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Welcome to *Eureka!*— Collaboration

PRIMARY FOCUS OF LESSON

Speaking and Listening

Students will be able to discuss and practice collaboration, following agreed-upon rules and maintaining assigned roles. **TEKS 4.1.A; TEKS 4.1.D**

Reading

Students will integrate ideas from two texts and speak knowledgeably on the best practices of collaboration. **TEKS 4.6.G; TEKS 4.6.H**

Writing

Students will write clearly about their own collaboration experience, supporting their opinions with facts and details. **TEKS 4.12.D**

FORMATIVE ASSESSMENT

Activity 1.2

Collaboration Building Challenge Observe small group conversations and ensure that all students are contributing and maintaining agreed-upon roles.

 **TEKS 4.1.A; TEKS 4.1.D**

Activity 1.4

Letter to Jacques Review students' writing, checking for coherence and use of details and facts to support each response. **TEKS 4.12.D**

 **TEKS 4.1.A** Listen actively, ask relevant questions to clarify information, and make pertinent comments; **TEKS 4.1.D** Work collaboratively with others to develop a plan of shared responsibilities; **TEKS 4.6.G** Evaluate details read to determine key ideas; **TEKS 4.6.H** Synthesize information to create new understanding; **TEKS 4.12.D** Compose correspondence that requests information.

INTRODUCTION (5 MIN.)



Play audio: Opening

Thrown together by the happenstance of where they live and go to school, a class of fourth graders has ten episodes to walk the path of invention and emerge—maybe scarred, maybe stronger, but almost certainly better—as inventors. This is the world of the reality game show Eureka! Student Inventor—where puppets pull the strings and “making it work” is only the beginning.

Inform class of its selection for the show.



Welcome to *Eureka! Student Inventor*. I'm your host, _____.

As you know, we scoured the country looking for the right mix of hard workers with creativity, ingenuity, and resilience—contestants who wouldn't be fazed by a little mess or a little yelling—students we could gather up and mold into the next great *Eureka!* inventors. And when the producers found your class—well, we cried, “Eureka!” which, in addition to being the title of our show, is also an expression we get from the ancient Greek inventor Archimedes that means “I have found it!”



But before we get started with the work of invention training, allow me to introduce you to our judges. I should warn you—they may be brilliant, but they're also . . . eccentric.



Play video: Welcome to *Eureka!*

Describe the Wheel of Invention and challenges.



Now you know what I have to deal with offscreen, day after day. They're geniuses, but not the easiest people in the world. But they really do want you to become great, well-prepared inventors yourselves. Every episode will focus on one or two of the six skills that will make you consummate inventors. You'll be working in groups to complete challenges related to these skills.



After you've learned about a skill and practiced applying it, you'll be assigned a wedge challenge—by completing it, your group can earn one of six wedges that together form the Wheel of Invention. This is fitting, since the wheel and the wedge are two of the greatest inventions ever!



Completing this wheel will earn you rewards, including twenty points and a trip to Round 2! There are also opportunities for bonus points, and all these points will help determine the winner . . . but let's not get ahead of ourselves.



Play audio, read aloud, or invite student to read Judges' Note 1A.



Judges' Note 1A

A Note from Thomas Edison:

Welcome, widgets. As your judge, and as the owner of 1,093 patents (by far the most of any of these clowns), I have the awesome responsibility of giving you your first challenge. How, you might ask, did I, one man with only twelve weeks of formal schooling, achieve so much? Hard work, hard work, and more hard work. And not just my own hard work: I started the first industrial lab in Menlo Park, New Jersey, hiring scientists, technicians, and mathematicians to carry out research and development to further my ideas. Honestly, I am not a huge fan of working with people, and I don't know that my employees were so thrilled to work with me, but we put up with it because we knew that many minds lead to excellent innovation! So you will also be working in lab groups. Go find them.

Sincerely,

Thomas Edison

FIND YOUR LAB MATCHING GAME (10 MIN.)



List the activity steps on the board

1. Read your clue and circle any words that provide details about your invention.
 2. Find your group by discussing your clues with your classmates, and listening for other clues that match yours.
 3. Sit together and raise your hands so the host can confirm you are correct.
 4. Create a name card for your lab and write an invention slogan.
- Each lab will have four to five students. Sentences describe the airplane, the microscope, paper, the clock, the radio, and the telephone.

