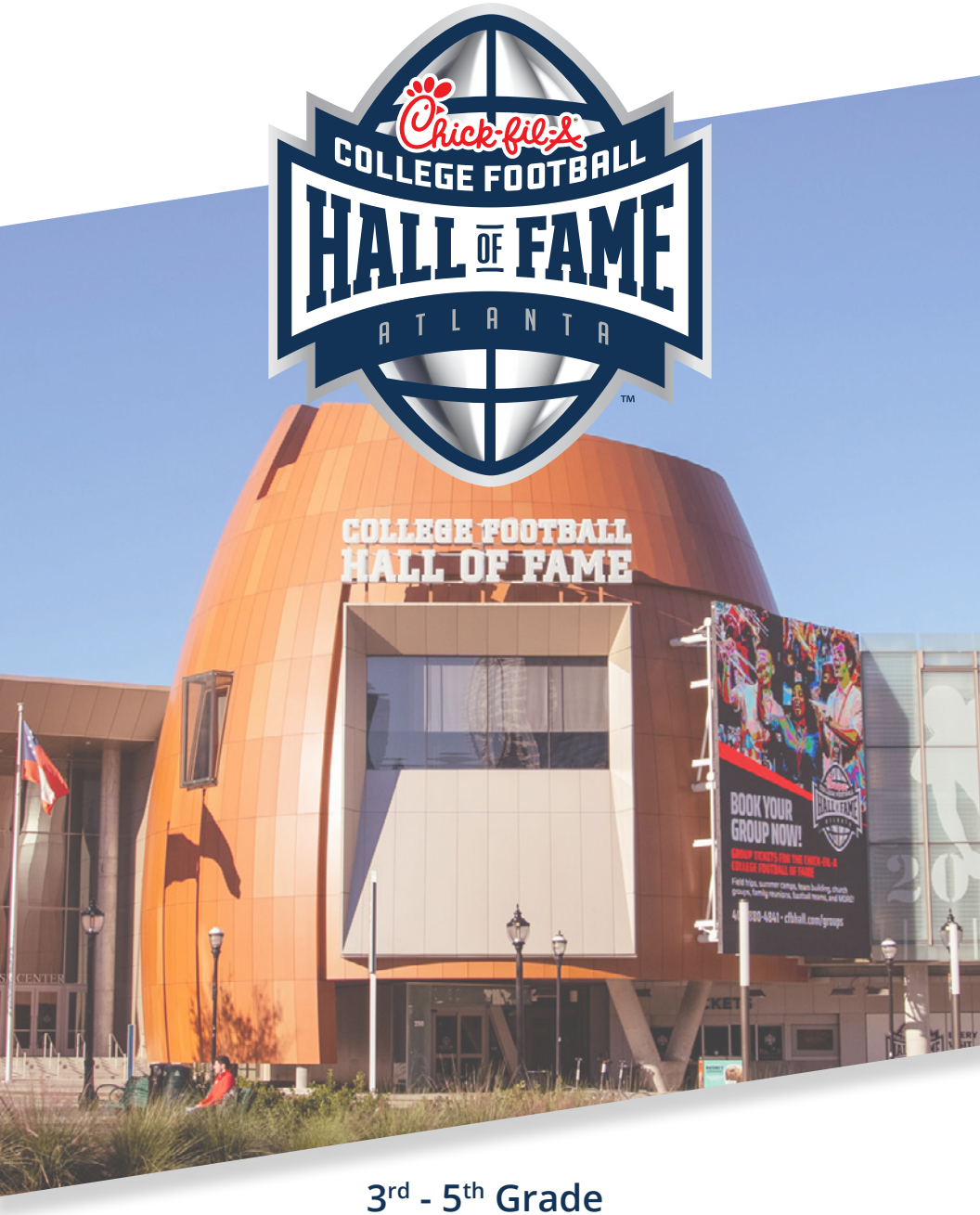


3rd - 5th Grade

TEACHER PLAYBOOK

INTRODUCTION

A visit to the Chick-fil-A College Football Hall of Fame is an amazing experience for fans of all ages. For students, however, the entertainment factor of a trip to the Hall can be enhanced by the opportunity to connect a beloved sport with classroom learning. Founded in 1951 by the National Football Foundation, the College Football Hall of Fame immortalizes the greatest of the amateur gridiron. 5.1 million people have coached or played the game and less than 1,300 are inductees into the Hall of Fame. The College Football Hall of Fame strives to use its position as a trusted authority within college football to educate, inspire, entertain, and connect audiences while honoring the people, traditions and passion of the game.

The goal of the curriculum contained in this Teacher Playbook is to provide educators with tools to create a unique learning experience for their students – because learning happens everywhere – not just in the classroom. The Teacher Playbook lessons integrate football and STEAM-based content in hands-on projects that allow students to meaningfully apply their skills and knowledge to real-world situations. Aligned with George Standards of Excellence and national standards for science, technology, engineering, math and art, the lesson plans are flexibly designed to allow teachers to tailor the content to meet their learning objectives for their students.

BIG THOUGHT

CURRICULUM WRITERS

Lily Binford is a passionate science teacher and curriculum writer who strives to provide dynamic, experiential, place-based learning for students that focuses on solving real-world problems through investigation and innovation. Her three foundations of teaching emphasize building warm, mutually respectful relationships with students, asking rigorous questions, and making content relevant by connecting scientific concepts to everyday life. She strongly believes education should not be contained within the four walls of a traditional classroom but take place anywhere and everywhere, including informal learning experiences like field trips, outdoor explorations and meeting professionals in STEAM industries. Lily taught middle school in Dallas, Texas for six years and currently teaches 7th and 8th grade science at a public charter school in Glenwood Springs, Colorado where she takes students outdoors as much as possible. She holds a Master of STEM Education degree from Southern Methodist University and a Bachelor of Arts in English from the University of Texas at Austin. A native of Dallas, Lily lives in the Roaring Fork Valley of Colorado with her husband James and a Siberian Husky named Haze.

Sherry Dieterich is a computer science and mathematics Teacher at Braswell High School in Denton, Texas. Sherry strives to provide a safe environment in her classroom where students can grow mentally, emotionally and socially. Her goal as an educator is to create well-rounded students who are prepared for the world ahead of them, so they can achieve their highest potential and find their passions. Because Sherry believes that students learn and retain knowledge better with hands-on learning, she is an advocate for providing students with life experiences outside of the classroom. Sherry holds a Bachelor of Science degree in computer science with a minor in mathematics and a master's degree in education administration. A high school teacher for 15 years, she has written curriculum for Denton ISD and Big Thought. Sherry lives in Denton, Texas with her husband and Huey the cat.

Krissi Oden has more than 15 years of experience in art education guided by a philosophy that focuses on a Constructivist approach to teaching and learning. Krissi's goal as an educator is to empower others to celebrate their uniqueness, and to build upon their own experiences and cultures as they learn and grow. She believes it is important to identify and empower spaces such as the College Football Hall of Fame where students can apply concepts they have learned to real world examples, as well as deepen their understanding that learning happens everywhere – not just in the classroom. Krissi has taught art in middle school, high school and at the college level and holds two master's degrees, one in art history and museum education from the University of North Texas and a second in teaching in art education from Texas Woman's University. Currently, she is the Cultural Arts Manager for the City of Bedford, Texas. She lives in Denton, Texas with her husband, daughter, son and their two blue heelers.

Each lesson contains the following components:

- **Lesson Title**
- **Players** - Grade Levels.
- **Equipment** – Supplies required for the lesson as written.
- **Kickoff Question** – An overarching question which kickstarts learning and serves as connective tissue for the entirety of the lesson.
- **Pregame** – Establishing a foundation for learning. Intended to be completed prior to visiting the Hall of Fame, the Pregame provides background information and topics for classroom discussions to ignite student curiosity and prepare them for their explorations at the Hall of Fame and in the classroom.
- **First Half** – Assignments for students to complete as they explore the Hall of Fame, most frequently data collection or sketching. In order for students to absorb as much as possible during their Hall of Fame experience, most lesson activities take place before and after the field trip.
- **Second Half** – Where learning is solidified by connecting classroom content with real-world experiences at the Hall of Fame. Lesson projects challenge students to apply the knowledge and concepts from “Pregame” and “First Half”, utilizing data gathered on the field trip.
- **Extra Point** - Optional art activity or project based on concepts from the lesson.
- **Game Stats** – Fun fact related to the lesson theme.
- **Going Pro** – Information about a career connected to lesson content, including required education and/or training.
- **Standards** – Applicable Georgia Standards of Excellence (GSE) and national learning standards aligned with each lesson’s primary subject content.

TABLE OF CONTENTS

A BLIMP'S EYE VIEW

STANDARDS

Art:	National Arts Standards:
GSE VA3.CR.2a	VA:Cr1.1.3a
GSE VA4.CR.2a	VA:Cr1.1.4a
GSE VA5.CR.2a	VA:Cr1.1.5a

EQUIPMENT

- Journal and writing utensil
- Student Playbook for every student
- Large paper
- Crayons or markers

KICKOFF QUESTION

- Does seeing a familiar object from a new perspective change how we experience or think about it?

PREGAME (Before the Hall of Fame)

Ask who knows what a "blimp" is. More specifically, has anyone ever seen the Goodyear Blimp?

A blimp, also known as an airbus or airship, flies on gas--usually helium. The Goodyear Blimp is perhaps the most well known example. For nearly 100 years, the Goodyear Tire & Rubber Company has flown blimps over sporting events.

For more information about the history of the Goodyear Blimp, visit www.goodyearblimp.com with the students.

Tell them that at the Hall of Fame they will have a Goodyear Blimp Experience. To prepare for it, they want to write these four questions in their journals:

- What do you see on the football field?
- From this perspective, what do you notice about the stadium?
- How is this perspective different from inside the stadium? Can you see more or less? How does the perspective change?

Tell your students to watch their flyover twice and to notice how the end zones are painted. Their fourth question is:

- How would you change the look of the football field to make it more interesting from a bird's-eye view?

FIRST HALF (At the Hall of Fame)

Note: Students will use the Student Playbook for grades 3-5.

Once at the Hall of Fame, instruct students to make their way to the Goodyear Blimp Experience exhibit on the second floor. Students will choose a stadium in the exhibit and experience a "flyover" from the perspective of a blimp. Give them some time to look around, and then have them take their student playbooks out and answer the following questions:

- What do you see on the football field?
- From this perspective, what do you notice about the stadium?
- How is this perspective different from inside the stadium? Can you see more or less? How does the perspective change?
- How would you change the look of the football field to make it more interesting from a bird's-eye view?

