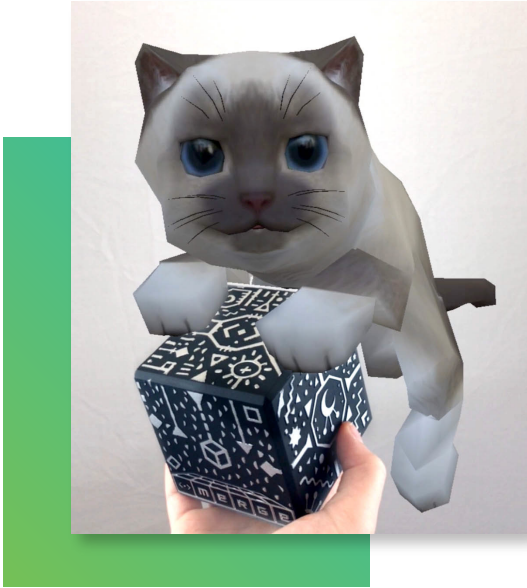


# Adopt a Kitten

Created by Mary Ledford



Difficulty **1**



40 minutes



small group

**Tags:** English, Language Arts

## App/Tech Tools

AR Kitten app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

## Materials



Pre-writing copy paper ([here](#)), Final copy paper, Printer, Humane Society or local animal shelter adoption page link or paper copy

### Learning Objective

Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.

## Activity

1. Use the Humane Society link ([click here](#)) or paper copy (of any local animal shelter) as an example on how to write an advertisement for adopting a kitten. Allow students to read several of the descriptions of a variety of cats and make a word bank on the brainstorming sheet.
2. Open the AR Kitten app and allow students to select the kitten of their choice; selecting color and name.
3. Students can practice manipulating the MERGE Cube and watching their kitten move and turn in a variety of ways.

4. By holding down the power button and the home button on the iOS device, students should take a series of three different screenshots with their kitten in various poses and backgrounds.
5. Using the pre-writing paper, students create an advertisement persuading readers to adopt their kitten.
6. **Optional:** Show video links.  Video 1  Video 2
7. When students have finished creating the prewriting outline, they can print their pictures and attach the photographs to their final copy.

## Extension Idea

- By using an audio app, such as Facetalk or Chatterpics, students can upload the screenshots and read their writings.



# Dig a 24 Challenge

Created by Heidi Samuelson



Difficulty **2**

15-30 minutes

1 to 1/pairs

**Tags:** Math, Number Sense, Math Tasks, Puzzles

**App/Tech Tools** DIG app, MERGE Cube, MERGE Headset (optional), device (phone/tablet), App to create videos (Clips, DoInk, PicCollageEDU, iMovie, InShot, etc.)

**Materials** Paper, pencils, whiteboards (optional), iPad holder (optional), background materials like greenscreen (optional).

## Learning Objectives

- Use 4 digits to create a solution of 24 using addition, subtraction, multiplication, and/or division.
- Be able to explain how to solve their 4 numbers for 24.
- Create a finished product to share their challenge and solution with a global audience.

## Activity

1. Choose 4 numbers to use in the challenge.
2. Find at least one solution for 24 with the numbers using addition, subtraction, division, and/or multiplication.
3. Use the DIG! App and the Merge cube to design the 4 numbers for the challenge on the cube.
4. Create a background area to video the 4 numbers on the cube.

5. Use the video option in the app to video the four numbers to add to the final project.
6. Combine the video of the 4 numbers with an introduction to the challenge.
7. Share the finished product (Seesaw, Twitter, Instagram, etc.) using the hashtag #gmttc24 or #24challenge.

## Suggested Questions

- What are the factors of 24?
- What are addends that equal the sum of 24?
- Can you use the numbers in the challenge more than one time? (NO.)
- Can you combine the numbers to make larger 2-digit numbers without using an operation like addition or multiplication? (NO.)
- Do you have to use all of the digits in the challenge? (YES.)
- How can you combine the 4 numbers to create a solution of 24?

## Extension Idea

- Join the Global Math Task Twitter Challenge for 24 to share created videos with classrooms around the world.



