



Why do we get sick?

STEAM Project 3

The Sneeze Machine

How can we stop germs from spreading in our class?

Project Overview

What will students do?

In this project, students will build a sneeze machine and investigate what happens when we sneeze.

STEAM Objectives

Session 1	Session 2
Science Objective - Students will learn why we sneeze and what happens when we sneeze. Technology and Engineering Objective - Students will build a sneeze machine to determine the distance of a sneeze and how far germs can spread from sneezing.	Science Objectives - Students will make predictions about how far a sneeze can travel. - Students will use their sneeze machines to recreate a sneeze, measure how far it travels and compare with their predictions.
Session 3	Final Event
Science Objective Students will create a poster to promote ways to stop germs from spreading.	Objectives - Students will present their posters and findings. - Students will listen to other groups' presentations, choose one of their posters and answer questions about it.

Sessions Preview

	STEAM Focus	Teaching Resources
Session 1	Science Technology Engineering	Face templates worksheet Bottle caps Yarn Spray bottles Cardboard
Session 2	Science	Student's sneeze machines Water Food dye of different colors Tape measures Adhesive notes
Session 3	Science	Poster paper
Final Event		Health posters Sneeze machines Masking tape or adhesive putty

Session 1

Science Objective Students will learn why we sneeze and what happens when we sneeze.

Technology and Engineering Objective Students will build a sneeze machine to determine the distance of a sneeze and how far germs can spread from sneezing.

Teaching Resources Face templates worksheet (one per group), bottle caps, yarn, spray bottles (one per group), cardboard

Lead into the Lesson (5 min.)

- Pretend to sneeze several times. Invite volunteers to say what you're doing. Elicit if it's good or bad to sneeze. Accept all answers at this time.
- Tell students they are going to learn more about sneezing.

1 Look at the picture and read the text. (5 min.)

- Invite a volunteer to read the driving question aloud: *How can we stop germs from spreading in our class?* Students will read about the project objective.
- Have students look at the picture and read the questions. Invite volunteers to respond. Accept all answers at this time.

2 Read the text and label the diagram. (10 min.)

- Students read the text. Confirm that they understand what germs are. Ask: *Why do we cough and sneeze? What happens when we cough and sneeze?* (We push germs out through our mouth and nose.)
- Have students label the diagram. Invite volunteers to point out on themselves where their nose and mouth are, where a cough comes out (the mouth) and where a sneeze comes out (the nose).

3 Make a sneeze machine. Follow the steps. (25 min.)

- Form groups (maximum five). Tell students this is their group for the remainder of the project.
- Invite volunteers to read the list of materials and the steps.
- Hand out the face templates and materials. Have students discuss and decide how to decorate the templates. Point out that they can use the bottle caps for eyes and cotton for hair.
- Demonstrate how a spray bottle works. Explain the parallel between the action of the spray bottle and the action of our bodies when we cough or sneeze. (Both actions use force to push liquid or germs out.)
- Have students make a hole in the nose of the template and push the nozzle of the spray bottle through the hole.
- **Know Your Students:** Some students may be natural leaders, taking the initiative and making the sneeze machine on their own. If necessary, gently remind the groups that everyone should participate. You may need to guide them to divide the tasks—some students may glue the bottle cap eyes on the face template while others work on the hair.

Wrap Up the Lesson (5 min.)

- Invite volunteers to make predictions about why they made sneeze machines and what information the machines might tell them.
- Collect students' sneeze machines. They will need them for Session 2.

 **Teachers may now evaluate students for Session 1 on the platform.**

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STEAM Project 3

The Sneeze Machine: Session 1

1 Look at the picture and read the text.

How can we stop germs from spreading in our class?

In this project we are going to build a sneeze machine and investigate what happens when we sneeze. Before we begin, think:

- Why do we sneeze?
- What happens when we sneeze?

Let's do this project to find out!



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Science Objectives Students will make predictions about how far a sneeze can travel. Then they will use their sneeze machines to recreate a sneeze, measure how far it travels and compare with their predictions.

Teaching Resources Students' sneeze machines, water, food dye of different colors, tape measures (one per group), adhesive notes (one per student)

Lead into the Lesson (5 min.)

- Guide students to recall what they have learned about germs, coughing and sneezing. Ask: *Why do we cough and sneeze? What happens when we cough and sneeze?*
- Elicit what students did in Session 1. (They made sneeze machines.)
- Tell students they are going to use the sneeze machines they made to measure how far a sneeze can travel.

1 Set up the sneeze machine and make predictions. Follow the steps. (15 min.)

- Hand out four sheets of paper to each group.
- Have students go through the list of materials and guide them to complete the steps.
- To help students make predictions, ask: *How far do you think a sneeze will travel?*
- Make sure students make a note of their predictions in the chart.

2 With your teacher's help, fill the sneeze machine with colored water. (10 min.)

- Have students decide what color they want to dye the water with and write it in the space provided.
- Students then fill their sneeze machines with the colored water. To facilitate cleanup, have students fill the bottles outside or over a sink.

