

Lesson #5

Grades

1 and 2

Suggested Pacing

20+ min

Group Size

Teacher Led

Individual



Lesson Slides

<https://tinyurl.com/y55suz2a>

What You Need

From Lysol® Minilabs Module #1:

- **Student Journals**

From Lysol® Minilabs Module #2:

- **Five (5) craft boxes, one (1) googly eyes sheet, five (5) felt sheets, one (1) faux fur roll, five (5) long fluffy pipe cleaners, and five (5) bags of fiber fill**

Sourced Materials:

- **Coloring and writing tools**
- **Optional: Arts and crafts materials**

Digital Only Option

If you don't have the physical Lysol® Minilabs Science Kit, check out the "Digital Kit Implementation Guide" at the end of this lesson plan with links to free printables and list of materials you need to source.

Invent to Problem Solve

Overview

This lesson has **3 essential parts**. **(1)** Review Together: **go over True & False questions with your students to review key terms from previous lesson.** **(2)** Read & Watch Together: **watch a short video called "A Mysterious Cat Illness" and read over a one-page prompt from Chapter 5 of the Minilabs Journal.** **(3)** A Hands-On Activity for students to form a hypothesis and build of a solution to stop the spread of the disease and help sick cats on the planet of Gubby Pubs get well. In addition, you may implement some of the optional extensions and the optional section titled "Check Understanding."

Session Planning

- Lesson Difficulty: **The "Beginner" level for the Hands-On Activity provides students with more direct and concrete design ideas. The "Advanced" level encourages students to ideate, design, and build their own unique inventions.**
- Time Management: **If you have 20-30min, we recommend focusing on "Read Together", writing a hypothesis, and limit the amount of time for building projects. Alternatively, students can use free class time to work on their projects.**

Learning Goals

- **Understand what a hypothesis is and how one can prove or disprove it.**
- **Learn about engineering design cycle and engineering terms to help navigate the creative process.**
- **Develop critical thinking and problem-solving skills to design and create an invention that addresses a specific problem.**
- **Utilize 3D modeling and prototyping techniques to effectively communicate and test ideas.**

Key Vocabulary

- Science Concepts: **Hypothesis**
- Science Practices: **Sketch, Model, Test**
- Engineering Practices: **Engineering Design**

Standards

- **NGSS** K-2-ETS1-1, K-2-ETS1-2. **NHES** 1.2.1, 1.2.3, 2.2.1, 4.2.1, 4.2.2, 4.2.5, 5.2.3, 5.2.4, 6.2.1, 6.2.2, 7.2.1, 7.2.2, 8.2.2, 8.2.3. **CCSS.ELA-Literacy** RI.2.1, W.2.6, W.2.8, SL.2.5. **TKES** S.1.3.A, S.1.3.B, S.1.3.C, S.1.5.B, S.2.3.A, S.2.3.B, S.2.3.C, S.2.5.B



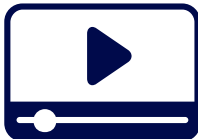
Getting Ready



- Have lesson slides ready to project on your classroom projector board; you'll find the lesson video in the slides. Please watch the lesson video before the start of the class.
- Have copies of the student Minilabs Journals ready to pass along to students.
- Five (5) craft boxes, one (1) googly eyes sheet, five (5) felt sheets, one (1) faux fur roll, five (5) fluffy pipe cleaners, and five (5) bags of fiber fill in your Lysol® Minilabs Science Module #2. Use a pair of scissors to cut the googly eye sheet and faux fur roll into five (5) parts. Next, create five "Mystery Boxes" for five (5) groups of students by filling each of the craft boxes provided with googly eyes, a piece of felt, a piece of faux fur, one (1) fluffy pipe cleaner, one (1) bag of fiber fill, and a random assortment of other arts & crafts or recycled materials you have at hand. Have these "mystery boxes" ready to pass along to students.
- **IMPORTANT:** Please remember to collect all student Minilabs Journals at the end of the session. They will need the journals for all lessons in Modules 1, 2, and 3.