# Digging for Dinosaurs

Grade

3

Created by Fittipaldo/Jackovic



Difficulty **1**



30 minutes



small group

**Tags:** Science, History, Archeology, Zoology, Paleontology

## App/Tech Tools

Dino Digger app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

## Materials

Venn diagram, Dinosaur information cards (see activity for link), Paper and pencil, Interactive notebook

## Learning Objective

Students will be able to identify dinosaur characteristics. Students will be able to compare and contrast two dinosaurs discovered in their digging.

\*Paleontologists study fossils and other organisms that lived long ago.

## Activity

1. Discuss characteristics of dinosaurs – Carnivore, herbivore, horns, teeth, legs.
2. Review what a paleontologist studies. Tell students they will become a paleontologist for a day and their job is to discover dinosaur fossils and identify the dinosaur based on the fossils left behind.
3. Put students in groups of two.
4. Using the MERGE Cube and device, open the Dino Digger App.

5. Select a tool and tap on the screen to begin digging.
6. Students will need to complete at least 2 Dino digs in order to compare and contrast the dinosaurs. Work together to record fossil discoveries and create a Venn diagram to list the unique and shared features of the two dinosaurs.
7. Share what you learned from your Venn diagram with the class.



# Exploring 3D Models

Created by Heidi Samuelson



Difficulty **1**



30 minutes



small group

**Tags:** Science, Astronomy

## App/Tech Tools

Galactic Explorer app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

## Materials

Vocabulary anchor chart (optional)

### Learning Objective

Support the development and exploration of the different types of models students can build in an effort to test solutions to future problems. Gain first hand experience of 3D models using Merge Cube and Galactic Explorer app.

**Suggested Vocabulary:** Model, Two-dimensional model, Three-dimensional model, Scale-model, Computer model

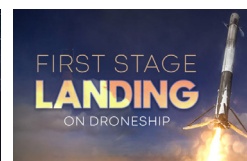
## Activity

1. Discuss how scientist use models to help them create and test a solution to an identified problem.
2. Introduce and explore the different types of models that scientists can create in order to help them test a solution to a problem.
3. Compare 2D models to 3D models: Examine and discuss a diagram of the solar system. Determine the two dimensions used in this model to help you obtain information about the real thing.

4. Interact with Merge Cube and Galactic Explorer App to explore the difference in a three dimensional model.
5. Determine if the Galactic Explorer app is just a 3D model or if it could also be considered another type of model.

## Suggested Questions

- How is this model different from other models?
- How might this be useful to a scientist?
- What knowledge can you gain from a 3D model that cannot be gained from other types of models?



# Hangry Herb's Habitat

Grade

4

Created by Heidi Samuelson



Difficulty **1**



20 minutes



small group

**Tags:** Science, Botany, Plant Science

**App/Tech Tools**

Hangry Herb app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

**Materials**

## Learning Objective

After exploring Hungry Herb, students will determine if this is a plant that uses only photosynthesis to get the materials it needs for growth.

**Suggested Vocabulary:** Photosynthesis, Herbivore, Carnivore, Omnivore, Carbon Dioxide, Oxygen

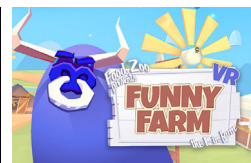
## Activity

1. **Prep:** Before using Hangry Herb, students should explore more information and research how plants get the materials they need to grow using books, charts, and website resources.
2. After researching the concept of photosynthesis and how plants get what they need to grow, students will explore the Hangry Herb app and determine similarities and differences between a real life plant and Hangry Herb. As they interact with Hangry Herb, students will document their observations and answer the following questions:

- What is Hangry Herb's response when you push the water button too many times in a row? How is this similar to a real plant?
- Which water delivery system seems to bother Hangry Herb? Which delivery system does it seem to enjoy the most?
- How is this similar to real life plants? What naturally occurring weather would be most harmful to real plants?
- What is Hangry Herb's response when you put the meat button too many times in a row? How is this similar to a real plant?
- What is Hangry Herb's response each time it is fed?
- What kind of gas could this be similar to in a real life plant?
- What is the dice button symbolizing for a real plant?

## Extension Ideas

- **Optional:** Take a photo of Hangry Herb. Add it to your Seesaw Journal with a writing response to this question: "How is Hangry Herb similar to a real plant? How is it different?"
- After exploring Hangry Herb, students will determine if this is a plant that uses only photosynthesis to get the materials it needs for growth.



