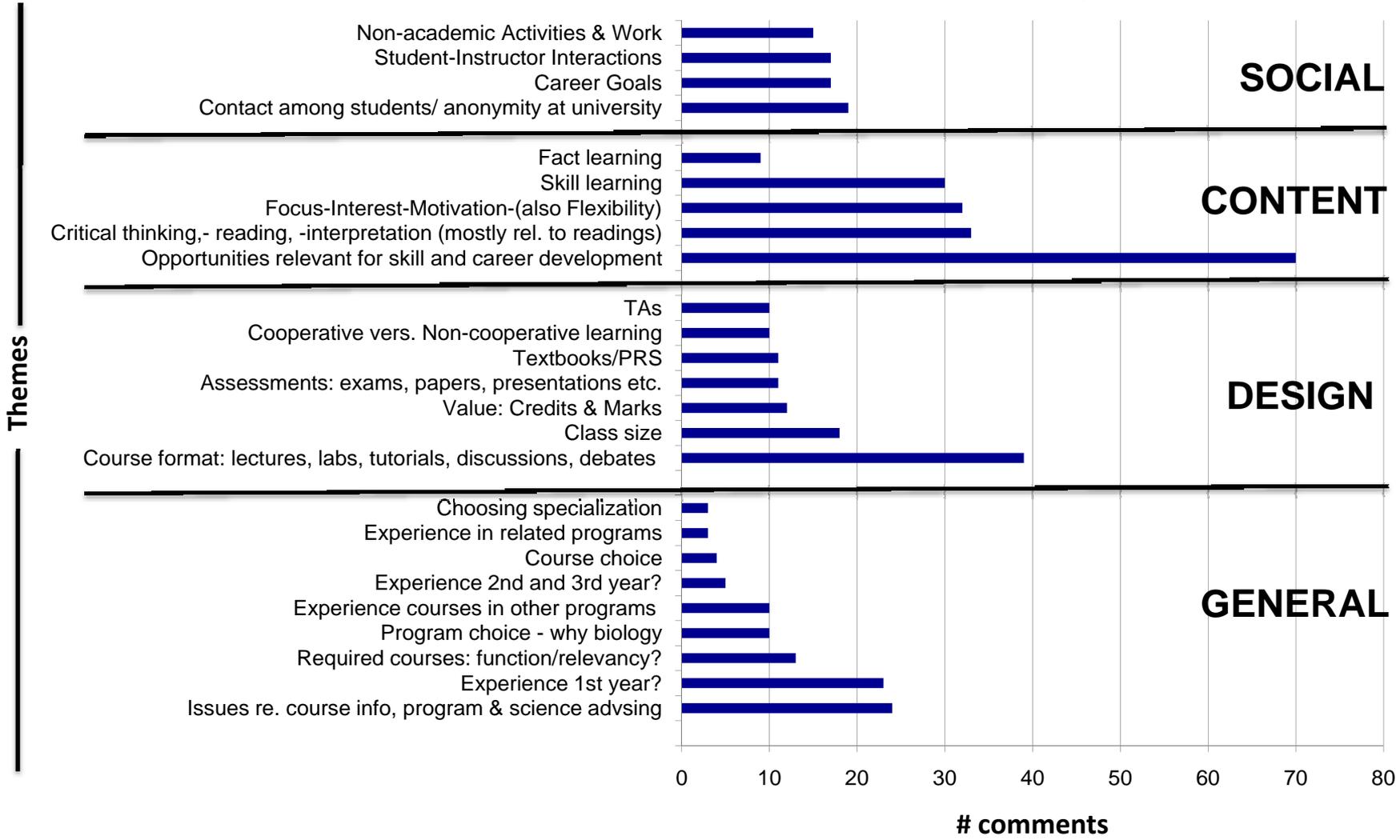
Methodology

- **Designed Biology Program Exit Survey**
 - Conducted semi-structured interviews with groups of 4th year students (n=35) on their experience with the program
 - Identified recurring themes in the comments of students
 - Constructed survey based on frequency of THEMES – survey generated both qualitative and quantitative data
 - Validated survey questions in student interviews (n=6)
- **Produced interim report for faculty in Botany and Zoology Departments and the Dean of Science**
- **Ran exit survey in fourteen 400-level biology courses in Winter term (in class to receive high participation and representation, n=202 students)**



