

## Informed Consent

### Informed consent

- I agree to participate in this study.
- I do not wish to participate in this study.

## Self-Efficacy

Rate the degree to which you agree or disagree with the following statements concerning your confidence in your abilities to function as a scientist in your area.

	Strongly disagree	disagree	Neither agree nor disagree	agree	Strongly agree
I am confident that I can use technical science skills (use of tools, instruments, and techniques)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can generate a research question to answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can figure out what data/observations to collect and how to collect them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can create explanations for the results of the study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can use scientific literature and reports to guide my research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can develop theories (integrate and coordinate results from multiple studies)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Science Identity

Rate the degree to which you agree or disagree with the following statements concerning your sense of yourself as a scientist who undertakes research activities

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I have a strong sense of belonging to the community of scientists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I derive great personal satisfaction from working on a team that is doing important research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have come to think of myself as a 'scientist'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I belong in the field of science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The daily work of a scientist is appealing to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Scientific Community Values

Please read each description and think about how much each person is or is not like you. Check the answer that best reflects how much the person in the description is like you.

	Not like me at all	Not like me	A little like me	Somewhat like me	Like me	Very much like me
A person who thinks discussing new theories and ideas between scientists is important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A person who thinks it is valuable to conduct research that builds the world's scientific knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A person who thinks that scientific research can solve many of today's world challenges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A person who feels discovering something new in the sciences is thrilling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Project ownership

Rate the degree to which you agree or disagree with each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
My research will help to solve a problem in the world	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My findings are important to the scientific community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I faced challenges that I managed to overcome in completing my research project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was responsible for the outcomes of my research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The findings of my research project gave me a sense of personal achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I had a personal reason for choosing the research project I worked on	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The research question I worked on was important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In conducting my research project, I actively sought advice and assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the table below you will find 5 different emotion words from a standardized emotion index. Think about the laboratory course you participated in and wherever relevant please indicate the extent to which each word describes your experience of that course.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
delighted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
happy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
joyful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
amazed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
surprised	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
astonished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Networking

Rate the degree to which you agree or disagree with the following statements dealing with the discussion of your research

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I have discussed my research in this course with my parents (or guardian)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have discussed my research in this course with my friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have discussed my research in this course with students who are not in my class but in my institution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have discussed my research with students who are not at my institution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have discussed my research in this course with professors other than my course instructor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Experimental Design

Advertisements for a herbal product, ginseng, claim that it promotes endurance.

Prior to accepting this claim, and to determine whether or not this claim is fraudulent, you decide to perform a scientific experiment. Describe your proposed experiment and provide justifications for each aspect of your experimental design. Lastly, state whether the results of your experiment could prove the hypothesis that ginseng promotes endurance. This should take you approximately 10-15 minutes to complete.

### Instructional Practices

How often were the following true about your biology lab course this semester?

	Never	Seldom	Often	All of the time
I can define what it looks like to master each topic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can describe what I was supposed to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can describe what comes next in my learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



How often were the following true about your biology lab course this semester?

	Never	Seldom	Often	All of the time
My instructor provided me with specific, descriptive feedback focused on next steps.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I knew exactly how my work would be assessed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My instructor provided me with examples of exemplary work and scoring guidelines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

During biology lab this semester, I worked on projects...

	Not at all	Very little	Somewhat	A great deal
That allowed me to figure out what the information means	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requiring me to learn and use skills that are expected of practicing scientists (e.g., technology, teamwork, problem solving).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requiring me to justify my results with evidence from my experiments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requiring me to apply knowledge from one or more disciplines or content areas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requiring a significant investment of time and intellectual resources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requiring me to use various methods, media, and sources to conduct an investigation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grounded in real life and work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How often were the following true about your biology lab course this semester?

	Never	Seldom	Often	All of the time
You made presentations to explain what you have learned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You participated in whole-class discussions where your instructor talked less than the students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You worked on projects requiring you to develop your own experimental procedures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You worked on project using research methods from one or more disciplines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You were asked to apply prior knowledge to new tasks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your instructor graded students through methods such as presentations, portfolios, and exhibitions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You used project criteria (rubrics) that you helped establish to gauge what you were learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

During biology lab this semester, I worked on projects...

	Not at all	Very little	Somewhat	A great deal
In which my instructor provided me with experimental design protocols.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requiring me to arrive at a specific experimental design that my instructor has in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In which the correct results are already known.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Laboratory Class Assessment Survey

In this course, I was encourage to ...

	Never	One or two times	Monthly	Weekly	I don't know	Prefer not to answer
discuss elements of my investigation with classmates or instructors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
reflect on what I was learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
contribute my ideas and suggestions during class discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
help other students collect or analyze data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
provide constructive criticism to classmates and challenge each other's interpretations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
share the problems I encountered during my investigation and seek input on how to address them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In this course, I was expected to ...

	Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly agree	I don't know
generate novel results that are unknown to the instructor and that could be of interest to the broader scientific community or others outside of class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
conduct an investigation to find something previously unknown to myself, other students, and the instructor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
formulate my own research questions or hypothesis to guide an investigation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
develop new arguments based on data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In this course, I had time to ...

	Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly agree	I don't know
change the methods of the investigation if it was not unfolding as predicted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
share and compare data with other students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
collect and analyze additional data to address new questions or further test hypotheses that arose during the investigation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
revise or repeat analyses based on feedback	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
revise drafts of papers or presentations about my investigation based on feedback	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Demographic questions

How many lab courses are you taking this semester?

Did you work or volunteer in a research lab this semester?

- Yes
- No

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