



LESSON PLAN

WHAT IS SCIENCE? GRADES 3-5

SUMMARY

Learn about the practices of science, what science is, different fields in science, and how to think like a scientist. Students will determine how they use science and engineering practices when they conduct a test of their team design in the Egg Drop Challenge. Prior to this, students should be able to ask questions of each other about what they read and observe, and the conclusions they draw from scientific investigations.

NEXT GENERATION SCIENCE STANDARDS CORRELATION

| Science & Engineering Practices | Connections to Classroom Activity |
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| <ul style="list-style-type: none">• Asking questions (for science) and defining problems (for engineering)• Developing and using models• Planning and carrying out investigations• Analyzing and interpreting data• Using mathematics and computational thinking• Constructing explanations (for science) and designing solutions (for engineering)• Engaging in argument from evidence• Obtaining, evaluating, and communicating information | <ul style="list-style-type: none">• Ask questions about the egg drop device design and define their designs.• Address the egg drop problem by designing and building a model of their device.• Carry out their investigation to test their model.• Analyze and interpret their drop data and apply new ideas to a redesign.• Construct a claim based on their evidence of the effectiveness of their designs.• Present their investigation results to the class. |

DURATION

Two 50-minute class periods (Engage/Explore: 1 class period; Explain/Elaborate: 1 class period; Evaluate: during both periods).

PRE-ASSESSMENT QUESTIONS

Please see Discussion Questions. These can be discussed as a group or answered individually in student science notebooks.



ENGAGE

Tell the class that they are going to become scientists and engineers. Have an egg with a protective structure built around it prepared and ready to test-drop. Explain that you are going to drop the egg and ask them what they think will happen. Record their predictions. Ask for questions about the egg protection device, then drop your design. Record their questions. Discuss why someone would want to know how to protect an egg if it dropped. (optional: drop the unprotected egg and briefly discuss the results)

Ask them to think what they would build to protect the egg and how they would find out if it worked. Tell them they are now thinking like scientists and engineers by asking questions and coming up with ideas to explore, and they are going to build and test their own egg protectors.



EXPLORE

Each team of students discusses egg protector design possibilities, decides on a design, and draws their designs in their notebooks. Each team will have two eggs to drop, but they will create their design together and can modify their design after the first egg drop.

See the DIY Activity guide on the GENERATION GENIUS website and show the DIY segment of the GENERATION GENIUS WHAT IS SCIENCE? video at this point, to show how Zoe built and tried out her egg protector.

Teams build their egg protectors after drawing their designs. When teams are finished, have a class demonstration of each team's design. Ask teams to explain their design choices, and let the team drop their egg. Discuss the results - each team should record their results in their notebooks. After all teams have dropped their first eggs, teams draw a re-design of their egg protector and try once more, recording those results as well.

MATERIALS

- Science notebooks (1 per student)
- Pencils

DIY Egg Drop Challenge: Per team of 2-4

- Eggs, uncooked – two eggs per team
- Straws
- Tape
- Scissors
- Balloons, styrofoam popcorn and/or other construction and protection materials
- Painter's plastic tarp



EXPLAIN

Start the GENERATION GENIUS WHAT IS SCIENCE? video, stopping along the way as Dr. Jeff, Izzy and Zoe explain each science and engineering practice (SEP). Record the SEPs as they come up in the video. As each SEP comes up, ask the class if and how they did that in their Egg Drop Challenge.

Ask the class to decide if the Egg Drop Challenge is science or not, and explain why. Have students name other fields of science mentioned in the video (paleontology, astronomy, chemistry) and come up with other fields of science they know about. Ask if all science involves doing an experiment (some fields like paleontology).



ELABORATE

Have each team look through their data and decide what their claims are about their egg protectors. They must also list the evidence and whether it supports their claim. Ask them to identify all the SEPs they used when they performed the Egg Drop Challenge. Have each team present their designs, redesigns, results, claims, and evidence, as well as which SEPs they used in doing the challenge and presenting their results.

After all teams have presented, refer to the GENERATION GENIUS WHAT IS SCIENCE? video, and ask what was said in the video about how science is used in our world today (electricity, agriculture, medicine). Ask students if they think scientists do what they just did (with the Egg Drop Challenge) when working on ideas, and if they can imagine themselves doing investigations about the world around them. Ask students to think of what they would like to know about and how that information might help the world.



EVALUATE

Students can be evaluated on their active participation in discussions, participation and teamwork in performing the Egg Drop Challenge, their presentation to the class of their Egg Drop Challenge results, and identification of SEPs.



EXTENSIONS

- Students can research famous scientists who do work in fields they are interested in.
- Take a class field trip to visit laboratories, zoos, arboretums, etc., to see science in action.
- Ask a local scientist to come in and talk with the class, or video-conference with a scientist.
- Plan a BioBlitz Day to learn about the species living on the school's campus.