# Lights, Camera, Action

Grades

4-6

Created by Mary Ledford



Difficulty **2**



45 minutes



1 to 1

**Tags:** Literacy, English, Language Arts, Creative Writing

**App/Tech Tools**

57° North app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

**Materials**

Writer's notebook or paper and pencil

## Learning Objective

Writers will use knowledge of story structure (Story Arc) to create realistic fiction stories that include character, setting, problem, and solution.

## Activity

1. Turn the sound off on the device to eliminate the narrator's voice.
2. Begin by engaging students in conversations about their favorite action adventure books and movies; focusing on the realistic aspects of each.
3. **Ask:** What was it that made them so memorable?
4. **Review:** The best stories and movies bring the audience in by setting the scene, creating real characters people can identify with and a gripping moment that leaves the audience on the edge of their seat wondering what will happen next.

5. **Share assignment:** Today you will be creating an action adventure piece with the help of the Merge Cube. When we open our app, we will all start at the place but our stories will look different based on the choices we make by turning the Cubes.
6. Let's look at our first scene together....What are some of the words you would use to describe the picture you are seeing? Let's take a moment and write in our writer's notebook a few sentences to set the stage of your story for your audience. When you are ready, turn the cube the direction the arrow is pointing. (Give students 2 to 3 minutes to create the setting)
7. You should see two characters appear. Stop and think: Who are these characters? What are they doing in the boat during the storm? How did they get there? Let's stop and write about our characters; maybe share who they are and why they are out during a storm. (Give several minutes for students to write)
8. This is where you now begin to take your writing into your own hands, creating a story based on your choices of how you turn your Cube. No two stories will be alike. With each turn, a new scene will appear to help direct your story but not everyone will be making the same choices. Sometimes there will be descriptions that will help you decide which way to turn the cube that would be best for you and the adventure you are writing.
9. As you turn your Cube, stop and write. Here are some tips to help you create a gripping action story:
  - Use transition words to carry you from scene to scene.
  - Use details and descriptive words to help your audience understand what is happening. This will help your reader picture the story in their head.
  - Share dialogue your characters may be thinking or saying
10. When you are ready, create an ending that will leave your audience satisfied. This may take you to the end of the adventure on the cube or you may end your story sooner.

## Extension Ideas

- This app has the ability to record the pictures/scene the students chose. It may be helpful for students to record and to be able to look back on day 2 when trying to revise or edit their writing. A second alternative would be to screenshot each step. Screenshots would provide students with pictures to accompany their final writing piece.
- For some students the words that accompany some of the choices students will have to make may be helpful; for others it may be a distraction because it doesn't match their storyline. It is okay to use the words as a guide for struggling writers and allow others to ignore it when writing.

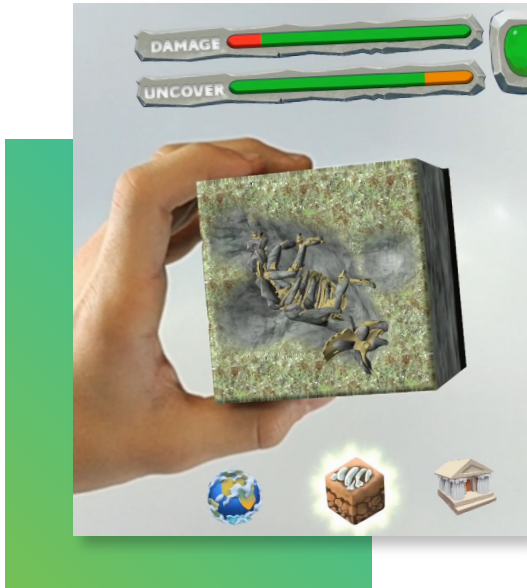
- Depending on the age of the students, some students may go through multiple scenes and not include them in their stories. The app provides many different scenarios where students can still develop a lengthy realistic piece without using every single scene.