SECOND HALF

(Back in the Classroom)

Tell the students they'll use their data from the Goodyear Blimp Experience to redesign their favorite team's football stadium from a bird's-eye view. Tell them to keep in mind:

- While viewing the stadiums at the exhibit, what got your attention?
- What would you include in a completely new stadium?
- What designs are particularly eye-catching?
- What colors and shapes should be used?
- What about your design makes it distinctive?

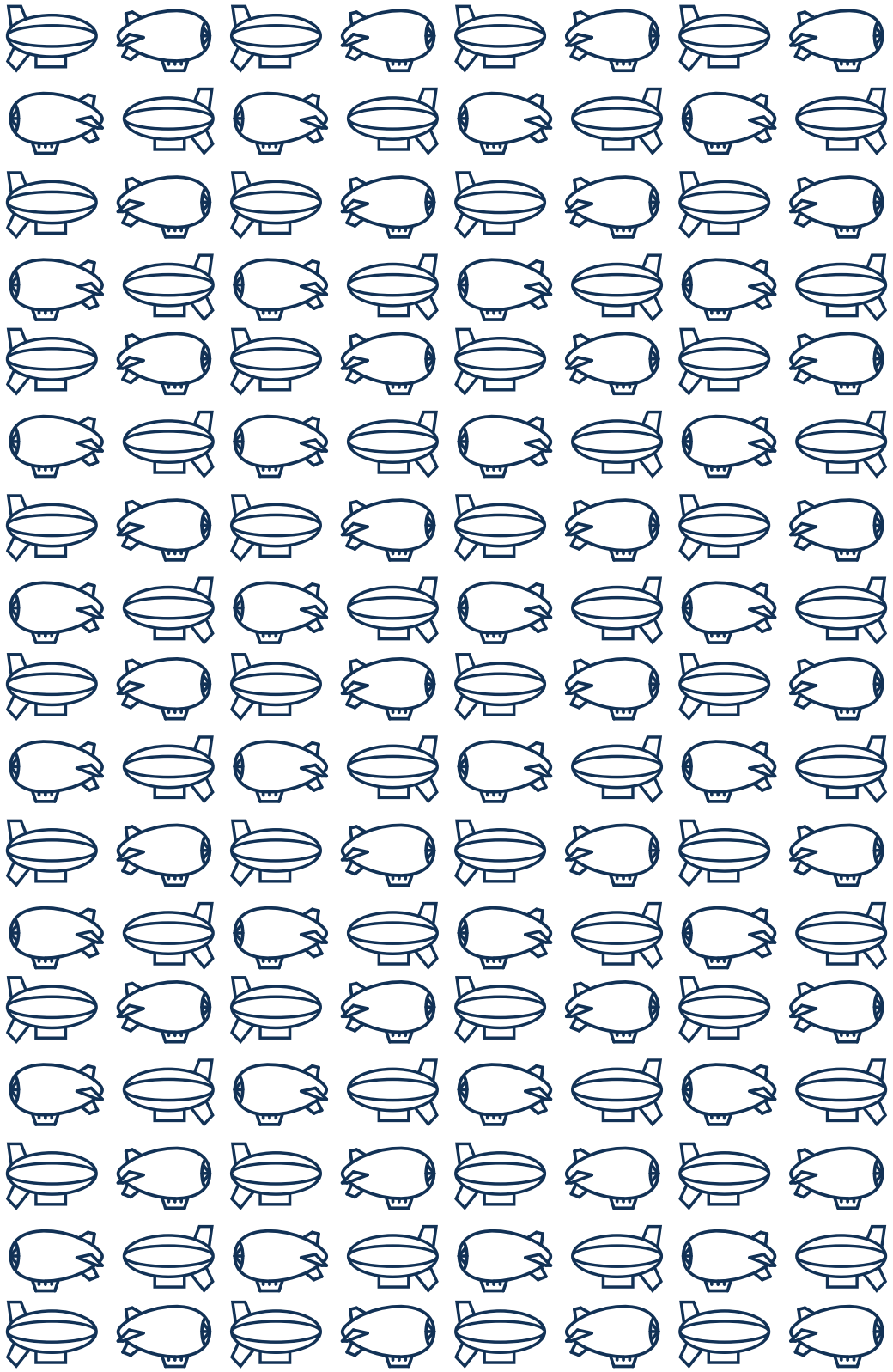
After sketching ideas in their journals, students should make a final drawing on large paper. When finished, allow time for everyone to present their designs to the class. Have them discuss their creative choices, why their design is successful, and how the design reflects the team. What about their design is unique? How were they inspired by what they saw at the Hall of Fame?

GAME STATS

- Blimps were created as surveillance devices in World War II. Today, they are used mostly as overhead cameras at sports events and as massive flying billboards.

GOING PRO

- **Blimp Pilot:** A blimp pilot must have a commercial pilot's license. Since no flight school is dedicated to blimps or zeppelins, a new blimp pilot learns on the job from a trained blimp pilot. There are very few qualified blimp pilots, and they are paid to watch sporting events while hovering above the playing field in their airship with one of the best seats in the house.



FOOTBALL FORECAST

STANDARDS

Science:

GSE S4E4 A-D

Next Generation Science Standards:

NGSS 3-ESS2-1
NGSS 3-ESS3-1
NGSS 4-PS3-1

Art:

GSE VA3.CR.2a
GSE VA3.CR.2b
GSE VA4.CR.2a
GSE VA4.CR.2b
GSE VA5.CR.2a
GSE VA5.CR.2b

EQUIPMENT

- Journal and writing utensil
- Anchor chart paper
- Anchor chart markers
- Printed or online resources with related weather information
- Makerspace materials (optional)

KICKOFF QUESTION

- What are the best weather conditions for a college football game?

PREGAME

(Before the Hall of Fame)

Ask students to individually or in pairs brainstorm and write down all elements and types of weather. When the class reconvenes, ask them to share what they wrote. On anchor chart paper or digitally, create an exhaustive classwide list.

Review the list and for each entry ask whether these conditions are ideal for a college football game. Challenge students with these questions:

- What temperature do you think is too low (cold) for gameplay? Too high (hot)?
  - ☐ You may want to look up the current temperature and take students outside momentarily to develop a frame of reference.
- What is the benefit of a cloudy sky? What is the downside?
- What is the benefit of wind during a game? What is the downside?
- Is there a benefit to precipitation during a game? If so, what is it?

With this list of stadium locations, have students use the Internet (or print out materials for them in advance) to find the average temperature and average precipitation of each. Finding the humidity rate is a bonus. To ensure reliable and consistent findings, give all your students the same data source.

- University of Georgia: Athens, Georgia
- Louisiana State University: Baton Rouge, Louisiana
- Texas A&M University: College Station, Texas
- University of Michigan: Ann Arbor, Michigan
- Ohio State University: Columbus, Ohio
- University of Notre Dame: Notre Dame, Indiana
- University of Wisconsin: Madison, Wisconsin
- University of Southern California: Los Angeles, California

After they collect this data, ask your students:

- Which location gets the least precipitation annually? The most?
- Which location has the highest average temperature? The lowest?
- What other weather factors are important to know?
- If temperature and precipitation were the only two factors to consider, which stadium would be the most ideal?
  - ☐ You may want to take a digital poll and examine the results as a class.
  - ☐ Did everyone agree on a stadium, or was there variability?

FIRST HALF

(At the Hall of Fame)

Arriving at the Hall of Fame, tell your students to look for indicators of weather in game photos. Sunny games are easy to find, but are there games in snow? In the rain? In strong winds? Tell your students to keep track of their observations, particularly the rare cases of inclement weather. Guide their notetaking with these questions:

- What in the photo indicates the weather?
- How do you think this weather affected the football players? The fans? The coaches?
- What types of weather do you not see in any of the photos throughout the College Football Hall of Fame? Why do you think that is?

SECOND HALF

(Back in the Classroom)

Tell your students that a new (fictional) college football team is forming in a location with above-average precipitation, above-average humidity, above-average wind speed, and above-average temperatures. Challenge them to work in pairs or small groups to design a stadium for this location that addresses those weather/climate factors. Guiding questions:

- What feature(s) of your stadium will keep out heavy precipitation?
- What feature(s) of your stadium will protect players, fans, etc., from extreme wind?
- What feature(s) of your stadium will keep players, fans, etc., cool and dry enough during high temperatures and high humidity?
- Bonus: How can these features be part of an environmentally friendly design? (E.g., Can precipitation be collected as a water supply for the community? Can the extreme wind be harnessed to fuel some of the stadium's energy needs?)
- Note: Students may assume that a closed and climate-controlled stadium (typically a dome) is an obvious solution.

As they collaborate and brainstorm, circulate among them to ask for any potential downsides to a closed stadium. While domes protect players and fans from the elements, their teams statistically have lower performance, likely because:

- ☐ "Dome teams" (teams that play in closed stadiums at home) deal poorly with Mother Nature when they play in an opponent's open stadium; and
- ☐ "Non-dome teams" (teams that play in open stadiums at home) blossom when they experience climate-controlled conditions of dome stadiums on the road.

Students may sketch, digitally design, and/or construct a model using makerspace materials, then present their stadiums to the class and justify the features. For this phase, consider having guest audience members such as engineers or architects.

EXTRA POINT

- Design a football uniform to withstand all types of weather. Consider materials, attachments to the uniform, even technologies to integrate into the design.

GAME STATS

- The coldest college football game ever played was in November of 1964, in an open stadium, when Ohio State and Michigan went head-to-head in 20-degree weather with a -30-degree windchill.

GOING PRO

- **Meteorologist:** A meteorologist uses scientific analysis to predict weather, then communicates these predictions to others. Most meteorologists hold an advanced degree and first serve as an intern to gain experience and knowledge. The largest employer of meteorologists is the government; however, many work for private companies as well as TV and radio stations. Others serve the legal system through the field of forensic meteorology, and some serve as part-time consultants or advisors to football and other outdoor sports teams.