Frequency of Recurring Themes

Unsolicited Comments per Theme



Survey Categories

- Category 1: Reasons for choosing the program that students are enrolled and their career goals
(10 questions)
- Category 2: Skills that students thought they learned
(16 questions)
- Category 3: Student experience with instruction
(7 questions)
- Category 4: Learning Environment
(8 questions)
- Category 5: Demographics
(6 questions)

Preliminary Survey Results

Demographics

Gender:

Female: 68%

Male: 32%

Age:

18 - 20: 4%

20 - 22: 61%

22 - 24: 28%

25 - 30: 6%

> 30: 1%

Language spoken in household:

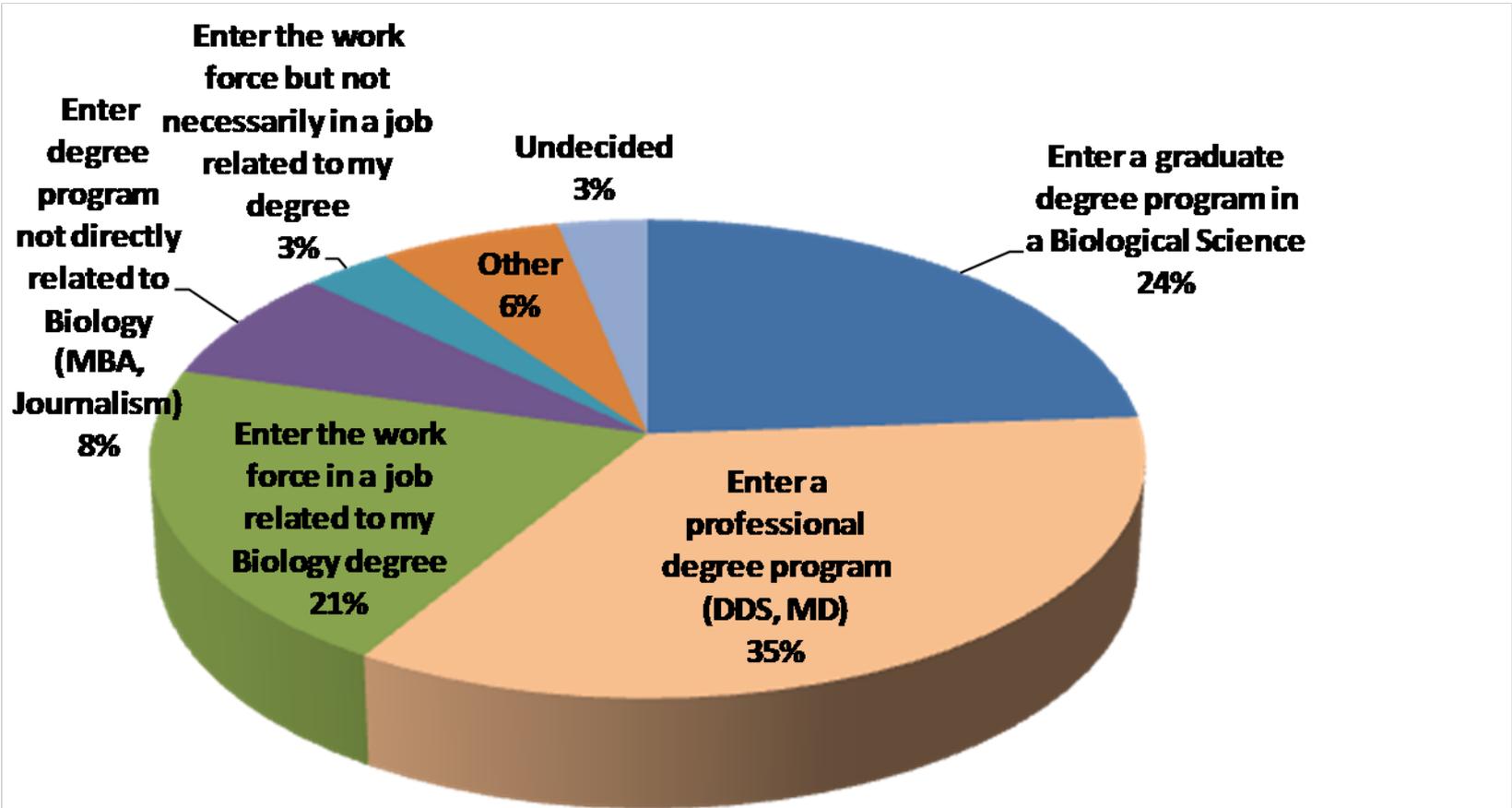
English: 58%

Non-English: 42%

Biology Program Option that participants are currently in:	%