# The Magic Tree House

Grade  
3

Created by Angela Barnett



Difficulty **2**

20 minutes

small group

**Tags:** English, Language Arts, Creative Writing

## App/Tech Tools

Dino Digger app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

## Materials

Paper/notebook, Anchor chart paper, Magic Tree House #1: Dinosaurs Before Dark by Mary Pope Osborne, MTH Fact Tracker: Dinosaurs (non-fiction companion) by Wil OSborne & Mary Pope Osborne, District curriculum

## Learning Objectives

- Students use graphical displays (table, chart, graph) to organize data about:
  - fossils of animal
  - existence of modern counterparts to the fossilized; animals and information where they currently live.
- Students identify and describe relationships in the data, including:
  - that some fossils represent organisms that lived long ago and their modern counterparts
  - the relationships between the fossils of organisms and the environments in which they lived

## Activity

1. Before the start of this Book Club read, teacher will hand out a piece of paper to each student to create a graphic organizer.
2. Fold the paper into fourths (four boxes).

3. Label each box using: "What I Know," "What I Want to Know," "What I Learned," and Academic Language or Vocabulary.
4. Start with "What I Know" and have students make a bulleted list of words, ideas, thoughts of what they know about dinosaurs.
5. Students share out what they know (students can put a star next to ideas that match their own).
6. Next students create at least one question and write it in "What I Want to Know".
7. Read Chapters 1 -World of Dinosaurs and 2 -Fossils from Fact Tracker.
8. Make Anchor Charts with key details and vocabulary. For example: Pangaea, Continent, Dinosaur descriptors (Jack, one of the main characters from MTH keeps notes).
9. Have students share the question they have written down then discuss in pairs any other questions they may have -Students can add questions to "What I Want to Know".
10. Add Academic Language/Vocabulary to the graphic organizer from each chapter if applicable (i.e. - Paleontologist, fossil, Mesozoic Era).
11. If students have access to Google Classroom share [this](#) Google Arts and Culture Link titled Dinosaur. Here students can view fossils and read more about dinosaurs. - Students will use a MERGE Cube and Dino Digger app to explore fossils.
12. Students will create a graphical display to organize the information they acquire from Dino Digger; what fossils they uncover and what modern-day habitat matches their findings. (Chapters 4-6 of Fact Tracker: herbivores, carnivores, flying creatures, sea monsters) [Google Doc: What Habitat Was Here?](#)
13. Students can research what modern counterpart(s) match the dinosaurs that were discovered in Dino Digger.
14. Students can do a compare and contrast of habitats of the dinosaurs they discovered and the modern counterparts
15. What do paleontologists learn from fossils?
16. Depending on curriculum, teacher can create an assessment. Presentations can be done through a video platform.

# Suggested Questions

- What are dinosaurs?
- What do dinosaurs look like?
- Are dinosaurs still alive?
- Do you know the name of any dinosaurs?

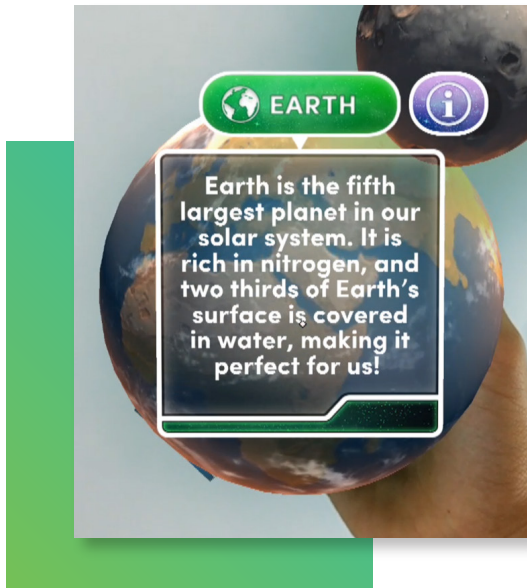


# Mission from NASA

Created by Brenda Mashiotta

Grade

5



Difficulty **1**



45 minutes



small group

**Tags:** Science, Astronomy

## App/Tech Tools

Galactic Explorer app, MERGE Cube, MERGE Headset (optional), device (phones/tablet)

## Materials

Planet card checklist posted on screen or handout one per group, Paper and markers/colored pencils/crayons

## Learning Objective

The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night and different positions of the sun, moon, and stars at different times of the day, month, and year.

**Suggested Vocabulary:** Inner planets, Outer planets, Galaxy, Solar system, Characteristics, Comparison

# Activity

1. **(Optional)** You can set the stage for the activity by saying, "This is Commander Blast from NASA. We have a mission for your class if they choose to accept it. We want to explore whether people can live on other planets and we need your help."