IN SHAPE: FOOTBALL DESIGN

STANDARDS

Mathematics:
GSE MGSE3.G.1
GSE MGSE5.G.3

Science:
GSE S4P3.a

Next Generation Science Standards:
NGSS 2-PS2-1
NGSS PS2-2

Art:
GSE VA3.CR.2b
GSE VA4.CR.2b
GSE VA5.CR.2b

National Arts Standards:
VA.Cr1.1.3a
VA.Cr.1.1.4a
VA.Cr1.1.5a

EQUIPMENT

- Journal and writing utensils
- Anchor chart paper
- Anchor chart markers
- Enough footballs for half of the students
- Other sports balls such as tennis, baseball, volleyball, etc. (optional)

KICKOFF QUESTION

- How does the shape of a football affect gameplay?

PREGAME

(Before the Hall of Fame)

Arrange students into pairs or small groups with instructions to list and/or draw as many sports balls as they can think of (soccer ball, basketball, football, tennis ball, handball, etc.). When they're ready, invite the entire class to share what's on their lists. You may add a few they overlooked (golf, rugby, softball, dodgeball, billiards, polo, croquet, wiffle, etc.) Write all the ideas on anchor chart paper or on a whiteboard, and ask students how they would organize the many types of balls. Based on their responses, you might make an affinity diagram.

Ask:

- How wide is the variety of these balls? Which is the smallest? The largest?
- Why are they the color they are? (Footballs are usually brown; baseballs are usually white, etc.)
- Why are they shaped differently for each sport?
- Why are they made with different materials?
- How do you think some of these balls evolved since the beginning of the sport?

Explain that the structure of an object tends to serve its function. A bowling ball would soon end a game of soccer; a soccer ball would be impractical in a game of ping pong.

Break your class into small groups once again, assign each group to a different sports ball--orally, in writing, as an image, and/or with the actual ball--and issue this challenge. (Each group may present its response in a class discussion, on anchor chart paper, or as a slidedeck.)

- The University of Texas at Austin is about to play their rival Texas A&M. One problem: no football in sight and none to be found. The referees agree that the show must go on and, rummaging through the field house, they come up with this: [the ball you provide to the group]. Before the game begins, the refs want your opinion: Is it possible for the Longhorns and the Aggies to play a football game with this ball? If not, how would the game need to change--keeping it as close as possible to the original rules and play of football? Defend your answer.

FIRST HALF

(At the Hall of Fame)

Arriving at the Hall of Fame, tell students to notice the varieties of footballs (color, shape, size, material, position, etc.) on display or in photographs throughout the various exhibits. Encourage them to sketch the balls they find the most interesting or unique.

Ask them to note how football design evolved, based on photographs and artifacts at the Hall of Fame. Guide their thinking with these questions:

- Were college-game footballs rounder in the past or rounder now?
- Has the color of footballs in college games changed over time or stayed the same?
- You can't pick up and feel the weight of the footballs in the photographs and on display, but do you suspect, over time, that they've gotten heavier or lighter?

SECOND HALF

(Back in the Classroom)

On the board, write drag, sphere, friction, and trajectory, and have your students share what they know about them. Give neutral feedback, and say they're about to experience the definitions.

Note: For the next activity, you'll want to take your students outdoors or to a gym.

Create groups of two or four students and give each group a football of any size. Issue these instructions:

- Throw the football back and forth. With each throw, notice its position in flight. Does it wobble end over end? Does it soar with a continuous spiral or rotation? Which of these positions sends it furthest?

Reconvene the class and have the groups share their observations. Returning to the words on the board, ask how they apply to this activity. As a class, create definitions for each word. Have students record the definitions in their notes. As needed, use:

- spiral - a curve on a plane that winds around a fixed centerpoint.
- friction - a resisting force that occurs when two objects rub against each other.
- drag - the force of air or water acting against an object's motion.
- trajectory - the path of an object in flight.

Tell your students to write a few sentences describing how to throw a football. They should appropriately incorporate these four new terms.

EXTRA POINT

- Introduce students to the term "action drawing"-- lines drawn to show an object or person in some sort of action. For example, if a ball is flying through the air, a series of short lines above or below the ball create the illusion of movement.
- Ask the students to write the terms in their sketchbooks: spiral, friction, drag, and trajectory.
- Now ask them to create an action drawing for each of those words. If possible, display the drawings together and discuss the various ways each term comes to life. Are there similarities in how the actions are drawn? Differences? How do the action lines change the way someone might experience the art?

GAME STATS

- A football is sometimes called a "pigskin" because hundreds of years ago, in the Middle Ages, football-type games were played with balls made from air-filled pig bladders.

GOING PRO

- **Sports Engineer:** A sports engineer develops solutions to engineering challenges related to sports and recreation. They may design sports equipment, stadiums, safety protocols, or training programs. Sports engineers usually earn a degree in mathematics, physics, or engineering, and they may work for a variety of employers such as ski resorts, college and professional sports teams, or athletic gear manufacturers.

IT'S GAME TIME

STANDARDS

Mathematics:	Common Core Mathematics:
GSE MGSE3.MD.1	CCSS.Math.Content.3.MD.A.1
GSE MGSE3.NF.1	CCSS.Math.Content.3.NF.A.2
GSE MGSE3.NBT.2	CCSS.Math.Content.3.NBT.A.1
GSE MGSE4.NBT.4	CCSS.Math.Content.4.NT.B.4
GSE MGSE4.NF.2	CCSS.Math.Content.4.NF.A.2
GSE MGSE5.NF.3	CCSS.Math.Content.5.NF.B.3
GSE MGSE5.NBT.7	

EQUIPMENT

- Journal and writing utensil
- Stopwatch

KICKOFF QUESTION

- Does a team win because its players are fast?

PREGAME

(Before the Hall of Fame)

Discuss with the students what makes a winning team. As a group:

- List the qualities and skills of a winning team, and
- Vote on which quality or skill is most important.

Ask your students whether they think having a fast runner will help a football team win and why.

Give them this information:

- Professional football player Raheem Mostert was the fastest runner in the 40-yard dash, at 4.32 seconds.
- College football player Isaiah Thompson was the slowest runner in the 40-yard dash, at 6.06 seconds.

Tell students to complete the following and record the data in their journal.

- Convert Mostert and Thompson's racing times to fractions,
- Determine the time difference between the fastest runner and the slowest, and
- Create a number line to show the speeds of the fastest and slowest runners.

Have the students discuss the numbers and how they arrived at them.

FIRST HALF

(At the Hall of Fame)

At the Hall of Fame, on the first-floor football field and on the second-floor Kia Performance Challenge, have the students:

- Locate information about at least four fast runners. Note each runner's name, distance run, and speed.
- Find information about at least four players they believe are the fastest. Write down each player's name.

1st floor football field: Here, have students pair off and time each in a 40-yard run. Record the data in the table provided.

2nd Floor Kia Performance Challenge: Ask students to complete the Kia Performance Challenge race and record the data in the table provided.

Each student should record this data:

- The time in seconds it took to run 40 yards on the field,
- The time in seconds it took their partner to run 40 yards on the field,
- The time in seconds it took to run 40 yards at the Kia Performance Challenge, and
- The time in seconds it took their partner to run 40 yards at the Kia Performance Challenge.

SECOND HALF

(Back in the Classroom)

As a group have the students pull out their new running data and discuss these questions:

- What are the similarities and differences in the running times?
- Who was the fastest runner in the group?
- How much faster was the fastest player you found at the Hall of Fame than the fastest runner in your class?
- How do the fastest runners you found at the Hall of Fame compare to the fastest and slowest runners you talked about in pregame?
- Other than speed, what is an important piece of data when choosing a winning team?

Now have your students:

- Break into small groups to research stats of the payers they selected at the Hall of Fame,
- Choose the players they'd want on their teams,
- Discuss their teams with the class, and why they selected which players, and
- Over the next year, watch their players to judge whether they help their team win.

EXTRA POINT

- Explain haiku to students: A haiku is a short poem of three lines. The first has five syllables, the second seven, the third five. The haiku originated in Japan and traditionally is about nature. Now it can be about anything.
- Challenge your students to create a haiku about something regarding the Hall of Fame. It can be from the building itself to a game, an exhibit, a specific player ... anything.
- When they're finished writing, ask your students to read their haikus to the class. Challenge the class to guess which part of the Hall a given haiku is about.

GAME STATS

- Originally, football boots were modeled after baseball shoes which featured cleats for traction. Innovations in football footwear have included lighter weight construction, detachable cleats so players can modify their shoes for different field conditions, and rubber cleats to provide traction on artificial turf.

GOING PRO

- **Marketing Analyst:** Marketing analysts study market conditions to assess sales and sales trends, helping companies determine what products and services are in demand, who will purchase them, and what prices they'd pay. A marketing analyst typically has a bachelor's degree in business, marketing or mathematics. Marketing analysts who work for sports teams collect data using surveys, interviews, questionnaires and public opinion polls. They then use the data to help teams engage with their fans more effectively as well as build new audiences.

PUT A LID ON IT

The Science of Helmet Design

STANDARDS

Science:
GSE S4P3

Next Generation Science Standards:
NGSS 3-PS2-1
NGSS 4-PS3-3

Health:
GSE HE3.7.b
GSE HE4.5.b
GSE HE4.7.b

Art:
GSE VA3.CR.1a
GSE VA3.CR.2a
GSE VA4.CR.1a
GSE VA4.CR.2a
GSE VA5.CR.1a

National Arts Standards:
VA.Cr.1.1.3a

EQUIPMENT

- Journal and writing utensil
- Student Playbook for every student
- One plastic egg for groups of 2-4 students
- Five marbles for every group
- A variety of makerspace materials

KICKOFF QUESTION

- Why do football players wear helmets?

PREGAME

(Before the Hall of Fame)

Put the students in pairs and have each pair list ways to protect objects from damage, e.g., safety belts and bubble wrap. Reconvene and have all students share their lists to compile one comprehensive list.

Ask students these questions:

- What are some of the features common to these kinds of protection?
- What happens to certain objects that are left unprotected? How much might it cost?
- How might we improve some of the ways we protect objects?

Now to the human body. Ask your students:

- What can we wear to protect the soles of our feet from uncomfortable surfaces, harsh temperatures and debris?
- What can we wear to protect our knees and elbows from skateboarding injury?
- What can we wear to protect our heads from injury when we're on a bicycle or horse?
- What can we wear to protect our skin from overexposure to natural elements such as sun, wind, rain, and temperature?
- What can we wear to protect our eyes from chemicals during a lab experiment?
- What can we wear to protect our teeth when playing a sport like hockey?
- What can we wear to protect our ears from very loud sounds?
- What can we wear to protect ourselves from drowning?

