



SESSION 6: SHARING YOUR SCIENCE

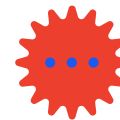
~30 minutes

SESSION OVERVIEW

In this session, students will explore the many ways scientific ideas can be communicated to different audiences. Using their creativity, students will communicate a variety of science facts through different mediums, such as art, song, speech, and acting. Through this experience, they will discover that scientists use a range of communication methods to share discoveries, build understanding, and inspire curiosity, while adapting their message to make it accessible and engaging for their audience.

LEARNING GOALS

- **Communicate** science in a clear and engaging way
- **Choose** the best way to explain a science fact to an audience
- **Explain** a science fact using a method of their choice
- **Design** ideas with their group
- **Understand** why science communication is important
- **Listen** to the ideas of their peers



Design



Communicate

SCIENTIFIC BACKGROUND

Science communication is an important part of the scientific method. Scientists use many different methods to share their ideas and discoveries, choosing communication styles that are appropriate for their audience. By communicating science through creative formats, students practice making science ideas accurate, engaging, and accessible to others.

CURRICULUM CONNECTIONS

Science & Technology

- Grade 4-8: A1.5, A3.2

Language Arts

- Grade 4-8: A1.1, A3.1, B1.1 - B1.5

The Arts

- Grade 4-6: A1.3, B1.1, B1.3, C1.3, D1.1, D1.3
- Grade 7-8: A1.4, B1.1, B1.3, C1.3, D1.1, D1.3



SESSION 6: SHARING YOUR SCIENCE

~30 minutes

MATERIALS

- Session 6 presentation
- Laptop
- SMART board or projector
- Science fact cards (see appendix)
- Sharing your science handout
- Student tech (for exit survey)
- Art materials (play-doh, paper, pencils, markers, etc.)

DISCUSSION PROMPTS

Before

- Why is it important for scientists to share their discoveries with others?
- Why might a scientist choose one way of communicating over another?
- How could you explain something you learned to someone younger than you? Older?

During

- Who are you presenting your science fact to? Who is your audience?
- How could you make sure that this audience understands what you are presenting?
- What message do you want your audience to remember when you are done?

After

- Are there other methods that could have worked better to present your idea?
- What challenges did your group have during this communication activity?
- Did any of these methods make you more curious about the world around you?

EXTENSIONS & ASSESSMENT

Extension

- No extensions are required for this session. Students can continue practicing their communication skills by choosing alternative methods to share their science ideas.

Assessment

- Assessment for this session is mainly through student product and observation. There is also an optional final Wonderground assessment, which can be viewed in the appendix of this document.



SESSION 6

- Science fact cards (Grade 4 - 6)
 - Science fact cards (Grade 7 - 8)
 - Final assessment (Grade 4 - 6) (optional)
 - Final assessment (Grade 7 - 8) (optional)
- 



The Earth spins to make day and night



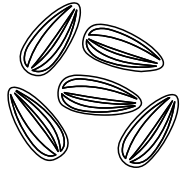
Bats use sound to find their way in the dark



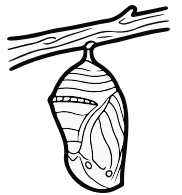
Bees help flowers by pollinating them



Plants grow from seeds



Caterpillars turn into butterflies



Plants grow toward sunlight



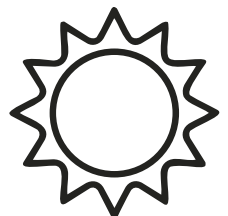
Sound travels in waves



Tornado winds can spin faster than race cars



The Northern Lights happen when particles from the Sun hit Earth's atmosphere

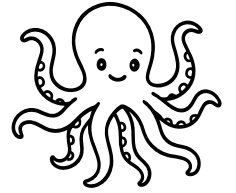




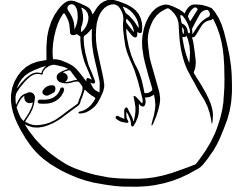
Rainbows are actually full circles – we usually only see parts of them



Octopuses have three hearts



Sloths can hold their breath longer than dolphins



Everyone has different fingerprints





The Northern Lights happen when cosmic rays hit Earth's atmosphere



Rainbows are actually full circles – we usually only see part of them



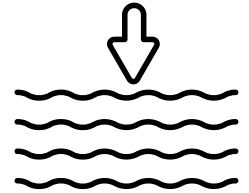
Photosynthesis turns sunlight into chemical energy for plants