We need your students to investigate the 7 other planets in our solar system (not Earth) using Galactic Explorer for Merge Cube App in your classroom. You must create 7 informational planet cards for our astronauts to investigate

so they can decide what planet would be best to live on! Remember, you do not have to create a planet card for Earth. Your teacher will give you further details on what must be included on your planet cards if you choose to accept this mission! Good luck!”

Say: “Okay class – are you ready to accept this mission? (hopefully class says yes)  
Okay, we have our mission, let’s get started!”

2. Pass out Merge Cubes to each student or small group.
3. Hand out Merge Headsets (if available) equipped with phones to each student or small group.
4. Have students activate the Galactic Explorer for Merge Cube App.
5. Hand out paper, coloring supplies, and planet card checklist.
6. Use the special Headsets (or say iPads if not using goggles) and information you learn on the Galactic Explorer for Merge Cube App and create informational planet cards for the astronauts to investigate. You will create 7 cards (Mercury, Venus, Mars, Jupiter, Saturn, Uranus, and Neptune). Remember the astronauts are looking for a new planet where people can live.
7. Each planet card must have (post on large screen or handout out copy to each group): Name of planet, picture of planet (use correct coloring and characteristics), comparison of size of planet to size of Earth, location of planet in solar system, and at least 3 facts about the planet you learn from the Galactic Explorer for MERGE Cube App.
8. Students can create the 7 cards individually, with a partner, or as a small group. Start the class countdown. When you get to 0, students can put on VR goggles or begin using app on their iPads. Students will investigate the planets required to complete their planet informational cards. Allow students plenty of time to investigate each planet using the MERGE Cube and Galactic Explorer for MERGE Cube App to create their informational planet cards.
9. When students have finished creating their 7 informational planet cards – give them time to share their cards with each other. Have them share with the class or small group which planet would be best for the astronauts to live on and explain why.

## Suggested Questions

- Where is Earth located in the solar system – describe in connection with each planet you made an informational card for?

- What do the inner planets have in common based on your visual observation using the MERGE Cube?
- What do the outer planets have in common based on your visual observation using the MERGE Cube?
- What differences did you observe when viewing the inner and outer planets using the MERGE Cube?
- How does a planet's position from the sun affect the planet?
- Why did you not create an informational card for Pluto?
- **BIG DISCUSSION QUESTION:** Do you feel the information you learned about each planet using the MERGE Cube was enough information to decide if people could live on that planet? If yes – why? If no – what other information would an astronaut need to know about the planet to decide if it was a good planet to live on or not?

## Extension Ideas

- Have students create videos where they pick one of their planet informational cards to share with Commander Blast from NASA to share with the astronauts.
- Have students write a letter and include one of their planet informational cards to share with Commander Blast from NASA to share with the astronauts.



# Moment AR Conversation Starters

Created by Joni Ehm

Grades  
**6-12**



Difficulty **1**

 20 minutes

 small groups

**Tags:** Spanish, Foreign language, FLL, Conversation, Emotions, Vocabulary

**App/Tech Tools**

Moment AR app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

**Materials**

[Communication Rubric](#) for peer feedback (from Spanishplans.org)

**Learning Objectives**

Students will use the Moment AR app to communicate in the target language to apply vocabulary, grammar and context learned in class.

## Activity

### DAY 1

1. Choose a partner.
2. One person launch the Moment AR app and choose "Emotions" on the home page. Position the Merge Cube in front of your device.
3. Choose a color (in Spanish): blue, green, purple, red, yellow, grey.
4. Your partner holding the Merge Cube will go to the color you selected and describe the emotion of the character featured in Spanish. You will try to guess the emotion.

5. Get the cube from your partner and repeat the process.
6. When the time is up, fill out the communication rubric for yourself and partner digitally.  
Submit to Google Classroom.

## DAY 2

1. Repeat the process above, except this time instead of using the “Emotions” tab on the main screen, select “Language”. These scenes focus more on motion and activity and will require the use of more verbs in the target language.

## Extension Idea

- Choose one of the scenes to act out for the class.