Give students this case:

- Ashley is preparing for summer camp, where she knows she'll swim at the lake, ride a mountain bike, make s'mores over a campfire, play basketball on the outdoor court, hike on rocky terrain, canoe on the river on a hot day, and set off a model rocket during a STEM activity.
- Create a complete list of what Ashley should pack for camp that includes all the protective clothing and equipment she needs to stay injury-free.

Once students have their lists, hang the lists around the room and have everyone check all lists for items they may have overlooked. Reconvene and create an "ultimate" list of all the protective items Ashley will need.

FIRST HALF

(At the Hall of Fame)

Note: Students will use the Student Playbook for grades 3-5.

Ask students to answer the following questions in their playbook:

- What is the purpose of wearing a helmet?
- What design features make a helmet effective?
- How does a helmet mimic structures found in nature?

Send students to The Evolution of Equipment exhibit on the second floor, then ask them to read and answer the following in their Student Playbook:

- Your brain is like a computer. All day every day it uses and stores important information. Thankfully, they are protected by bones called the skull. In football, players wear helmets to protect their skulls. Why is that a good idea?

Ask students to read the following and then draw an example of two objects colliding in their playbook:

- When two objects collide, they hit each other while in motion.

Ask students to read the following and then draw their ideas for future football helmets in their playbook:

- Helmets did not always appear the way they do today. The first football helmet was made of simple leather straps with flaps hanging down to cover the player's ears.

Finally, ask students to read and answer the following in their playbook:

- Humans gain a lot of design ideas from nature. Our sweaters and coats mimic animal fur to keep us warm. Our drinking straws mimic long, narrow bird beaks. Our swimming flippers mimic fish fins. How is a helmet similar to the body of an armadillo?

SECOND HALF

(Back in the Classroom)

Show students a plastic egg and open it to show five marbles inside. Say the egg is a human skull; the marbles inside are the brain.

Arrange the class into groups of 2-4 students. Give each group a plastic egg holding five marbles and this challenge:

- Develop a "helmet" for this egg to prevent it from breaking open when it's dropped from 3 meters above the ground (Measure out 3 meters for the students.)
- Like a real helmet, the egg helmet must be easy to remove.
- Use at least 3 of the different materials provided.
- Use ONLY the materials provided.

Tell students to sketch and label a helmet design so that anyone else could understand its structure and function. (Optional: Students develop their helmet designs with free online tools.) Following peer feedback and teacher approval, each group should adjust their design and begin to build a prototype.

Equally divide among the students a variety of makerspace materials (tape, rubber bands, pipe cleaner, cardboard, etc.).

Students may test their designs along the way or wait for a final class demonstration.

Every group presents its design (labeled sketch and prototype) to the class and invites peer feedback. During the presentations, ask:

- How did you decide what materials to use?
- What are the disadvantages of your helmet design?
- How effective would your helmet be if your egg dropped from 6 meters above ground? 12 meters? 30 meters?
- If you could use one other type of material not provided, what would it be and why?

Optional extension: Tell the class that a college football team needs a new helmet design. Each group will develop a visual sales pitch for their design offering practical reasons supporting the materials used and helmet efficacy.

EXTRA POINT

Ask students to read these bullets and follow the instructions:

- Football players sometimes sport stickers or decals on their helmets. Some represent that player's individual or team accomplishments. Some may stand for a cause important to the player. Without knowing the player personally, viewers know more about him or her.

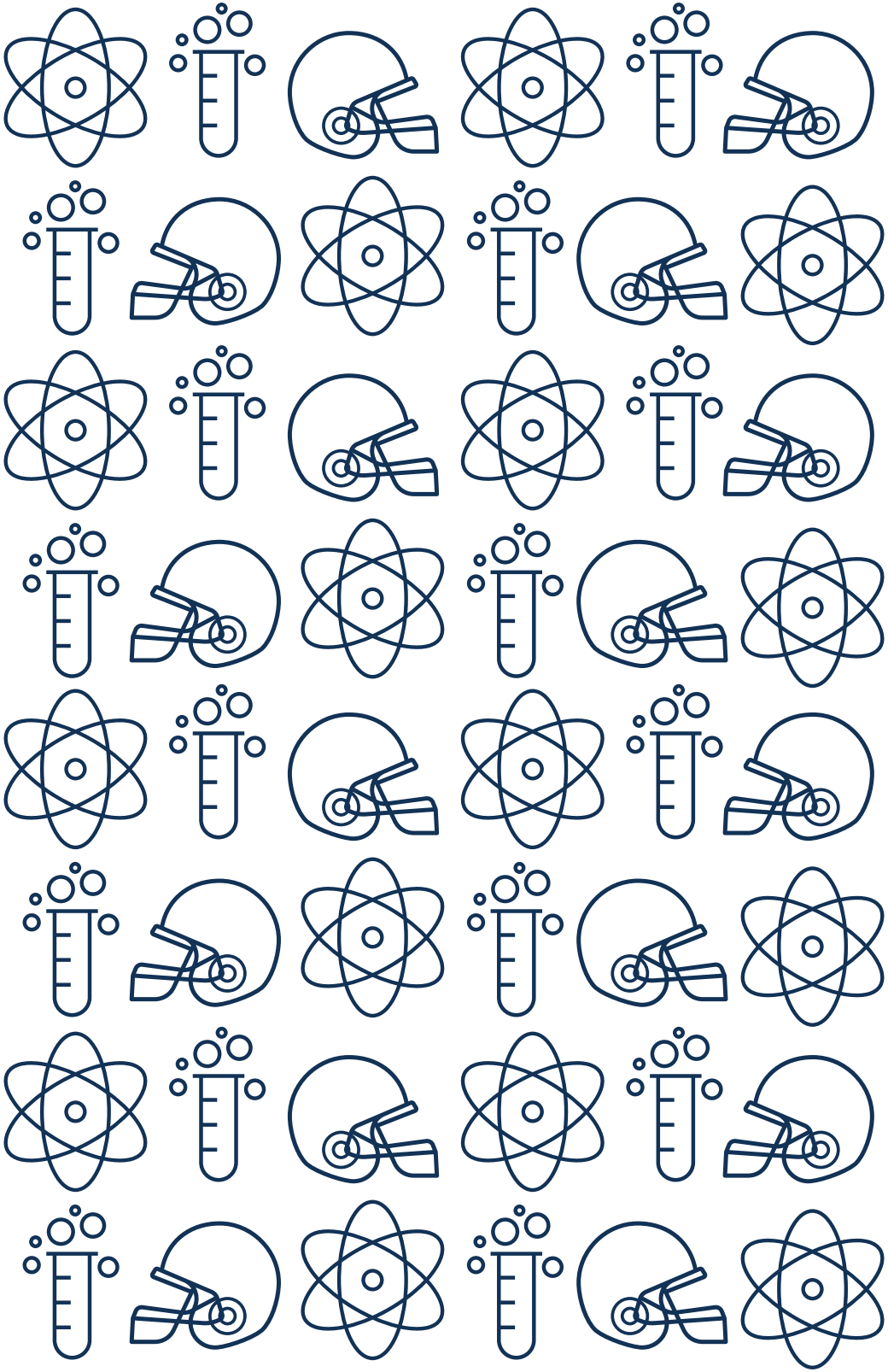
- If you were an athlete in front of hundreds of viewers, what would you want crowds to know from your helmet? Draw a helmet with the images important to you. Ask your friends or family to do the same and compare your choices. Next time you watch a football game, check for helmet stickers and guess what they might represent.

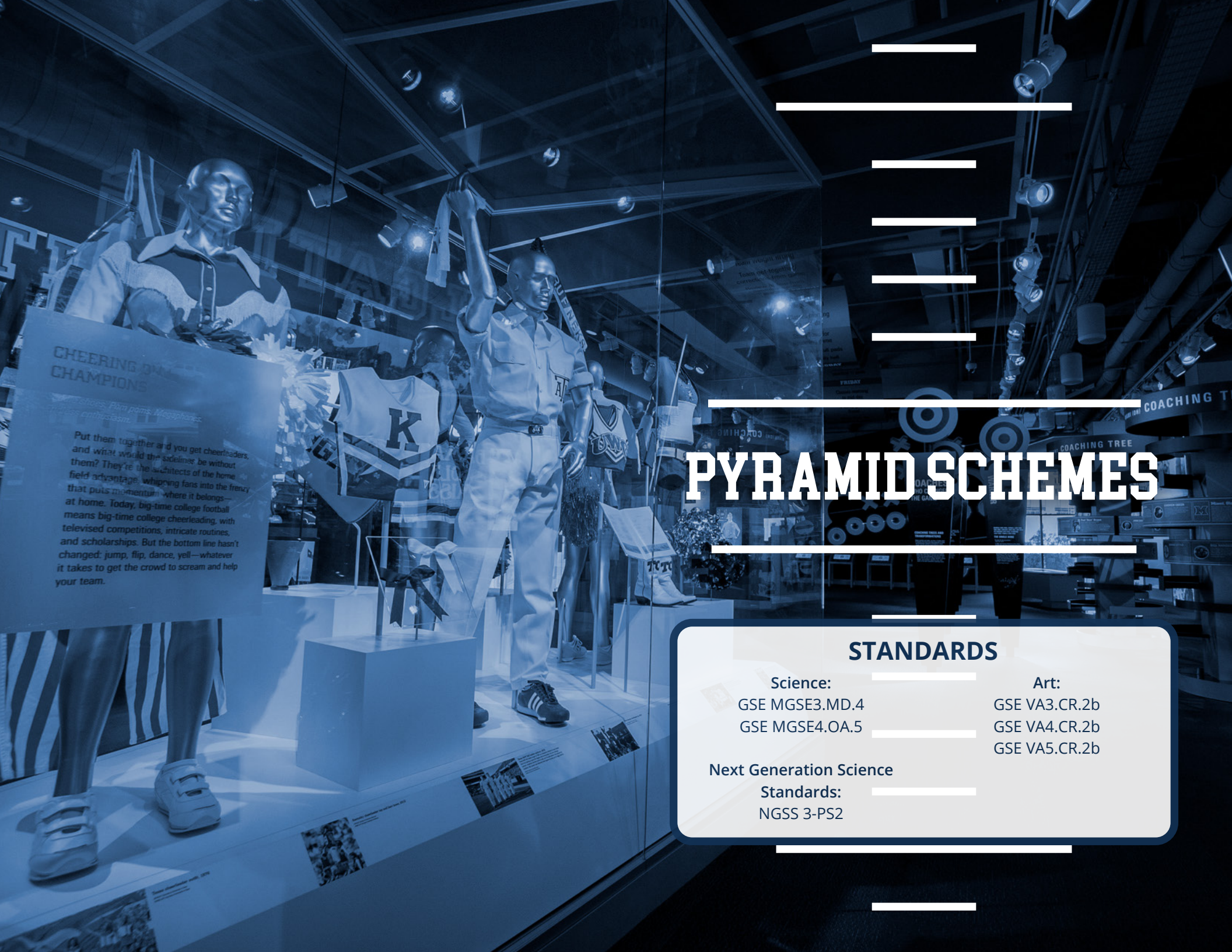
GAME STATS

- Helmets were not mandatory for pro football players until 1943, shortly after John T. Riddel invented the first plastic helmet.