Start Your Lesson

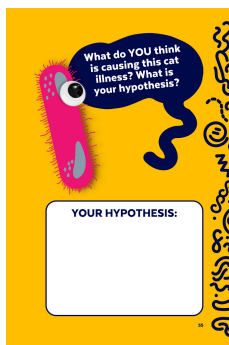
Suggested Time: 10min



- **REVIEW TOGETHER:** Go through lesson slides 10 to 17, to review key terms from the previous lesson.
- **READ & WATCH TOGETHER:** Watch "A Mysterious Cat Illness" video, which you can play directly from the slides. Students will learn about a fictional planet called Gubby Pubs where cats are contracting a disease that stains their fur with purple dots. The cats don't know how they are getting the disease or how it spreads. All they know is that there are 3 options: they cuddle too much, their cat food is not good anymore, or the rats are spreading it to the cats. Once the video is over, ask students to turn to page 57 of their Minilabs Journal and read the page.

Hands-On Activity

Suggested Time: 20-30min



*Special Cat Spray



*Cat Washer 3000

- **WRITE HYPOTHESIS:** Students write down their hypothesis of what they think is causing this cat illness on page 57 of their Minilabs Journals. Explain to them that a **hypothesis is a proposed explanation or educated guess that can be tested through research and experimentation.**
 - To construct their hypothesis students may review Chapter 3 of their Minilabs Journal to remember different ways bad microbes might find their way inside someone's body: eating rotten or dirty food, dirty hands, putting dirty things in mouth, etc. They may also check out their Microbe ID Cards to study where microbes might be found: rotten food, dust, dirty water, dirty surfaces, etc.
- **DESIGN A SOLUTION:** Next, have your students form groups (up to 5 groups) and provide each group with a Mystery Box of prototyping materials. In their groups, students design a solution to the cat illness problem and build a prototype of their solutions using materials in their mystery box. Their inventions may either prevent or cure the illness:
 - Beginner Level: **For students who are new to design thinking and engineering design cycle, you may prompt them to build concrete solutions such as a comfortable bed for sick cats to rest in, medicine for the cats, an isolated spot for the sick cats, or a nutritious bowl of food!**
 - Advanced Level: **For more advanced students, challenge them to think of THEIR OWN inventions:**
 - An invention to prevent the illness by stopping the spread of bad microbes. **A "hand-washing" station for cats, a device to scan food for bad microbes, a cat face shield, a cat vaccine, or something else?**
 - An invention to help cats' immune systems get stronger to fight the bad germs. **An exercise device for cats to make them moving, a new cat food with lots of vitamins, or something else?**
 - An invention to help cats who are sick get healthy. **They may check out pages 60 & 61 to get ideas. For example, a place for sick cats to isolate and rest, a new medicine, or something else?**



Hands-On Activity

continued... (feel free to skip for beginner level students)

Describe
Share about YOUR invention!

ABOUT YOUR INVENTION

1 My invention's name is...

2 To build my prototype I used these materials:

3 My invention helps sick cats by...

Optimize
Test the prototype of your invention, compare, and gather feedback!

MY INVENTION'S STRENGTHS ARE...

MY INVENTION'S WEAKNESSES ARE...

- **AFTER DESIGNING THEIR PROTOTYPE:** In their own journals, students can flip to page 58 and answer the questions about their invention. Students can work together with their team to best describe it.
- **PROTOTYPE TESTING:** Once they are done answering the questions on page 58, students can walk around the classroom and test the prototypes from other groups. You may do this by:
 - Selecting half of the groups to go around and test the other prototypes
 - One group at a time can go around the room
 - One or two students from each group take turns going around and testing the other prototypes
- When going around the room, students can ask clarifying questions about the prototypes, give suggestions or recommendations, and provide feedback for ways that the invention can get better.
- **AFTER PROTOTYPE TESTING:** Students may go back to their groups to talk about the different prototypes they saw and what they thought of them. Then answer the questions on page 59 of their journals.
 - My invention's strengths are...
 - My invention's weaknesses are...
- Once they are done answering both questions and if time allows, give students a few minutes to make changes and improve their prototype.