Explain the lab matching game



OK, contestants, it's time to find your lab. You will each receive a sentence/clue that relates to one of six famous and important inventions. First read your sentence and circle any words that might give you a hint about which invention you have. Then walk around and discuss it with your fellow contestants. In your discussions, share the details you circled and listen for hints that might go with yours. Find those contestants whose sentences relate to the same invention yours does, and you'll find your lab.



Once you find your lab mates, sit down together and raise your hands. I will come check on you. You can also begin working on creating a name card for your lab and a slogan for your invention. A slogan is a catchy phrase, such as you might see in advertising. A slogan for the light bulb, for example, might be "Light bulbs illuminate." A slogan for the refrigerator might be "Keeping it cool. Brrrrr!"



On *Eureka!*, in addition to wedges, you can also earn bonus points for your lab by completing certain tasks or winning games. Write a good slogan—something catchy that describes your invention—and your lab will earn its first bonus point!

Begin Lab Matching Game

Note: You may want to prearrange the distribution of slips in order to ensure that the labs include a good mix of students with complementary skills.

- To make this activity easier and quicker, you can provide students with the lab invention names before they try to match up. Do this by placing simple prewritten namecards for the labs around the room, or by listing the names of the labs on the board.
- The radio and clock groups both include an extra clue, for students 25 and 26. If your class has more than twenty-six students, two students can share a clue. If your class has fewer than twenty-five students, give a few students two clues.
- Once a lab is complete, confirm that the students have found the correct group. Have them create their lab name card, and give each member of the lab a sticker for their *Inventor's Notebook*, plus one for the name card.
- Award one bonus point to each lab with a catchy and informative slogan. Record bonus points on the scoreboard.



Check for Understanding

Circulate to each group and confirm that students have found the correct inventions for their clues. If students have not correctly identified their inventions, point out key details in the clues and ask them to consider which other inventions these could be describing.



ENGLISH
LANGUAGE
LEARNERS

Speaking
and Listening
Exchanging
Information/ideas

Beginning

Suggest conversation prompts for students, such as "Which invention do you think you have?" They should tell partners,

"I think my clue may refer to the ____."

Intermediate

Suggest conversation prompts for students, such as: "I think my invention might be _____. Do you think we have the same invention? How do you know?"

Advanced/ Advanced High

Share the important details of your sentences and discuss which inventions your clues could be describing.

ELPS 1.B; ELPS 1.E;

ELPS 2.C; ELPS 3.D

**ENGLISH
LANGUAGE
LEARNERS**



**Speaking and Listening
Exchanging
Information/Ideas**

Beginning

Ask: Is the chair an invention? Is the pencil an invention? Is a rock an invention? Why is the rock not an invention? (Things found in nature are not inventions. We didn't make them. They were never new or different.)

Intermediate

Ask: Can you tell me one of your favorite inventions? What was it created to do?

**Advanced/
Advanced High**

Ask: What is the difference between an invention and things found in nature?

**ELPS 1.A; ELPS 1.F;
ELPS 3.D**

DEFINE “INVENTION” (10 MIN.)

Describe the importance of a common understanding of *invention*



You know, while you were working on your lab slogans, I was thinking—so much confusion in the world, and on television, would be avoided if everyone were to define their terms carefully. Last season we didn't define our terms. It was, like so much of last season, bad news. Combine a lab that thinks an invention must include electricity (not true!), a lab that thinks anything you can throw is an invention (not true—and where did they get that idea?), and a boatload of jellyfish and pudding—the results weren't pretty.



So the network has imposed a new rule for *Eureka!* You can't be an inventor if you can't explain what an invention is. What are some of the things that come to mind when I say *invention*?



Write “*invention*” on the board and facilitate a discussion about the definition.

- Answers will vary, but some ideas to encourage are: something new, something that does something, something you build, something that can help humans improve their lives.
- Once you have taken some ideas of what inventions can be generally, ask for more specific suggestions.
 - Make sure to clarify that things found in nature are not inventions. You may also want to discuss whether or not art is an invention.



Write: “An invention is an object or process that someone MAKES that is NEW and DIFFERENT and was created to DO SOMETHING.”