GOING PRO

- **Neurologist:** A neurologist diagnoses and treats disorders affecting the brain, spinal cord and nerves. This type of physician earns a bachelor's degree in a science or medical field and then attends medical school. A residency to gain practical experience in neurology is also required. A neurologist may work in a traditional hospital, research hospital, private practice, or at a university as an academic researcher. Neurologists and other medical professionals can become board-certified in sports medicine, allowing them to work as part- or full-time physicians for college football teams.





PYRAMID SCHEMES

STANDARDS

Science:
GSE MGSE3.MD.4
GSE MGSE4.OA.5

Art:
GSE VA3.CR.2b
GSE VA4.CR.2b
GSE VA5.CR.2b

Next Generation Science Standards:
NGSS 3-PS2

EQUIPMENT

- Bullet and change highlighted text to:
- Journal and writing utensils
- 20 cups (paper or plastic) for each group of 2-3 students

KICKOFF QUESTION

- Why are pyramids a stable design?

PREGAME

(Before the Hall of Fame)

To begin, show a short video or photo of a cheerleading pyramid. Ask the following questions:

- This cheerleading formation is called a pyramid. What do you notice about it?
- Do you see more people at the bottom or the top?
- What would happen if more cheerleaders were at the top than at the bottom?
- How tall do you think a cheerleading pyramid can get? How many cheerleaders would it take?

Assign students into small groups of two or three. Give each group 20 paper or plastic cups with instructions to create a pyramid. Challenge them to use all 20 cups in as many combinations of small pyramids as possible.

Reconvene the class and use these questions to guide a discussion:

- As you created your pyramids, what patterns did you notice?
- Where do you see pyramid shapes in everyday life and in the world?
- Why do you think this shape is so common?
- Why do you think this is a popular formation for cheerleaders?
- Of the cheerleaders in a pyramid, which ones are in the safest position? Which ones are in the least safe position?

Show pictures of famous and everyday pyramids: Egyptian pyramids, teepees, the USDA food pyramid, a cellphone tower, mountains, the Eiffel tower, etc. Point out that pyramids can be natural or man-made. The natural ones often inspire the manmade versions.

For fun, show a short video or photos of the Guinness Book of World Records' largest cup pyramid and/or largest human pyramid.

FIRST HALF

(At the Hall of Fame)

Arriving at the Hall of Fame, tell students to look for triangular and pyramid shapes and sketch or list them. Examples: architectural details, tiered trophies, a human body when feet are spread, football play formations, certain mascots.

SECOND HALF

(Back in the Classroom)

In small groups, have students reconfigure a pyramid to achieve greater height and discuss their designs as a class. Next, have them each independently compose a short essay about pyramids.

To stimulate essay ideas, recall the cup activity as well as the Hall of Fame experience. Ask what architectural features or exhibit objects had triangular or pyramid shapes.

Share this information with your class, adding the underlined terms to a word wall, and/or have students write and define the terms in their notes.

- Pyramids are triangular; they converge at a single point at the top.
- Pyramids are strong, stable shapes, so the structure is balanced and unlikely to fall.
- The base, or bottom layer, has the greatest area.
- Each layer of a pyramid is strong enough to hold the next layer on top of it.

- Because a pyramid is perfectly symmetrical, its center of gravity is the line from the apex (the very top) to the exact center of the base.

Expand on concepts of area, angles, 2-D and 3-D shapes . . . and pose questions. For example, how is a pyramid different from a triangle?

Reassign students into small groups and give each group 20 cups. The assignment is to create a pyramid with all 20 cups, as before, then measure and record the heights of the pyramids with a metric ruler.

With that information, tell your students to dismantle their pyramid and take this challenge:

- You just measured the height of your pyramid. Now, as a group, try to create a taller structure. Use nothing but the cups, and the structure must be freestanding. No combining your cups with other groups. With each new structure, measure and record its height.

Extension 1: As they go, have students sketch their designs, as architects in drafting building designs. The sketches may include measurements and/or notes about successes and failures with each trial.

Extension 2: Have students record their measurements in a shared spreadsheet to generate a classwide graph or chart.

Reconvene the class, and discuss these questions:

- Is it possible to create a structure taller than a pyramid?
- If yes, is that structure more stable than the pyramid, or less?
- Could cheerleaders carry out your structural design as a cheerleading formation? Would it be as safe as a normal cheerleading pyramid? More safe? Less? Why?

Have students write a short essay about pyramids as structures. You may require them to include certain terms, such as triangular, stable, base, apex, symmetrical, area, center of gravity, balanced, etc.

EXTRA POINT

- Art may be created from anything, including plastic cups.
- Tell your students to paint the plastic cups from their pyramids--in solid colors, or not, with or without shapes and objects added.
- Once the cups are painted, invite the students to create pyramids with them. Each new pyramid is a new work of art.

GAME STATS

- In a cheerleading pyramid, the "flyer" is the one at the top who flies back down to safety. The cheerleader at the bottom is the "base," the same term used in geometry.

GOING PRO

- **Architect:** An architect is a skilled STEAM professional who plans and designs buildings. He or she plays a key role in the building's function, aesthetics, safety, and construction. Before they ever work independently, most architects have earned an advanced degree and a special license to practice, and have years of training. Some architects focus exclusively on sports stadium design.

The U.S. Air Force presents an immersive, fully responsive QB simulator that puts you in the middle of the game to see if you have what it takes to get the ball to your wide receiver before you get sacked!

RIGHTIES VS. LEFTIES

STANDARDS

Mathematics:

GSE MGSE3.NF.1
GSE MGSE4.MD.5
GSE MGSE5.NF.3

Art:

GSE VA3.CR.3a
GSE VA4.CR.3a
GSE VA5.CR.3c

Common Core Mathematics:

CCSS.Math.Content.3.NF.A.1
CCSS.Math.Content.4.MD.C.5
CCSS.Math.Content.5.NF.B.3

EQUIPMENT

- Journal and writing utensil
- Student Playbook for every student

KICKOFF QUESTION

- Are there differences between right-handed and left-handed people?

PREGAME

(Before the Hall of Fame)

- Survey the group for righties and lefties.
- As a class, discuss the difference.
- In their journals, have students recreate this table to use at the College Football Hall of Fame.

Right handed	
Left handed	
Right angle (center)	
Acute angle (to the left)	
Obtuse angle (to the right)	

FIRST HALF (At the Hall of Fame)

Note: Students can use their journals or the Student Playbook for grades 3-5.

- Send students to the Air Force Air Raid on the second floor: Some college football players use this AI (Artificial Intelligence) system to prepare for games.
- As students await their turn, have them watch other players and make tally marks for each player in the table in their journals or playbooks.
  - ☐ A ball thrown near the center is close to a right angle.
  - ☐ A ball thrown to the left is an acute angle.
  - ☐ A ball thrown to the right is an obtuse angle.

SECOND HALF (Back in the Classroom)

Using their data from the Hall of Fame, have students complete these tasks In their journals:

- Graph the data using a bar graph.
- Graph the data using a picture graph.
- Add the right-handed and left-handed players together for the total number of people. Use that and the tally marks from your table to determine and record:
  - ☐ The fraction of people who are right handed, and
  - ☐ The fraction of people who are left handed.

Discuss these questions with the class:

- Were there more right- or left-handed people?
- In which direction was the ball thrown most?
- What patterns do you notice?
- From the data you collected, what hypothesis can you make?

EXTRA POINT

- Ask students if they have ever tried to use only their non-dominant hand. If so, what was it like?
- Was it more difficult?
- How did it feel?
- Do you think with enough practice you could use either hand the same way? Why or why not?

Ask students to choose an object in the classroom, draw it with their dominant hand, and then draw the same object with their other hand. When everyone is finished, discuss the experience and invite volunteers to share their work.

Expand on concepts of area, angles, 2-D and 3-D shapes, and pose questions. For example, how is a pyramid different from a triangle?

Finally, have students explore using their non-dominant hand with various types of media: watercolor, crayon, pastel, etc. After some time, discuss which media was most challenging and why that might be.