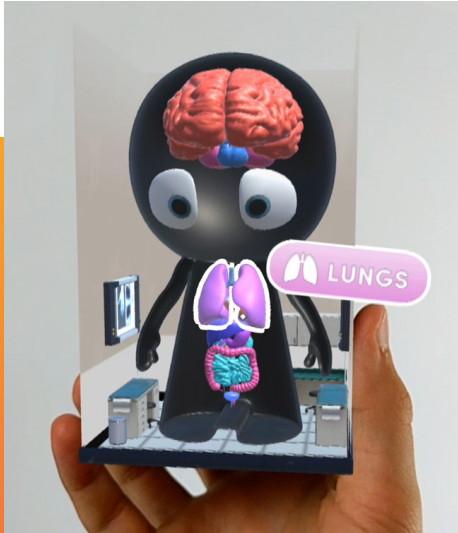


# Mr. Body Bingo

Created by Mary Ledford

Grades

3-6



Difficulty **1**



40 minutes



small group

**Tags:** Science, Anatomy, Biology

## App/Tech Tools

Mr. Body app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

## Materials

Timer, Bingo cards (see below for link), Definition cards (see below for link), Markers to cover the squares (10-25 per group)

## Learning Objective

- Understand how structures and systems of organisms (to include the human body) perform functions necessary for life.
- Draw on information from print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

## Activity

1. Put students in groups of 4 to 5 and allow students to explore Mr. Body and the internal organs. (10 mins.) Students should use this time to familiarize themselves with definitions or general location of internal organs.
2. Pass out Bingo cards (click [here](#) to print); one per group.

3. Explain how the activity is played:

- Each group is to work together to cover squares in a row, horizontal, vertical or diagonal.
  - After a definition card is read, a timer will be set for 15 seconds to locate and match the definition with the correct organ.
  - Once matched, students use a marker to cover the square.
4. The teacher selects one definition card (click [here](#) to print) and reads the definition and starts the timer. Students search the cube to match the definition with the correct organ and cover the square with a marker.
5. The activity is repeated until one or more groups have a Bingo.

## Extension Idea

- Give students a blank Bingo sheet and a definition sheet. Students cut up the definitions (without the answers) and glue them on a blank Bingo sheet with squares. The teacher then calls out the organ and students must match the definition.



# Pronombres Personales

Grades

6-12

Created by Joni Ehm

\*Requires accounts with CoSpaces Edu Pro



Difficulty 3



1 - 2 hours



1 to 1

**Tags:** Spanish, Foreign Language, Pronouns, FLL

## App/Tech Tools

CoSpaces Edu Pro accounts, MERGE Cube, MERGE Headset (optional), device (phone/tablet), desktop computer

## Materials

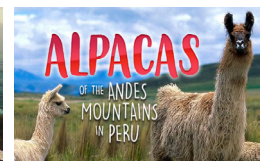
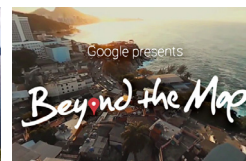
### Learning Objectives

- Standard 1.2: Students understand and interpret written and spoken language on a variety of topics.
- Students will demonstrate understanding of personal pronouns in Spanish by visually representing them using photos and/or videos.

## Activity

1. View the Example Space [here](#).
2. Remix the Space.
3. Upload your own photos to match the personal pronouns.
4. Add example sentences for each pronoun.

5. Share your new Space with a partner and give each other feedback.
6. Make changes based on feedback.
7. Send link to teacher and use the embed code to post on your digital portfolio.



# Rocks and Minerals Hands On Assessment

Created by Brenda Mashiotta

Grades  
**4-5**



Difficulty **2**

 30 minutes

 small group

**Tags:** Earth Science, Rocks and Minerals

**App/Tech Tools** D!G app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

**Materials** [Grand Canyon VR Video](#) (optional), Laptop or paper/pencil to record explanation (or students can do this verbally within their small group)

## Learning Objectives

- Students will create a rock (igneous, metamorphic, or sedimentary) using the Merge Cube and Dig! app that visualizes 3 characteristics of the rock group that is written on the card at the spot they sit down by at station table.
- Students will be able to explain the characteristics of rock they created.

**Suggested Vocabulary:** igneous, sedimentary, metamorphic, weathering, pressure, cementing, fossils, magma, minerals, rock cycle.