- Agree upon the definition on the board.
- Ask students for examples of inventions.
 - Examples could include wheel, pencil, television.
- Clarify the difference between inventions and objects found in nature.
 - Things in nature are not inventions because we didn't make them, and they were never new or different.

Wrap-up discussion



There. We have a fantastic definition of *invention* and you can use it—we're already ahead of last season.

LEARN FROM LAST SEASON: BAD COLLABORATION (10 MIN.)

Introduce skill: collaboration



And now, time to start work on the first wedge in the Wheel of Invention! Let's practice . . . COLLABORATION!

- Ask students what they think the word *collaboration* means. Answers will vary but might include: working together, everyone contributing, sharing ideas, helping teammates.

Jacques is passionate about collaboration.



Judge Jacques Cousteau is particularly maniacal about collaboration, so if you don't want to end up on his bad side, you'll take this skill seriously.

Support

Share the following sample sentence to help students figure out the definition of *collaboration*: My brother and I learned that our chores go more quickly when we practice collaboration.



Play audio, read aloud, or invite student to read Judges' Note 1B.

Judges' Note 1B

Challenge

Remind students that Jacques Cousteau was a famous oceanographer, and ask them how the language in his note reflects this.



A Note from Jacques Cousteau:

Bonjour, tadpoles! Inventing—it is like a boat trip. Lab mates are at once alone and together amid the hostile seas. (Alas, this season they will not let me put you on a boat amid hostile seas to demonstrate this. I swear to you, the thing with the jellyfish was not something we could have prevented! And no one, including the jellyfish, suffered any permanent damage! The network, it spoils all my fun.)

But I digress. Here is the thing: you must work together in this Quest. You must listen to one another. You must let everyone have a turn. You do not know—ze quiet one in ze corner could save your life. I mean . . . fix your invention. Oui!

It is not the easiest thing, collaboration. So today, we practice! You see the collaboration wedge? I am not giving that away for freebies!

Sincerely,

Jacques Cousteau



Write students' ideas about collaboration on the board.

- Begin by asking students what they think are good rules for collaboration. Make two columns on the board: "Things TO do when collaborating" and "Things NOT to do when collaborating."
- Once students have shared their ideas for two to three minutes, have them take out their *Inventor's Notebooks*, open to Activity Page 1.1, and go over Jacques's Rules for Collaboration.
- If contestants came up with any great additions (or you have any that make your classroom run smoothly), then add them to the list!

Activity Page 1.1





Reading Supporting Opinions

Beginning

On page 4, when Alex asked, "What's for lunch?" was this a good question?

Why or why not?

Intermediate

On page 3, what is happening in the conversation involving Sam, Laura, and Tyler? Which of Jacques's rules are they not following?

Advanced/

Advanced High

On page 4, can you find an example of a person's NOT following the rules of collaboration?

ELPS 4.G;
ELPS 4.K



If you haven't already, list Jacques's Rules for Collaboration on the board.

- Compare the behavior of last season's contestants to the rules—where did they fail to follow the rules? How could they have done better?

COLLABORATION BUILDING CHALLENGE (40 MIN.)

Introduction

Jacques's Challenge



Now that you've shown you've learned his rules, Jacques has a new challenge for you!



Play audio, read aloud, or invite student to read Judges' Note 1C.



Judge's Note 1C

A Note from Jacques Cousteau:

It is all well and good to talk the collaboration talk, but what about when you must walk the collaboration walk, to put these rules into practice yourself? This is the big one, my wiggly fishies. If you succeed in this challenge—and by succeed, I mean work together thoughtfully and well, and then write about how you did it—you will earn your first wedge to get your Wheel of Invention rolling.

Sincerely,

Jacques Cousteau

Read “Jacques’s Collaboration Building Challenge” in *Inventor’s Notebook*.



So here we are—the first wedge challenge. Let’s see what we have.

Open your *Inventor’s Notebooks* to “Jacques’s Collaboration Building Challenge” (Activity 1.2).

- Have students read the challenge aloud.

Clarify challenge constraints



Before we go on, does anyone have any questions about the inventing challenge?

Whatever you invent must allow you, without touching the table tennis ball, to:

1. Pick up the unaltered table tennis ball from the table.
2. Pass it around among the members of your group so that each member is in control of the ball for three seconds.
3. Deposit it into the basket.