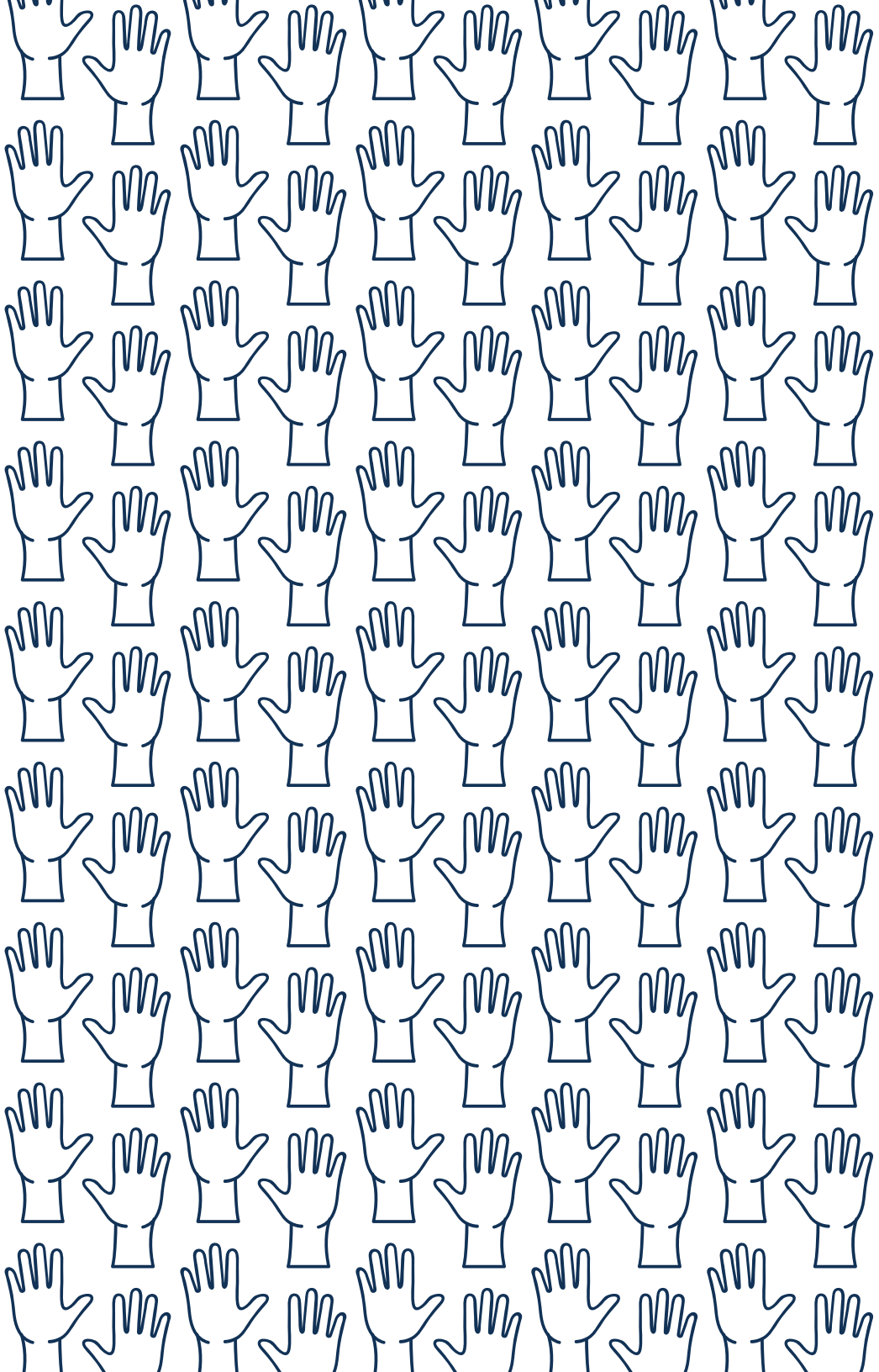
Tell students that although it's much harder using your non-dominant hand, it can actually create some very interesting lines and shapes.

GAME STATS

- Kangaroos and parrots are left handed. Most kangaroos groom themselves and eat with their left paw. Most parrots pick up objects with their left claw.

GOING PRO

- **Psychologist:** To study human cognitive, emotional and social processes and behavior, psychologists observe, interpret and record how people relate to each other and to their environments. A psychologist has a master's or doctorate degree in psychology. Sports psychologists provide counseling to players to help them gain a mental edge that can boost their performance.



RUN, JUMP, PLAY

STANDARDS

Science:
GSE S3P1
GSE S5P1

Art:
GSE VA3.CR.1c
GSE VA4.CR.1c
GSE VA5.CR.1c

Next Generation Science Standards:
NGSS 4-LS1-1

National Arts Standards:
VA.Cr1.1.3a
VA.Cr1.1.4a

EQUIPMENT

- Journal and writing utensil
- Student Playbook for each student
- One timer for every two students
- Enough 5'-long sheets of butcher paper for every 2-4 students
- Markers

KICKOFF QUESTION

- How do various exercises affect our body's systems?

PREGAME

(Before the Hall of Fame)

Show students how and where to find their own heartbeats. Options:

- Foot: Place your index and middle fingers above the highest point of the bone along the top of your foot. You may have to move your fingers along the bone or slightly to either side to feel the pulse.
- Wrist: Use the tip of the index and third fingers of your other hand to feel the pulse in your radial artery between your wrist bone and the tendon on the thumb side of your wrist. Apply just enough pressure to feel each beat.
- Neck: Press your first finger and middle finger to the side of your neck, just under your jaw and beside your windpipe. Don't use your thumb. Press your skin lightly to feel your pulse. If you can't find it, try pressing a bit harder or move your fingers around.

Ask everyone to find their pulse and count the beats, then put the students in pairs. Each pair has a Student A and a Student B. Give Student B a timer. Student A must stand or sit for 30 seconds to ensure a normal heart rate, then find her pulse. Student B starts his timer to measure one minute while Student A counts her heartbeats. When the minute ends, she writes down her final heartbeat count.

Now, Student A ups her heart rate by running or jumping in place. (Students with limited mobility can breathe faster to increase their heart rates.) Repeat the first procedure: Student B sets the timer for one minute while Student A counts her heartbeats. When the timer sounds, she records her heartbeats.

Optional: Student A and Student B switch roles so that Student B also determines his heart rate at rest and after exercise.

As a class, discuss the results with these questions:

- Was your heartbeat faster at rest or after exercise? Why is that?
- After you exercised, how long do you think it took your heart to return to its resting rate?
- What were other ways you could feel your body respond to exercise? [e.g., sweating, temperature increase, turning red, getting thirsty.]

FIRST HALF

(At the Hall of Fame)

Note: For these activities, students will use the Student Playbook for grades 3-5.

Direct students to the Kia Performance Challenge on the second floor. Students should read and respond to each paragraph below in their Student Playbook:

- Before extreme exercise, to "warm up" their bodies, athletes slowly contract and release their muscles, and carefully rotate their bone joints. Once they begin to exercise, they're less likely to rip, tear or twist their muscles or severely injure joints. List three warm-up activities for a football player before a big game.
- When you pull a rubber band, the material contracts (tightens); when you let it go, it releases (loosens). Like rubber bands, the muscles in your body contract and release. As you do the Vertical Jump, at what point do your leg muscles contract? When do they release?

- Your heart--within your cardiovascular system--pumps faster when your body needs more blood, quickly, to all its cells. When you sit or stand still, your heart pumps, but not as fast as when you move around. Does your heart beat faster before or after you complete the 40-yard dash? Why?
- Humans cool their bodies by sweating which is when the skin pushes out heat in liquid form through little holes called pores. Dogs and cats sweat a bit through their paws. Mostly they cool off by panting (sticking out their tongue to push hot air out and bring cool air in). If you don't wipe sweat from your skin, what eventually happens to it? Where does it go?

SECOND HALF

(Back in the Classroom)

Arrange the students into groups of 2-4 and give each group a sheet of butcher paper about 5' long. In each group, one student lies on the butcher paper while the rest uses markers to trace the outline of his body.

After the first student stands up and moves, the group should fill in the outline showing all the ways strenuous exercise affects various parts of the body. (Option: Students with Internet access can research some of these effects.) Students should use words and drawings to depict the effects, such as:

- increased heart rate
- increased blood flow
- increased breathing rate
- increased internal and external temperatures
- fatigue
- reddening of the skin (increase in lactic acid production)
- sweat
- hunger
- thirst

Have each group show their drawings to the group as a gallery walk or in a presentation. You also may display them around your classroom or throughout your campus.

EXTRA POINT

Ask students how they might depict objects or bodies in motion in drawings.

- How would you draw a figure to look as if it's running?
- How would you draw a ball so it appears to be bouncing?

Many artists will simply draw lines behind the object as shown in this example with a ball. Ask the students to practice drawing this ball with motion lines, and then move on to bigger objects, such as a car or a figure. This project can be a series of sketchbook drawings or more refined larger drawings for presentation.

GAME STATS

- In ancient Greece, bodybuilders relied on their own body weight for exercises such as pushups and pullups. When their body weight was insufficient, they'd lift stones, logs, and even large animals.

GOING PRO

- **Cardiologist:** A cardiologist is a physician focused on heart health, able to diagnose and treat patients with cardiovascular issues. Cardiologists perform tests, prescribe treatments for chronic conditions and conduct surgeries as needed. They earn a bachelor's degree and attend medical school where they specialize in cardiology. They work at research hospitals, clinics or in private practice. Cardiologists and other medical professionals can become board-certified in sports medicine, allowing them to work as part- or full-time physicians for college football teams.

THE ULTIMATE FOOTBALL PLAYER

STANDARDS

Art:

GSE VA3.CR.1a
GSE VA3.CR.1c
GSE VA4.CR.1a
GSE VA4.CR.1c
GSE VA4.CR.2a
GSE VA5.CR.1a
GSE VA5.CR.1c

EQUIPMENT

- Journal and writing utensil
- Student Playbook for each student
- Large paper
- Crayons or markers

KICKOFF QUESTION

- What characteristics and skills would you put together to create the ultimate football player?

PREGAME

(Before the Hall of Fame)

Ask students what it takes to be inducted into the College Football Hall of Fame. Is it more than physical ability? What characteristics do all Hall of Famers share?

When every student has had a chance to weigh in, say:

Every player in the College Football Hall of Fame must meet specific criteria such as these:

1. Received First Team All-America recognition.
2. Completed their final year of intercollegiate football.
3. While college football achievements are primary, in their community life the player reflects the ideals of football. Judges may also consider academic honors and whether the player earned a college degree.
4. They played their final year of intercollegiate football in the last 50 years. Professional players and coaches must be retired.
5. A coach is eligible three years after retirement or, if age 70 or older, immediately after retirement. Active coaches must be at least age 75, have been head coach for 10 years minimum, and coached at least 100 games with a .600 winning percentage.

Discuss these requirements with the students.

- Are any of them a surprise?
- Why should a candidate also be a positive role model or good citizen?

Tell the students that at the Hall of Fame, in a room on the third floor, they will see touch screens with information about every player ever inducted into the College Football Hall of Fame. At those screens the students will scan through the players, choose their favorite team and find the Hall of Famers from that team. When they find their players, they will write this information in their journals or playbooks:

- What positions did the players fill?
- What do they have in common?
- How are they different?

FIRST HALF

(At the Hall of Fame)

Note: During their Hall of Fame visit, students can refer to the Student Playbook for grades 3-5.

At some point in the visit, send your students to the third floor to find their favorite team and record the information reviewed before you left. The touch screens will have stories, videos, and stats. Allow time for students to find and write down all the information they can.

SECOND HALF (Back in the Classroom)

Now every student will design or create the "ultimate" football player--with the strengths and skills to play the following positions well enough to qualify for the College Football Hall of Fame.