## Activity

1. Sit down at a seat at the station table that has a device (iPad), Merge Cube, a laptop (for response or research), and a card with a rock group written on it: igneous, sedimentary, or metamorphic.
2. Students will then create their own rock that would fall into the rock category that is written on their card.
3. They will create their rock using the Dig! app and Merge Cube.

4. Students need to have at least 3 characteristics of the rock group their created rock falls into demonstrated visually in their rock they create on the Merge Cube (using the Dig! app). **For example:** Student creates a rock that would fall into the sedimentary rock group. The rock they create on the Dig! app would visually show 3 characteristics of a sedimentary rock: has fossils, variety of color, and layers.
5. When the student's rock is complete on the Merge Cube/Dig! app (with at least 3 visible characteristics of a particular rock group) – the student will then present their rock to their group. Students need to verbally state what rock group their rock belongs to and explain the rock group's characteristics they have visually represented on their rock on the Merge Cube.

## Suggested Questions

- What are characteristics of an igneous rock?
- What are characteristics of a sedimentary rock?
- What are characteristics of a metamorphic rock?
- What type of rock did you create using the Dig! app?
- What characteristics did you make visible on your Dig! app?

## Extension Ideas

**Ideas to make this activity even more ROCKin':**

1. When students are split into groups for the stations – have each group come up with a rock band name for each group. (example: the 'Mega Metamorphic Machine Heads' or the 'Singing Sedimentary Sensation")
2. For the first day of the hands on stations – have the students dress as rock and roll stars! You too!

**Second Merge Station (optional if you don't have Merge goggles)**

1. Have students investigate rocks that are found in the Grand Canyon using [this link](#).
2. Then using the Merge Goggles and a cell phone – have the student virtually tour the Grand Canyon [here](#).



# Scientists in Training

Created by Amy Cramer



Difficulty **1**

20 minutes

small group

**Tags:** Science, Botany

**App/Tech Tools** Hangry Herb app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

**Materials** Paper and pencils

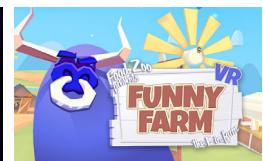
## Learning Objective

Scientists go through a set of steps known as the scientific method to explore the natural world around them. Those steps include observing and asking questions, hypothesizing, experimenting, recording data/results, drawing conclusions, and communicating the results with others.

## Activity

1. Pass out MERGE Cubes to each student or small group with compatible phones or tablets.
2. (Optional) Hand out MERGE Goggles equipped with phones to each student or small group.
3. Have students activate the “Hangry Herb” for MERGE Cube App.
4. Hand out paper and pencils to record data.

5. Say: "Today you are scientists! Use the chromebook and information you observed on the "Hangry Herb" MERGE Cube App to form a hypothesis, and then record observations and data about your "Hangry Herb" plant. You need to create a table, chart, or graph, using the data collected. Then, draw conclusions based on your data. Remember, a good scientist always communicates his or her results with others in the scientific community, so be prepared to share your data and conclusions."



# Shipwrecked

Created by Amy Cramer

Grade

3



Difficulty **2**



35 minutes



small group

**Tags:** Science, Creative Writing, Problem Solving

**App/Tech Tools**

57° North app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

**Materials**

Building materials (recycled items and/or k'nex), Paper and pencils

**Learning Objective**

Engineers design solutions to problems. All people can benefit from going through the steps of the design process to solve their problems. Problem solvers first define the problem. Then, they brainstorm ideas, come up with a plan, and draw detailed sketches. They use their ideas and plans to create a model/prototype. To see if their model will work, they test it. If something goes wrong or does not work during the test, they redesign.

## Activity

1. Pass out MERGE Cubes to each student or small group.
2. Hand out MERGE VR Goggles equipped with phones or iPads to each student or small group.
3. Have students activate the "57° North" for MERGE Cube App.
4. Hand out paper and pencils to brainstorm, sketch, and plan the designs.