Activity Page 1.2



Clarify building-manager role and wedge challenge



Does anyone have any questions about the role of building manager, or anything else about collaboration? I’ll be assigning building managers for this challenge in a minute—this is a role that I will assign every episode, so if you aren’t building manager today, you’ll have a chance on another episode.



As Jacques told us, completing this challenge is required for your collaboration wedge. I’ll give you five minutes to brainstorm alone, and then it’s lab-work time. Later you’ll be writing about how your lab worked together, so pay attention to the good work of your lab mates as you build! The most important part of this challenge is how you work together. BUT! If you succeed in making a working invention, you will also earn a bonus point.

ACTIVITY 1.2

Name: _____

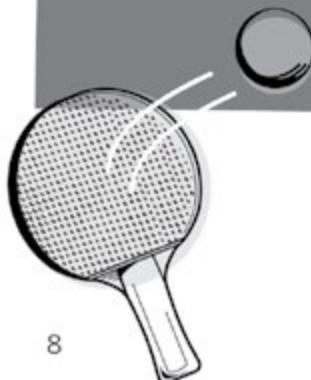
Date: _____

! JACQUES'S COLLABORATION BUILDING CHALLENGE

Devise a way to pick up a standard table tennis ball from the table, pass it around among the group (each lab member must be in control of it for three seconds), and then put it in the basket.

- Do not touch it with your hands.
That includes covering your hands with any kind of glove-like item!
- Do not drop it.
- You may use up to two pencils, ten pieces of tissue, and a box of rubber bands.

You may use trial and error and test your experiment or components of your experiment as you build. Keep your table tennis ball under control at all times!!



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Eureka! | Inventor's Notebook

Build

Building manager leads planning



OK, contestants, it's time to get into groups and build! Share your brainstorming, and let the building manager lead a conversation about which design or combination of designs you'll use. While you do that, I'll distribute the building materials. As soon as you've decided on your design, you can start building. Remember, the design you decide on can be revised as you build, but you have only about ten minutes to build, so budget your time wisely.

- Depending on how quickly students select a design, allow groups to talk, build, and experiment for fifteen minutes, give or take.



Check for Understanding

Circulate and observe the small group conversations, ensuring that the building manager is taking on their responsibilities, and that all students are contributing to the discussion. If necessary, remind students about the rules of collaboration and suggest adjustments to enhance collaboration.

Demonstrations and Debriefing

- Groups demonstrate their inventions. If they succeed, they receive a bonus point.
- If any groups don't succeed, remind students that failure is so important to invention that it is the final wedge they will earn in Episode 7.
- If the inventions vary in design, observe how there are many ways to solve a problem, something you'll talk about more in Episode 5.
- Ask students to share "with the audience at home".
 1. What went well?
 2. What was the most enjoyable part of the activity?
 3. What are you most proud of? What was hardest?



ENGLISH
LANGUAGE
LEARNERS

Speaking and Listening
Exchanging
Information/Ideas

Beginning

Prompt student conversation: Whose turn is it to talk? What is your idea? Does anyone have a question for ___? Can someone offer a constructive suggestion?

Intermediate

Prompt student conversation: Has everyone shared their ideas? What questions do we have? Which idea are we going to try?

Advanced/ Advanced High

Ensure all students are participating: Who has not had a chance to speak? ___, can you share your idea with the group? ___, do you have any suggestions for ___?

**ELPS 2.C; ELPS 3.B;
ELPS 3.E**

CLOSING: "INTROSPECTIVE INVENTORS" (5 MIN.)

Contestant interviews/“Introspective Inventors”



Thank you very much—I know that Jacques loves getting mail, so he'll be thrilled with all these letters! If all goes well, there will be wedges tomorrow!



Here on *Eureka!* we like to close the program with a segment we call “Introspective Inventors.” (*Introspective* means “looking within yourself.”) The viewers at home like to know what's going on inside our contestants' minds, so I'll invite one or two contestants up each episode for a little interview about what they did and what they learned.

- Invite a student to come to the front of the room and “face the camera, for the audience at home.”
- Ask two or three questions, which might include:
 1. Can you think of anything particularly clever or helpful that a lab mate did during the episode?
 2. What was a challenging moment, and how did you address it?
 3. What are you looking forward to?
 4. What is a lesson you'll take away from today and apply to the rest of the Quest?
- Collect *Inventor's Notebooks*.