Quarterback: As the leader of the team, the quarterback decides what plays will be called and signals the plays to the other players. After receiving the ball from the center, they either hand off the ball to the running back, throw it to a receiver or run with the ball. Important attributes for a quarterback include the ability to throw the ball far and accurately, as well as think on their feet and react quickly when a play doesn't go as planned.

Running Back: This player's job is to run with the football toward the end zone to score a touchdown. Running backs are also referred to as tailbacks, halfbacks and rushers. A running back needs to be able to run fast and maneuver quickly to dodge tackles.

Wide Receiver: The successful wide receiver moves quickly past defenders to catch the football and run as far as possible toward the end zone. Wide receivers must have good hands to catch the passes thrown to them by the quarterback and speed to elude defenders.

Defensive Lineman: The main job of the defensive lineman is to keep the other team from scoring. Depending on their position in the line, they work to overcome offensive blocking, pressure the opposing team's quarterback, disrupt the offense's backfield formation, and stop running plays by tacking the ball carrier or pushing them out-of-bounds. Linemen need to be big, strong and powerful.

Linebacker: Linebackers can have a wide range of duties as they defend against both running and passing plays. They are required to be all-around athletes with strength and speed so they can stop ball carriers, chase down the opponent's quarterback, and cover fast-running wide receivers.

Secondary: Players in the secondary defense such as the safety and cornerback provide the last line of defense against the opposing team's end zone. Positioned deep and wide on the field, defensive backs must be fast, tough and outstanding tacklers.

Once they draw their players, have the students put the characteristics and qualities in writing. In one or two sentences, explain how those qualities come together in the ultimate football player.

Remind the students to describe what kind of person the player is; a Hall of Famer also must have a proven record of good citizenship both on and off the field.

When they're finished, the students should present their ultimate players to the class and describe each of the characteristics they chose and why.

GAME STATS

- Of the 5.1 million people who have coached or played college football, fewer than 1,300 have been inducted into the Hall of Fame.

GOING PRO

- **College Football Coach:** A college football coach has at least a bachelor's degree. Often coaches hold a master's degree or higher, along with various certifications. Most college football coaches began at the high school level, where they also taught classes (requiring teacher certification), then moved up through smaller colleges to the university level.

UNUSUAL MASCOTS

STANDARDS

Art:

GSE VA3.CR.1a
GSE VA3.CR.1c
GSE VA3.CR.2a
GSE VA3.Cr.2b
GSE VA4.CR.1a
GSE VA4.CR.1c
GSE VA4.CR.2
GSE VA4.CR.2b
GSE VA5.CR.1a
GSE VA5.CR.1c
GSE VA5.CR.2a
GSE VA5.CR.2b
GSE VA5.CR.2d

National Arts Standards:

VA.Cr1.1.3a
VA.Cr1.1.4a
VA.Cr1.1.5a

EQUIPMENT

- Journal and writing utensil
- Large paper
- Crayons or markers

KICKOFF QUESTION

- Why are mascots an important and popular part of college football?

PREGAME

(Before the Hall of Fame)

Spark a discussion with a few basic questions:

- What is a mascot?
- What role do mascots play in sports?
- Do you have a favorite mascot? If so, what is it? Why is it your favorite?

After students answer, explain that mascots are symbols for their sports teams and often considered good luck. A mascot may be an animal, a person, or even an object. During games, they pump up the crowd by leading chants or cheers or other traditional activities.

Show examples of college football mascots. Create your own list, or use these:

- University of Georgia: Uga the Bulldog
- Naval Academy: Bill the Goat
- University of Florida: Albert & Alberta Gator
- Syracuse University: Otto the Orange
- University of Texas at Austin: Bevo the Longhorn
- East Carolina University: PeeDee the Pirate

After you view view images of mascots, ask the students three questions:

- What do you notice about the mascots?
- How are they similar?
- How are they different?

Point out that every mascot has a name. A school mascot is not just any person, place or thing; it has an identity. Ask the students why they think that may be important.

Explain that while they're at the Hall of Fame, they'll want to make notes of the mascots they see. As they move through the exhibits, encourage the students to note their favorites in their journals--or to create quick sketches. Back in the classroom, these notes will be essential to their projects.

FIRST HALF

(At the Hall of Fame)

Arriving at the Hall of Fame, remind students to be on the lookout for mascots at each exhibit they view. Images of mascots can be found on helmets, uniforms, banners, t-shirts, cups and other game-related items. They'll want to take notes on what they see and create quick sketches of their favorites. A few leading questions:

- What colors are used?
- What features does a given mascot have?
- What sorts of clothing does it wear?
- Does it carry anything?
- What about this mascot do you like?

Remind them that they will use the notes for a project later.

SECOND HALF

(Back in the Classroom)

Back in the classroom, ask your students to retrieve their notes. Encourage them to share anything they wrote or sketched. After everyone's had a chance to share, ask a few questions:

- What stood out to you about any of the mascots?
- Which ones were your favorites? Why?
- What qualities do you think make for a good mascot?

Now ask students to design their own mascots for their school or for a favorite sports team. If a student has no favorite team, suggest creating a mascot for a favorite activity. Remind your students that mascots stir excitement at an event and may be viewed as a good luck charm.

To start, have the students sketch ideas on a piece of paper. Their notes from the Hall of Fame can remind them of certain traits and features.

For the final design, give every student a large sheet of paper and markers or crayons. Tell them to draw their mascot in detail and in full color.

When everyone finishes, have them present their mascot designs to the class and answer three questions:

- What's your mascot's name?
- Why did you choose this animal/object/person?
- As you created your design, which mascots inspired you?

If possible, hang the mascot drawings in a space for a group viewing. Have the students write their answers to the three questions and post the information with their drawing.

GAME STATS

- Uga the Bulldog has been the University of Georgia mascot since 1956. Uga V, who reigned from 1990-1999, once appeared on the cover of Sports Illustrated.

GOING PRO

- **Sewist:** A sewist sews fabric together to create a completed ensemble, such as a mascot uniform. For this career, you would most often need a high school diploma and training in design, sewing, and measurements. You would also need experience working with various types of fabric.

WHAT'S IN A NICKNAME?

STANDARDS

Art:

GSE VA3.CR.1a
GSE VA3.CR.1c
GSE VA3.CR.2a
GSE VA3.CR.2b
GSE VA3.RE.1d
GSE VA4.CR.1a
GSE VA4.CR.1c
GSE VA4.CR.2a
GSE VA4.CR.2b
GSE VA4.RE.1d
GSE VA5.CR.1a
GSE VA5.CR.1c
GSE VA5.CR.2a
GSE VA5.CR.2b
GSE VA5.CR.2d
GSE VA5.RE.1d

National Arts Standards:

VA.Cr.1.1.3a
VA.Cr.1.1.4a
VA.Cr.1.1.5a

EQUIPMENT

- Journal and writing utensil
- Large paper
- Crayons or markers

KICKOFF QUESTION

- How does a nickname define a space or how we experience it?

PREGAME

(Before the Hall of Fame)

Before heading to the Hall of Fame, discuss the term "nickname" with your students. Ask how a nickname may apply to a building or space.

A few starter questions:

- What's a "nickname"?
- Can a building have one? If yes, what are some examples?
- How can a nickname define a space?

After students give answers, explain that over time certain buildings--football stadiums in particular--acquire nicknames that also influence how people think about the space.

The official names of football stadiums honor a respected player or famous person from the school, or the school's geographic setting, or a school tradition.

Ask the students if they already know any football stadium nicknames. After a few answers, review this list with them:

- University of Georgia: Between the Hedges
- Louisiana State University: Death Valley
- Texas A&M University: Home of the 12th Man
- University of Michigan: The Big House
- Ohio State University: The Horseshoe
- University of Notre Dame: The House that Rockne Built
- University of Wisconsin: The Camp
- University of Southern California - The Grand Old Lady

Each time you read a stadium nickname aloud, based solely on its nickname, ask the students to describe what that stadium might look like. If possible, have an image of each stadium to show how the nickname may or may not reflect the stadium's physical space. Print out the images or have them available for group view.

From the list of stadiums, have students choose one or two favorites to research at the College Football Hall of Fame. If their favorite team or stadium isn't on the list, they're still welcome to use it.

At the Hall of Fame, every student settles on a team/stadium to follow. Tell them while they're there to take notes on everything they find out about that team or stadium. Questions to guide their thinking:

- What are the team colors?
- What is the mascot?
- Where is the stadium located?
- What is the shape of the stadium?
- What are some features of the stadium that make it stand out?

If the students can write out their questions before they go, they have a checklist to use in the Hall of Fame.

FIRST HALF

(At the Hall of Fame)

Arriving at the Hall of Fame, remind students to find all the information they can about their team or stadium and to record it in their journals. As they move through the floors, remind them to look for their team and record any interesting facts.

On the second floor at the Blimp Experience, have your students check for their stadium. If it's on the list, try to view the flyover.

Remind them to keep up with their notes to refer to them back in the classroom.

SECOND HALF

(Back in the Classroom)

Back in the classroom, have the students produce their notes from the College Football Hall of Fame.

To start a discussion, toss out a few questions:

- What interesting facts did you learn about your team/stadium?
- What did you learn that surprised you?
- What did you most enjoy learning about?
- How do you think a stadium's nickname can influence what clothing or accessories fans might wear to show their team support?

After all the students have a chance to speak, spend time on the final question. Ask students to think about how football fans love to wear shirts that support their team, and then consider the designs on the shirts. When teams or stadiums have nicknames, artists who design fan apparel can translate those nicknames into images.

For this project, students use the information they gathered about their team's stadium nickname to design a tee shirt graphic for their team. The students have creative freedom, but the artwork is images only: no words, numbers, letters or symbols.

Encourage the students to create three or four sketches before they start their final drawing.

Every final drawing is a full-color design on a large sheet of paper. Make sure it has NO stadium nickname or team name.

Have the students post their finished work around the classroom. As a group, have them walk to each design and guess the team it represents. After the students guess, have the designer answers three questions:

- How is the stadium's nickname in your design?
- How will fans know this design represents their team?
- What part of this project challenged you most?

When the students have considered every design and heard every response, ask them:

- In your research and design creation, how did your stadium's nickname affect how you think about that team or stadium?

GAME STATS

- The football stadium for the University of Georgia is called "between the hedges" for the 5,000 square feet of hedge surrounding the field. Originally planted in 1929, the hedges have been dubbed "the most famous flora in football."