General Biology - Majors	13.3
Animal Biology - Majors and/or Honours	4.4
Plant Biology - Majors and/or Honours	3.3
Cell Biology and Genetics - Majors	35.6
Genetics - Honours	3.3
Cell and Developmental Biology- Honours	5.6
Ecology and Environmental Biology- Majors and/or Honours	1.1
Conservation Biology - Majors and/or Honours	1.1
Evolutionary Biology - Honours	1.1
Marine Biology - Majors and/or Honours	13.3
Biology and Computer Science Combined Major	7.8
Biology and Chemistry Combined Honours	3.3
Oceanography and Biology Combined Honours	3.3
Co-operative Education Program in Biology	1.1



Goal after getting the degree



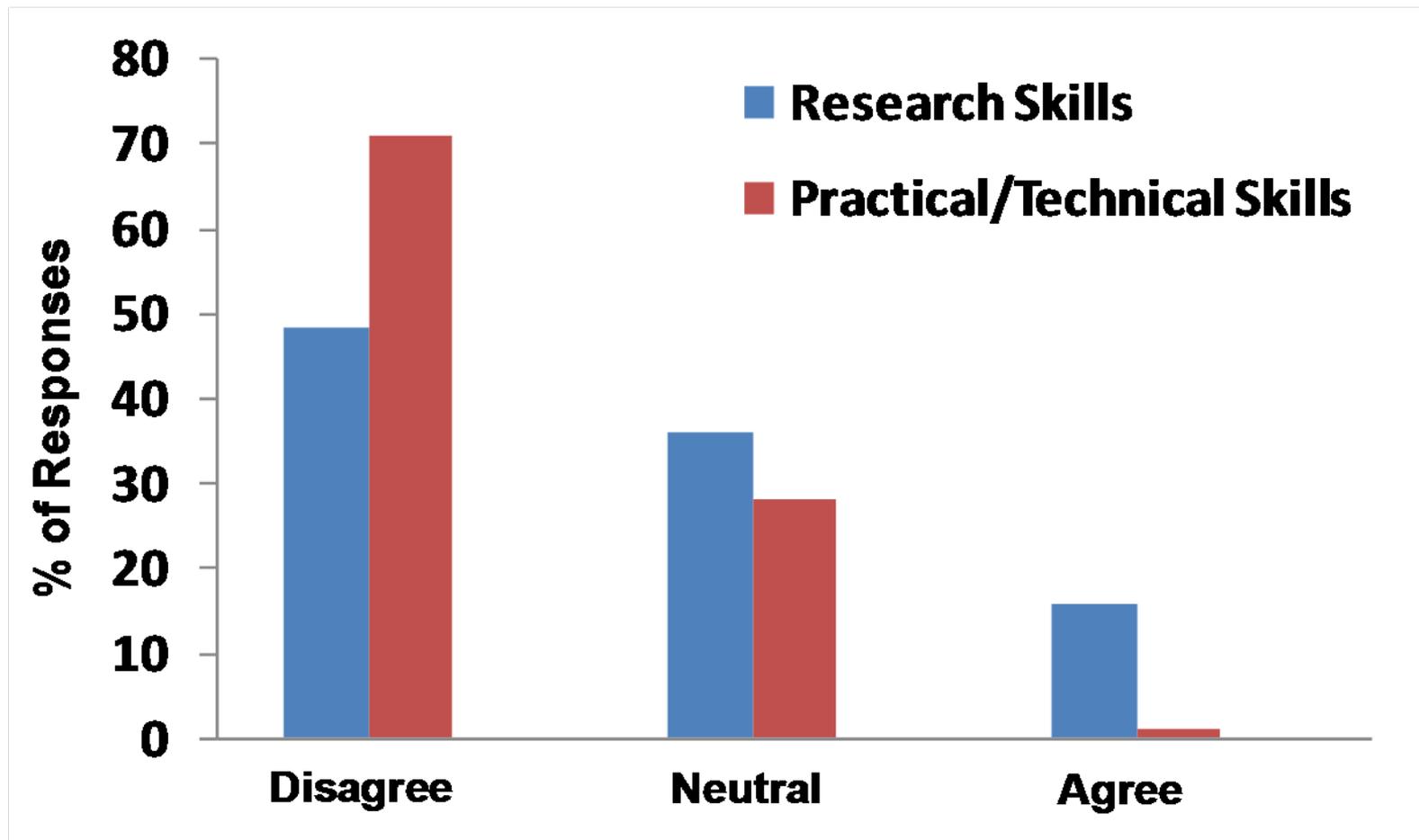
Skills that students learned in the program