Density determines whether something sinks or floats



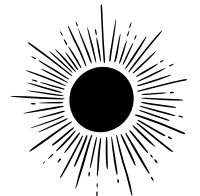
Ocean tides are caused mainly by the Moon's gravity



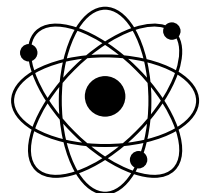
A black hole's gravity is so strong that not even light can escape it



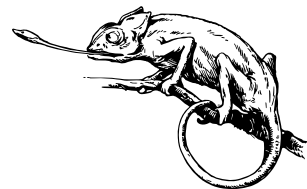
A solar eclipse happens when the Moon blocks the Sun



Atoms are made of protons, neutrons, and electrons

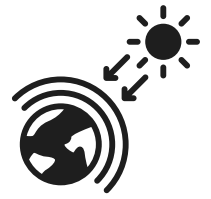


Camouflage helps animals blend into their environment

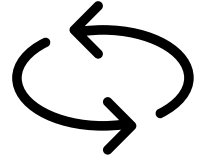




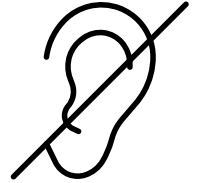
The ozone layer helps protect Earth from harmful UV rays



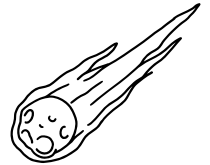
Day and night happen because Earth spins around the Sun



Sound cannot travel in outer space because there is no air



Shooting stars are really fast-moving space rocks





FINAL ASSESSMENT

Name: _____

1 Is this a **SMART** scientific question? Circle YES or NO.

Are jelly beans the best candy?	YES	NO
Does reading help you learn faster?	YES	NO
Does oil float on water?	YES	NO
Can I sing the best in my class?	YES	NO

2 Why shouldn't you change more than one variable at a time? Circle the best answer.

- a) It is hard to tell what caused the change
- b) It makes it easier to get good results
- c) The experiment will work better
- d) It doesn't matter how many you change

3 Order the steps of the scientific method from 1 to 5.

Share your results _____

Ask a question _____

Test the prediction _____

Make a prediction _____

Look at the results _____

4 Match the example with the variable type by drawing a line between them.

Time to melt the ice cube

Water temperature

Size of ice cube

Control variable
(what stays the same)

Independent variable (what we change)

Dependent variable (what is measured)

5

A student wants to see if a basketball bounces higher on surface or underground.

a) What question did they ask?

Do basketballs change colour underground?

Do basketballs bounce higher underground?

b) What prediction could they make?

c) The basketball underground did not bounce as high as the one on surface. Why did this happen?

There is more pressure underground

There is less pressure underground

6

**What is one thing you learned about SNOLAB during the program?
Draw a picture and write a short sentence.**



FINAL ASSESSMENT

Name: _____

1 Why is this question a SMART scientific question? Explain.

Does a basketball bounce higher underground or on surface?

2 When designing an experiment, why is it important to only change one variable at a time? What would happen if you tried to change too many at once?

3 Order the steps of the scientific method from 1 to 5 on the lines below.

Share your results	_____
Ask a question	_____
Test the prediction	_____
Make a prediction	_____
Look at the results	_____

4 Match the variable to the example by drawing a line.

Time for sugar to dissolve	Control variable(s)
Amount of sugar and water	Dependent variable
Water temperature	Independent variable

5

A student wants to investigate whether being on a phone before going to sleep affects sleep quality. Write out the following information for the experiment:

a) The SMART scientific question: _____

b) A prediction: _____

c) The results they might see and why: _____

6

Calculate the mean, median, mode and range for the results of a SNOLAB experiment shown below.

Test #	Speed (m/s)
1	13.25
2	12.96
3	13.72
4	14.01

7

Name a fact about SNOLAB that you learned during the program.



FINAL ASSESSMENT

Name: TOTAL: 18 points

1

Is this a **SMART** scientific question? Circle YES or NO.

4 points

Are jelly beans the best candy?

YES

NO

Does reading help you learn faster?

YES

NO

Does oil float on water?

YES

NO

Can I sing the best in my class?