GOING PRO

- **Graphic Designer:** A graphic designer creates visual texts and imagery concepts by hand or using computer software to communicate ideas that inspire, inform, or captivate consumers. To become a graphic designer, you need a bachelor's degree in graphic arts, design, or a related field and extensive knowledge of design software. College football teams often have a graphic designer on staff to create illustrations to boost their brands and support their social media team.

WHAT'S THE SCORE?

STANDARDS

Mathematics:

GSE MGSE3.OA.3
GSE MGSE3.OA.4
GSE MGSE4.OA.1
GSE MGSE4.OA.3
GSE MGSE5.NBT.5
GSE MGSE5.NF.3
GSE MGSE5.NF.6

Common Core Mathematics Standards:

CCSS.Math.Content.3.NBT.A.3
CCSS.Math.Content.3.OA.A.1
CCSS.Math.Content.4.OA.A.1
CCSS.Math.Content.4.OA.A3
CCSS.Math.Content.5.NBT.B.5
CCSS.Math.Content.5.NF.B.3
CCSS.Math.Content.5.NF.B.6

Art Standards:

GSE VA3.CR.1a
GSE VA3.CR.1c
GSE VA3.CR.2a
GSE VA4.CR.1a
GSE VA4.CR.1c
GSE VA4.CR.2a
GSE VA4.RE.1b
GSE VA5.CR.1a
GSE VA5.CR.1c
GSE VA5.CR.2a
GSE VA5.RE.1b

National Arts Standards:

VA.Cr1.1.3a
VA.Cr.1.1.4a
VA.Cr.1.1.5a

EQUIPMENT

- Journal and writing utensil
- Dice

KICKOFF QUESTION

- How are scores calculated in a football game?

PREGAME

(Before the Hall of Fame)

In football, as with most games, the team with the most points wins. A team scores when it throws or runs the ball into the other team's end zone, or when it kicks the ball through the goalpost. The table below explains how points are earned.

Type of Play	Points	Description of the football play
Touchdown	6	A player carries or catches the ball in the end zone. This may be followed by either a 2-point conversion or an extra point--but not both.
Field goal	3	In place of a touchdown, a player kicks the ball through the goalpost.
Safety	2	A player is tackled in his own team's end zone. The other team gets the points.
2-point conversion	2	After a touchdown, a player carries or catches the ball in the end zone. This score is possible only following a touchdown.
Extra point	1	Following a touchdown, a player kicks the ball through the goalpost. This score is possible only after a touchdown.

Using a die and the table below, in the following activity students simulate the score of a football game:

A student rolls a die for each type of play in a football game, recreates the table below in his or her journal, and, in the column, records the number they rolled. Remember: No extra points or 2-point conversions without touchdowns.

Type of play	Points	Number rolled	Score
Touchdown	6		
Field goal	3		
Safety	2		
2-point conversion You cannot have more than the number of touchdowns	2		
Extra point You cannot have more than the number of touchdowns	1		

To get the score for each play type, students multiply the number rolled by the point value, recreate the table in the journal, and record the values there.

Remember that the number of extra points and 2-point conversions cannot exceed the number of touchdowns. If this happens, students may roll the die again to get a lower number.

Have students add the score of each type of play to get the score of the game, then answer:

- When you compare your score to your classmates', who had the highest score?
- What's the difference between your score and the highest score?

Now ask your students to answer:

- If a football team scores one touchdown with an extra point kick in the first half of a game, and two field goals in the second half, what is the team's final score? Write out the equation and solve it.
- If the total touchdown score is 24, how many touchdowns were made? Write an equation and solve for your variable.
- If the total touchdown score is 26, how many touchdowns and extra points were made? Write an equation and solve for your variable. Use the remainder to find the extra points.

Give your students the following data and problem:

In 1962, the University of Minnesota played the University of California-Los Angeles (UCLA) at the Rose Bowl. It was the first nationally televised college football game ever shown in color, and Minnesota won by a score of 21-3.

- How did UCLA earn the 3 points?
- How could Minnesota have earned the 21 points?

Allow time for students to discuss this with a partner and then as a group.

Finally, tell students while they're in the Hall of Fame to collect scores from Rose Bowl Games at the Goodyear Blimp Experience, which is on the second floor. Ask students to recreate the following table in their journals, bring the journal with them to the Hall of Fame, and then record their data in the table.

Year game played	Winning team name	Winning score	Losing team name	Losing score

FIRST HALF

(At the Hall of Fame)

Remind students to record scores from past Rose Bowl Games at the Goodyear Blimp Experience on the second floor for use back in the classroom.

If you plan for students to complete the Extra Point art activity, direct them to look closely at the Rose Bowl trophy in the Bowl Game trophy case on the second floor.

SECOND HALF

(Back in the Classroom)

Tell your students to have ready their Rose Bowl scores from the Hall of Fame. If students did not have time to record scores while at the Hall of Fame, they can look them up at https://tournamentofroses.com/about/rose-bowl-game-history/.

Tell them to use those scores to determine the difference between the winning team with the highest score and the winning team with the lowest score, and then record their data in the table provided.

Next, have students use the scores they collected to determine the difference between the losing team with the highest score and the losing team with the lowest score--and record their data.

When they're finished, ask them what they notice about the difference of the scores.

EXTRA POINT

The annual Rose Bowl Game is usually on January 1 in the Rose Bowl Stadium in Pasadena CA. It's the oldest bowl game, and it was first played in 1902. Each year a big parade precedes the game. The game winner receives the prestigious Rose Bowl trophy.

According to www.tournamentofroses.com: The annual Rose Bowl Game trophy, also known as the Leishman Trophy, goes to that year's winner. The trophy's name honors the 1920 Tournament of Roses President William L. Leishman, responsible for the construction of the Rose Bowl Stadium, and his son, 1939 Tournament of Roses President Lathrop K. Leishman, who helped establish the Rose Bowl Game as "The Granddaddy of Them All."

Tiffany & Co. designs and crafts the Rose Bowl Game trophy. The 21-inch-tall design features a 3/4-size football entirely in sterling silver. Master artisans create it with age-old techniques – spinning, silversmithing, chasing, etching, and polishing. The process takes about three months to complete.

Show the students the image of the trophy, and ask them:

- What do you notice about the trophy?
- What do you think works best in the trophy design?
- What would you change about the design?

Tell the students to design a new trophy for this year's Rose Bowl Game. Sketch the ideas first, then draw a final design, in color, on a large sheet of paper. Give them this checklist:

- What shapes do they want to include?
- What colors, if any, are important?
- What particular objects might represent this year?
- What size should the trophy be?
- What, if anything, should accompany the trophy?

When they finish, ask your students to present their work to the class and address the above considerations. If possible, display the artwork in the school before the Rose Bowl.

GAME STATS

- For many years, college football games could end in a tie when the fourth quarter ended. In 1996, the rules were changed to include overtime, and tie games were eliminated.

GOING PRO

- **Statistician:** A statistician usually requires a degree in mathematics or statistics. Statisticians create surveys, opinion polls and questionnaires--and collect, organize and analyze the data to form conclusions. Companies use the information to compete in their industry. Statisticians who work for sports teams track data on players and teams to help them improve their performance.

YOU HAVE BEEN RECOGNIZED!

STANDARDS

Computer Science:

GSE CSS.EL.3-5.1.5
GSE CSS.EL.3-5.1.6
GSE CSS.DA.3-5.9.1
GSE CSS.DA.3-5.9.2

Art:

GSE VA3.CR.2a
GSE VA3.CR.2b
GSE VA4.CR.2a
GSE VA4.CR.2b
GSE VA5.CR.2a

EQUIPMENT

- Journal and writing utensil

KICKOFF QUESTION

- How will RFID change the world?

PREGAME

(Before the Hall of Fame)

Start a discussion with your students using these facts and questions:

- To create a unique experience for everyone, the College Football Hall of Fame uses RFID technology.
- RFID stands for Radio Frequency Identification.
- RFID technology is comparable to barcode scanners, except:
  - ☐ Barcode scanners require a straight line to scan and can only scan one thing at a time.
  - ☐ RFID can read multiple codes at the same time and only needs to be near the reader.
- Where do you think you've seen RFID in use?
  - ☐ Have students record the list in their journals.

FIRST HALF

(At the Hall of Fame)

As they enter the College Football Hall of Fame, remind your students to receive and register their All-Access Pass, which allows the building to recognize them as they move about the Hall of Fame. The students will receive an RFID-enabled badge.

- As students tour the Hall of Fame, ask them to list in their journals all of the places where the building knows their name.
- Also, ask students to brainstorm and list places where everyday life could be enhanced with RFID technology.

SECOND HALF

(Back in the Classroom)

As a class, discuss the following and have your students note their findings in their journals.

- How did their ideas about RFID change because of the trip?
- How did their ideas about RFID remain unchanged by the trip?
- How do they think RFID technology changes the world in good ways?
- When is RFID not a good idea?
- What other ways can RFID technology help people?
- How can RFID technology can change the future?

EXTRA POINT

Ask the students to brainstorm places in their school that would benefit from RFID technology.

Discuss these questions:

- Is it beneficial for spaces or objects in the school to recognize you?
- What spaces or objects do you think should have that technology?
- Why do you think this would be a good thing? What benefits would it bring?
- In what cases would it not be a good thing?

Put students in sets of two or three to brainstorm designs incorporating RFID technology into the school or classroom. Tell them to keep in mind the following questions. Display these in the room to refer to or have students write them in their journals:

- Should RFID technology be part of the room or an object inside of the room?
- Should it be noticeable or hidden? Why?
- What types of information should the object recognize?
- How could the technology be helpful to the person using it or not?

Have your students sketch preliminary ideas and create a final polished drawing in color. If possible, allow them to cast a prototype of their design in modeling clay.

When they're finished, have them present their ideas to the class and explain why it would benefit the user.

GAME STATS

- In 1945, the Soviet Union presented a hand-carved ceremonial seal of the USA to the US ambassador. Inside the seal was a predecessor to RFID (Radio Frequency Identification) technology. The ambassador checked the seal for bugs but found no wires or batteries. This device transmitted voices to the Soviet Union; it hung in his office for seven years before the device was discovered.

GOING PRO

- **RFID Engineer:** RFID Engineers must hold a bachelor's degree in mechanical engineering, electrical engineering or computer engineering. Using the principles of radio frequency and electronic conductors, RFID engineers design, develop and test RFID tags. They also invent new uses for RFID technology and design ways to implement them, including the interactive experiences at the College Football Hall of Fame.

NOTES, THOUGHTS & SKETCHES

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