(percent responses)

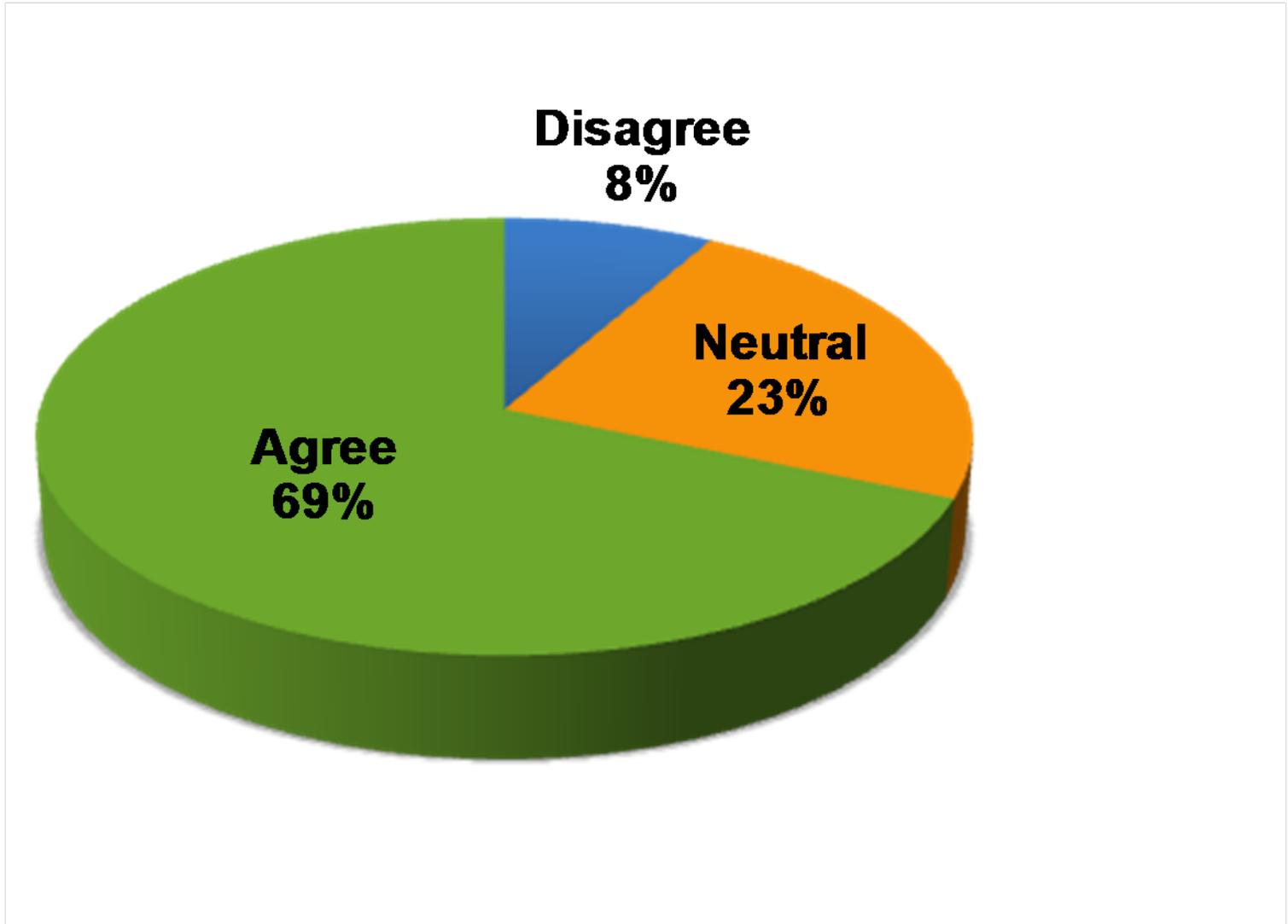
	little	some	quite a bit
Memorizing biological facts, ideas, or methods so you can repeat them pretty much in the same form			
In 1st year	7.4	21	71.6
In 2nd year	7.1	15.5	77.4
In 3rd year	16.5	40	43.5
In 4th year	32.1	15.5	22.6
Lab Techniques			
In 1st year	23.4	35.8	40.7
In 2nd year	29.7	28.6	41.6
In 3rd year	24.7	29.4	45.9
In 4th year	46.4	23.8	30.9
<i>Learned this skill mostly outside biology program</i>	Yes:	47	
Writing Skills			
In 1st year	35.8	33.1	32.1
In 2nd year	48.9	34.5	16.7
In 3rd year	17.4	37.2	45.4
In 4th year	11.8	17.6	70.5
<i>Learned this skill mostly outside biology program</i>	Yes:	53	
Teamwork Skills			
In 1st year	46.9	33.3	19.7
In 2nd year	54.8	31	14.3
In 3rd year	37.2	37.2	25.6
In 4th year	30.6	27.1	42.3
<i>Learned this skill mostly outside biology program</i>	Yes:	64	
Presentation Skills			
In 1st year	60	31.2	8.7
In 2nd year	69.9	25.3	4.8
In 3rd year	48.2	28.2	23.5
In 4th year	25	29.8	45.3
<i>Learned this skill mostly outside biology program</i>	Yes:	49	