YES

NO

2

Why shouldn't you change more than one variable at a time? Circle the best answer.

a) It is hard to tell what caused the change

b) It makes it easier to get good results

c) The experiment will work better

d) It doesn't matter how many you change

1 point

3

Order the steps of the scientific method from 1 to 5.

Share your results

5

Ask a question

1

Test the prediction

3

Make a prediction

2

Look at the results

4

5 points

4

Match the example with the variable type by drawing a line between them.

3 points

Time to melt the ice cube

Control variable
(what stays the same)

Water temperature

Independent variable (what we change)

Size of ice cube

Dependent variable (what is measured)

5

A student wants to see if a basketball bounces higher on surface or underground.

3 points (1 each)

a) What question did they ask?

Do basketballs change colour underground?

Do basketballs bounce higher underground?

b) What prediction could they make?

Answers may vary. EXAMPLE: I think that basketballs
underground will bounce less than on surface.

c) The basketball underground did not bounce as high as the one on surface. Why did this happen?

There is more pressure underground

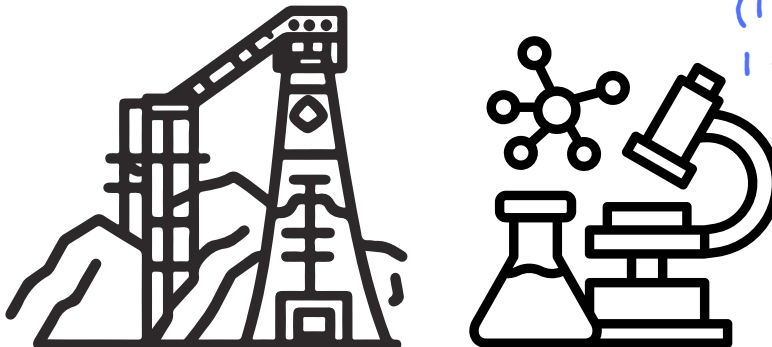
There is less pressure underground

6

What is one thing you learned about SNOLAB during the program?
Draw a picture and write a short sentence.

2 points

(1 for drawing,
1 for sentence)



Answers may vary. EXAMPLE: I learned that, at

SNOLAB, they do science in a mine underground.



FINAL ASSESSMENT

Name: TOTAL: 27 points

1

Why is this question a SMART scientific question? Explain.

3 points

Does a basketball bounce higher underground or on surface?

This is a SMART scientific question because it is
specific, measurable, attainable, relevant, and timely.
Therefore, the question can easily be tested and the
results obtained can provide us with new knowledge.

2

When designing an experiment, why is it important to only change one variable at a time? What would happen if you tried to change too many at once?

3 points

When designing an experiment, it is important to only change
one variable at a time because it allows the changes to be
better observed. If too many things are changed at once, it
gets harder to tell which variable is causing the change and the
results will be unclear.

3

Order the steps of the scientific method from 1 to 5 on the lines below.

5 points

Share your results	<u>5</u>
Ask a question	<u>1</u>
Test the prediction	<u>3</u>
Make a prediction	<u>2</u>
Look at the results	<u>4</u>

4

Match the variable to the example by drawing a line.

3 points

Time for sugar to dissolve	Control variable(s)
Amount of sugar and water	Dependent variable
Water temperature	Independent variable

5

A student wants to investigate whether being on a phone before going to sleep affects sleep quality. Write out the following information for the experiment: **4 points (2 for part C)**

a) The SMART scientific question: **Answers may vary. EXAMPLE:**

Does phone use before bed affect your sleep at night?

b) A prediction: **Answers may vary. EXAMPLE:**

being on your phone before bed will make you sleep worse

c) The results they might see and why: **Answers may vary. EXAMPLE:**

Being on your phone makes you sleep worse because of the blue light.

6

Calculate the mean, median, mode and range for the results of a SNOLAB experiment shown below. **8 points (2 each)**

Test #	Speed (m/s)
1	13.25
2	12.96
3	13.72
4	14.01

Mean: $13.25 + 12.96 + 13.72 + 14.01 = 53.94 / 4 = 13.485$

Median: $13.25 + 13.96 = 27.21 / 2 = 13.605$

Mode: There is no mode for this data set.

Range: $14.01 - 12.96 = 1.05$

7

Name a fact about SNOLAB that you learned during the program. **1 point**

Answers may vary. EXAMPLE: I learned that SNOLAB is a science lab that is 2 km underground at Creighton Mine in Sudbury.