More examples:



***A portable hand-washing station for cats.**



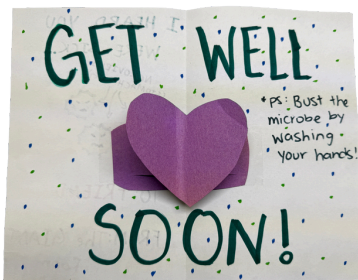
***Special hospital for cats that contract the illness.**



***Factory that creates vaccines to help fight and prevent the illness.**



Optional Extensions



- (10-15min activity) **GERM CARRIER:** You may explain to your students the concept of “a germ carrier”: a person or animal that has an infectious agent in their body but doesn’t show any symptoms of the disease. Challenge them to review their hypotheses and discuss whether any of them included a “germ carrier” behind the cat illness problem. For example, rats might be the germ-carriers on the planet of Gubby Pubs!
- (10-15min activity) **GROUP DISCUSSION:** Students form small groups, share about their hypotheses, compare, and provide feedback to each other. Ask students to:
 - Clearly state the problem and their hypothesis
 - Explain evidence they might have to support their hypothesis
 - Ask each other clarifying questions and provide feedback
 - Compare their hypotheses and discuss similarities and differences between them
- (15-20min activity) **INDIVIDUAL PRESENTATIONS:** Ask your students to present their invention to their classmates in small groups or whole class format. As part of their presentation they may answer the following questions:
 - What is their hypothesis?
 - Does their solution prevent the illness, help cats become stronger, or cure the illness?
 - What is their invention, and how does it work?
- (15-20min activity) **MAKE A GET WELL SOON CARD:** Ask your students to design a “get well soon” card for the sick cats on the planet of Gubby Pubs. They may grab a card, fold it in half, draw on the cover and write a kind message inside. For an extra challenge, they may design a pop-up card for the cats!



Bonus

PUBLISH YOUR CLASSROOMS' WORK

- Learn more and enter to win at:
www.thegiantroom.com/giant-remix-minilabs
- If chosen, we'll ask you to submit photos of your students' writings, and we'll turn them into a custom comic book featuring their work. Your class will receive free professionally-printed copies of the book!



Check Understanding

Suggested Time: 5 - 10min



- **FILL IN THE BLANK:** Go through lesson slides with a set of fill in the blank questions. These questions are designed to highlight the importance of design thinking, innovation, and engineering design cycle.
- **ANSWER QUESTIONS:** Go through lesson slides with a set of questions that prompt students to reflect on positive habits they can practice to help their immune system get stronger, and also ways they can help stop spreading bad microbes when they are sick.
- **TAKE NOTES:** Ask student to write down one thing they learned and one question they still have. Have three or four students share their notes to the rest of the classroom.
- **REFLECT TOGETHER:** Optionally, you may review definition of keywords with your students, challenge them to define the words, or draw a diagram in their journal (Appendix) to further define their meaning.

Lesson Glossary

Below is a glossary of all keywords covered in Lesson #5. Please note that students can go to the Appendix of their Minilabs Journals to check out the glossary.

BLUEPRINT

A blueprint is detailed plan or drawing that outlines the design and specifications of a building, structure, or system.

HYPOTHESIS

A hypothesis is a proposed explanation or educated guess that can be tested through research and experimentation.

Digital Kit Implementation Guide

If you don't have the physical box, you can still implement the Lysol® Minilabs Science Kit! Here are links to free printables and a list of materials you need to source.



FREE PRINTABLES

Individual Activity Sheet - Hypothesis

<https://tinyurl.com/bdd3f5bj>

Individual Activity Sheet - Describe & Optimize

<https://tinyurl.com/tt6nykha>

Chapter 5 Only

<https://tinyurl.com/4y6hasem>



MATERIALS TO SOURCE

- Craft boxes
- Googly eyes
- Felt sheets
- Faux fur roll
- Long fluffy pipe cleaners
- Fiber fill
- Coloring and writing tools
- Arts and crafts materials (Optional)

Check out page 8 for all the Online Resources for this lesson.



Online Resources



SLIDES: LESSON #5

<https://tinyurl.com/y55suz2a>



SCHOOL-HOME COMMUNICATION PACK

<https://tinyurl.com/4mceskfm>



VIDEO: READ & WATCH CHAPTER 5

<https://tinyurl.com/nhk89j45>



E-BOOK: CHAPTER 5 ONLY

<https://tinyurl.com/4n4a4c9u>



PRINTABLE: INDIVIDUAL ACTIVITY SHEET - HYPOTHESIS

<https://tinyurl.com/bdd3f5bj>

PRINTABLE: INDIVIDUAL ACTIVITY SHEET - DESCRIBE & OPTIMIZE

<https://tinyurl.com/tt6nykha>

PRINTABLE: CHAPTER 5 ONLY

<https://tinyurl.com/4y6hasem>



FEEDBACK: MODULE 2 SURVEY

<https://tinyurl.com/y263ry7p>