	little	some	quite a bit
Developing skills in observation			
In 1st year	55	27.5	17.6
In 2nd year	43.4	41	15.7
In 3rd year	13.1	40.5	46.4
In 4th year	21.5	23.8	54.7
<i>Learned this skill mostly outside biology program</i>	Yes:	39	
Formulating hypotheses			
In 1st year	49.4	28.4	22.2
In 2nd year	48.9	34.5	16.7
In 3rd year	19.8	22.1	58.2
In 4th year	8.2	17.6	74.1
<i>Learned this skill mostly outside biology program</i>	Yes:	18	
Making inferences			
In 1st year	56.8	30.9	12.4
In 2nd year	53.6	36.6	9.8
In 3rd year	14.1	38.8	47
In 4th year	8.3	23.8	67.9
<i>Learned this skill mostly outside biology program</i>	Yes:	20	
Critically evaluating literature			
In 1st year	66.3	23.8	10
In 2nd year	62.6	28.9	8.4
In 3rd year	17.6	34.1	48.2
In 4th year	4.8	10.7	84.5
<i>Learned this skill mostly outside biology program</i>	Yes:	24	
Choosing appropriate analysis (including appropriate use of statistical and mathematical tools)			
In 1st year	70.3	21	8.7
In 2nd year	74.4	18.3	7.3
In 3rd year	15.3	35.3	49.4
In 4th year	21.4	33.3	45.2
<i>Learned this skill mostly outside biology program</i>	Yes:	23	
which can be studied scientifically and asking an appropriate scientific question			
In 1st year	77.7	18.5	3.7
In 2nd year	77.1	19.3	3.6
In 3rd year	23.6	38.8	37.6
In 4th year	9.5	25	65.5
<i>Learned this skill mostly outside biology program</i>	Yes:	30	

There is too much emphasis on in the Biology Program.



I enjoyed studying biology at UBC.



Acknowledgements

- Our first and foremost thank you goes to the students who made time to talk to us in interviews about their experiences with the biology program and then filled the survey.
- We would like to thank George Spiegelman for his continued support of this project. George Ko for entering the data.
- We would like to thank members of the Carl Wieman Science Education Initiative, especially Jared Taylor, for their comments and help with the project.
- We thank members of the faculty in the Botany and Zoology Departments for making time to let us run the surveys in their courses. In particular, we would like to thank Fred Sack and Bill Milsom for their support in promoting the survey idea to their respective faculty.