3 Spray the sneeze machine. Answer the questions. (15 min.)

- Students spray their sneeze machines.
- Demonstrate how to measure a sneeze using a tape measure. Then hand out the tape measures.
- Encourage students to take turns measuring their sneeze distance and agree on the distance for their group before they answer the first question. Then elicit whose prediction was closest and have students answer the second question.
- For questions 3 and 4, encourage students to take turns using their hands and tissue to cover their sneeze machines and spraying them.

Wrap Up the Lesson (5 min.)

- Invite volunteers from each group to share their sneeze distances. Ask: *Whose machine sneezed the farthest?*

 Teachers may now evaluate students for Session 2 on the platform.

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The Sneeze Machine: Session 2

1 Set up the sneeze machine and make predictions. Follow the steps.

Materials:

- The sneeze machine
- Water
- Colored food dye
- 4 sheets of paper
- A tape measure
- Adhesive notes
- Tissue

Steps:

1. Attach four sheets of paper together to make a long strip.
2. Place the sneeze machine at one end of the strip.
3. Predict how far the sneeze will travel and mark with an adhesive note.
4. Measure your predictions and complete the chart.



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Session 3

Science Objective Students will create a poster to promote ways to stop germs from spreading.

Teaching Resources Poster paper (one sheet per group)

Lead into the Lesson (5 min.)

- Write the words *germs* and *sneeze*. Invite volunteers to create sentences using the two words.
- Have students recall what they have learned and done in Sessions 1 and 2.

1 Read the slogans for a poster to stop germs from spreading. Which do you prefer? (5 min.)

- Students read the slogans.
- Point to the word *slogan* and explain what it means. (a phrase that communicates a message)
- Have students discuss the slogans. Ask: *What's the message in (one of the slogans)?*
- In their groups, have students act out the actions on the slogans and then decide which slogan they like. Encourage students to give reasons for their choices.

2 Write the slogan for your poster. (5 min.)

- Tell students they are going to make a poster using their favorite slogan (or another of their choosing). Have groups write their chosen slogan in the space provided.
- Invite volunteers to share their slogans with the class.

3 What other things can you include on your poster? (10 min.)

- Students decide what to put on their posters. Remind them that pictures and information about the experiment should support their slogan. Ask: *What picture would be best for your slogan? What information is important to include?*
- Have students write about the other things they've agreed to include on their posters.

4 Make a poster about stopping germs from spreading in your classroom. (20 min.)

- Monitor and help. Make sure students have distributed tasks among themselves in their groups (writing the slogan they chose, drawing a picture, including the experiment results, decorating the poster, etc.) and that everyone is working on the posters.

Wrap Up the Lesson (5 min.)

- Tell students that they are going to present their posters in the next project session.
- Have the groups briefly discuss how they want to divide the presentation.
- Collect students' posters for the final event.

 **Teachers may now evaluate students for Session 3 on the platform.**

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STEAM Project 3 The Sneeze Machine: Session 3

1 Read the slogans for a poster to stop germs from spreading. Which do you prefer?

☐ When you sneeze, germs can spread!

☐ Use a tissue and throw it away!

☐ Wash your hands after you sneeze!

☐ No tissue? Sneeze into your elbow!

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Session 4 - Final Event

Objectives Students will present their posters and findings. They will also listen to other groups' presentations, choose one of their posters and answer questions about it.

Teaching Resources Health posters, sneeze machines, masking tape or adhesive putty

Lead into the Lesson (5 min.)

- Distribute students' health posters.
- Have the groups review the information on their posters and recall who is going to give each part of the presentation.

1 Display your poster and sneeze machine in the classroom. (5 min.)

- Tell students to display their posters and sneeze machines around the classroom.
- Explain that each group has five minutes to give their presentations.

2 Present your poster. (5 min.)

- Students present their health posters, sneeze machines, information and findings.
- **Know Your Students:** Some students may become nervous about presenting to the class, causing them to forget what they were going to say or lose their place in the presentation. Be prepared to ask leading questions to help students successfully complete their part of the presentation.

3 Listen to your classmates' presentations. (25 min.)

- Students listen to their classmates' presentations.
- Tell them to write about the distance other sneeze machines sprayed.

4 Look at the other posters. Choose one poster and answer the questions. (5 min.)

- Have students choose another group's poster to write about.
- Monitor and help students answer the questions.
- **Manage Your Class:** Students can do this individually or in pairs.

Wrap Up the Lesson (5 min.)

Read and choose the option for you.

- Tell students they are going to think about what they learned in the project and rate their skills as *Great!*, *Good* or *OK*. (*Great!* = *They do it very well.* *Good* = *They do it well.* *OK* = *They need some practice.*)
- Remind them that the evaluation is not scored or graded. Emphasize that the students' self-assessment is a tool to help them think about what they know well and where they can learn more.
- Invite volunteers to read the sentences in the chart. Then have them choose the answers that best match the statements for themselves.

 **Teachers may now evaluate students for the Final Event on the platform.**

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STEAM Project 3

The Sneeze Machine: Final Event

1 Display your poster and sneeze machine in the classroom.

2 Present your poster.

3 Listen to your classmates' presentations.

How far did their sneeze machines spray?

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