5. When needed, hand out recycled materials and/or k'nex to build the models.
6. Remind students that, as discussed in the past, they are all natural born, problem-solvers, and that whether they realize it or not, they naturally go through the stages of the design process each and every day to solve problems of life. Instruct them with the following steps:
  - Today you will be responsible for saving the lives of two children who encounter grave danger in a narrative presented in the 57° North app.
  - All Caleb and Sasha wanted to do was to escape the boredom of an Alaskan vacation with their family members. As the two cousins embark on a journey in the waters between the chain of islands, they encounter a storm that causes their boat to wreck, leaving them stranded on an island.
  - Use the Cube to view the first three chapters of the narrative.
  - You will be given choices along the way and should turn the cube to make those decisions as you begin to take part in the treacherous journey along with Caleb and Sasha.
7. Students view the first three chapters.
  - Not only do you need to escape the island to return to your family and life, but you find out that your life is in more danger than ever because there is a volcanic eruption likely to occur on the island.
  - You have no choice but to escape the island! Pieces of your boat are shipwrecked on the shore. Also, you have materials from Station 57 as well as any natural materials found on the land.
  - Use the materials available to you on the island to design an “escape” solution to flee the island of possible death!
8. Pass out the design process sheet/packet. As a class, discuss the defined problem, “How can I build a device/boat to escape the island?”
9. Students should brainstorm possible solutions in the space provided on the page.
10. Then, they should draw detailed sketches of their “escape solution,” and they should write a step-by-step plan of how to construct a model of their design solution, using recycled materials available to them as well as the classroom set of k'nex.
11. You will check the brainstorming to ascertain that the learners are on the right track.

12. Students will create a model/prototype of their escape device once the teacher has checked their brainstorming/plan.
13. Learners will have an opportunity to test their solution in a large bin of water.
14. If students encounter problems, they will redesign their escape devices/boats, fixing the problems along the way.
15. Students will present their models to the class.
16. Students will answer a series of reflection questions including the following:
  - a. What went well when building your model?
  - b. What did not go well when building your model?
  - c. What changes did you have to make to your plan to successfully construct a model?
  - d. What changes would you make if you had the chance to redesign and rebuild a model?
17. Students will be graded on the process, not on the end result! If they go through the steps of the engineering design process, they will be awarded the corresponding points.



# Team Challenge

Created by Amy Delaney



Difficulty **1**



30 minutes



small group

**Tags:** Group Development, Literacy, Problem Solving

## App/Tech Tools

Defused! app, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

## Materials

Anecdotal note grid or other way to take notes on student observations, 1 Cube stand per group

## Learning Objective

To observe and make notes on students as they work together in groups. You are focusing on those that fall into personality types you see in the class: • Leader or take over • Quiet or talker • Misunderstood or lost • Idea giver • Comedian • Listener • Etc.

## Activity

1. \*Explain your expectations using technology if you have not already done so.
2. Introduce students to the MERGE Cube and how to properly utilize it with the device and stand. Make sure to point out that the MERGE Cube is augmented reality (interaction with the real world that is “augmented” by technology).

Introduction video:




Video 1

3. Randomly group students based upon the number of devices you have available.

4. Explain to the students that they will be working together to solve the puzzle of diffusing the Cube using the Defused! App and that you expect everyone to participate within their groups.
5. Start a list of what students think “leadership”, “teamwork” and “school family” means to them.  
(see example chart below)

	Leadership	Teamwork	School Family
Before			
After			

6. What expectations do they have of their groups before they begin?
7. You can show the website for the app for a preview:  [Video 2](#)
8. If you really want to see how they work under pressure you can offer prizes for placement.
9. Have students work on the Defused! app to solve the puzzle.
10. While students are working, walk around making notes/observations on the personality types you are seeing in the classroom. Watch how they interact to solve the puzzle.
11. Look at your leaders vs over takers, your talkers vs your quiet mouse, your off task vs hyper focused, your out of the box thinkers vs your concrete thinkers, etc.
12. Once you bring everyone back together, inquire about the experience.

## Suggested Questions

- What did students think about the task – was it easy or hard?
- What might they have done differently while working on the task?
- How did their beginning expectations compare now that the task is over?
- How do the students perceptions of “leadership”, “team work” and “school family” compare after the task?

- Point out to students some of the personalities you saw and how those can be helpful in a school family and the need to include everyone when working together to solve problems (academic or social).
- List some of the personality types you saw in the classroom and have students think about what type they fall into and how they can use this to help their peers.

Click [here](#) for a great website to look at and gain information to explain personality types.

