DREAM FLIGHT ADVENTURES

Inspiring the world to think and dream

Instructor Packet

Everything you need to make the most of your Dream Flight Adventures mission

 We ignite imaginations, blur the line between entertainment and education, and let dreams take flight.

Introduction

Dream Flight Adventures is an interactive learning experience teaches **teamwork**, **critical thinking**, and **problem solving** by blending **science**, **technology**, and **engineering** with **social studies**, **humanities**, and the **arts**. In other words, it's a **real-life "Magic School Bus."** It's part simulator, part game, and part theater—and it creates an out-of-this-world experience!

The Dream Flight Adventures experience centers around an educational adventure that takes place in one of our full immersion simulators. Groups of students enter the simulator, work together to operate it, and go on incredible adventures. They travel to outer space, under the sea, back in time, through the body—anywhere their imaginations take them!

Students become the captain and crew of these simulators and must **work together** to complete their missions, and their success or failure can depend on the action of a single person. Our missions are **completely flexible and open-ended**. Students must **think creatively**, and each action can change the outcome of the mission.

Dream Flight Adventures builds upon the 20+ years of experience of the Christa McAuliffe Space Education Center, which has enriched the lives of over 300,000 children. Our missions are designed around **Common Core and state standards** by professional educators and are brimming with educational content. And the kids love them! They're often described as "better than Disneyland."

Our adventures use science fiction and fantasy contexts to expose students to **standards-based curriculum**, thought-provoking **social and ethical issues**, and crucial **21st Century skills**. These unique adventures create a strong emotional experience. This helps imbue the concepts deeply in our students' memory, so the lessons they learn remain with them for their lifetimes.

How To Use This Packet

Whether you're a frequent visitor or taking your class to Dream Flight Adventures for the first time, this packet contains all the information you'll need to make the most out of a Dream Flight Adventures mission. It includes background information about the simulator and mission, instructions to prepare your students, and a variety of lesson plans and curriculum-based activities that supplement the mission. We want your experience with Dream Flight Adventure to be unforgettable from beginning to end.

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Preparation Guide & Checklist

This packet is loaded with all sorts of materials to help you integrate your Dream Flight Adventures mission seamlessly into your existing lesson plans. That said, this packet can be a little daunting at times. Please take advantage of the following checklist to make sure you and your students are fully prepared for an unforgettable experience.

Getting Started

- ☐ Review the available missions at www.dreamflightadventures.com/missions and select one that matches your curriculum or seems interesting to your students.

  Each mission has multiple curriculum touch-points. If you need help deciding which one is best for your students, please contact us via www.dreamflightadventures.com/contact. We're eager to help!

- ☐ Schedule your adventure by contacting us at www.dreamflightadventures.com/contact.

Preparing for the Adventure

- ☐ Start by reviewing the **Simulator Overview** section of this packet, which describes the simulator experience and curriculum.

- ☐ Pay particular attention to the *Student Stations* section, which describes the various roles your students will have during the adventure.

  You may consider assigning these roles to your students in advance. The *Student Stations* section includes several pointers about what type of student is most appropriate for each role. For an even richer experience, allow your students to complete the *Infinity Knights Job Application* project in the **Lesson Plans & Curriculum-based Activities** section.

- ☐ Review the *Mission Introduction* for your mission with your students. This introduction is included in the **Mission Materials** section of this packet.

  The *Pre-Mission Diary* project, included in the **Lesson Plans & Curriculum-based Activities** section of this packet, provides a great way for students to reflect on their upcoming adventure.

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The "Big Day"

- ☐ Arrive on time to maximize your students' time inside their simulator adventure.
- ☐ Watch the adventure unfold. While your students are engulfed in their fully immersive adventure, you are welcome to join the Dream Flight Adventures staff behind the scenes to watch your students in action.

Aftermath

- ☐ Hold a class discussion with your students. Review how the mission relates to material you've covered in your curriculum.

  The *Mission Debrief Class Discussion Guide,* included in the **Lesson Plans & Curriculum-based Activities** section of this packet, contains several thought-provoking and mission-specific questions to help spur discussion.

- ☐ Allow your students to reflect on the adventure, record their experiences, and share what they have learned.

  The *Multimedia Mission Memoir* project, included in the **Lesson Plans & Curriculum-based Activities** section of this packet, helps students think through their mission's underlying concepts through the creative use of multimedia.

- ☐ Look ahead. Each of our missions blends a wide variety of topics. While you may have already addressed some of these topics in your lessons, others might still be down the road. Review the mission's curriculum topics and prepare to reflect back on the mission in future lessons. The curriculum topics associated with the mission are listed in the *Mission Overview*, found in the **Mission Materials** section of this packet.

Simulator Overview

A quick look at the where the magic happens

DREAM FLIGHT ADVENTURES

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Full Immersion Simulators

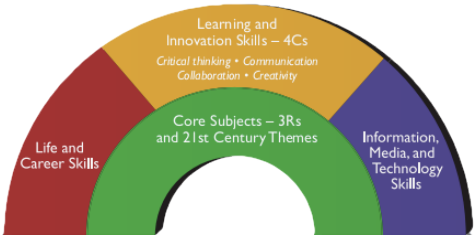
Dream Flight Adventure simulators are **immersive interactive environments** that throw students into the middle of epic stories. These stories are standards-based and built around core curriculum topics in science, social studies, technology, history, literature, and the arts.

Students become **active participants** in these stories, not passive observers. They must **learn how to operate the technology controls**, and then they must **apply that knowledge** in pursuit of their mission.

By virtue of the simulator's design, each mission—regardless of content—teaches over **forty 21st century skills**, which are organized below according to the Framework for 21st Century Learning.

Life and Career Skills

- Leadership & responsibility
- Productivity & accountability
- Cross-cultural interaction
- Initiative & self-direction
- Flexibility & adaptability
- High-stakes decision making
- Giving & following directions
- Planning
- Cost/benefit analysis
- Scarce resources & tradeoffs
- Prioritization
- Law enforcement
- Medicine
- Forensics
- Emergency response



Learning and Innovation Skills

- Critical thinking
- Problem solving
- Creativity and innovation
- Teamwork & collaboration
- Written communication
- Verbal communication
- Situational analysis
- Interpersonal relations

Information, Media, & Technology Skills

- Computers
- Music & sound
- Information literacy
- Cybersecurity
- Cryptology
- Acceleration
- Waveforms
- Additive color mixing

Core Subjects and 21st Century Themes

- Anatomy
- Immune systems
- Genetics & mutation
- Drama
- Acoustics
- Vital signs
- Navigation
- Atmospheric conditions
- Summarization

Each mission also includes its own unique curriculum aligned to Common Core and state standards. These missions all includes several relevant **STEM topics**; topics from **history, literature, and the humanities**; and thought-provoking **social or ethical issues**.

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Student Stations

During a Dream Flight Adventure mission, groups of students must work together as a team to accomplish a challenging objective. Each student is assigned a station and has individual responsibility for his or her role, which contains several important tasks. Our simulators support groups of 4-16 students at a time. The stations are:

Captain

The Captain is responsible for making all command decisions and ensuring that the mission is completed successfully. The Captain also serves as the official representative of the Infinity Knights.

Embedded Concepts:
Leadership, verbal communication, high-stakes decision making, group cohesion and morale

Selection Suggestions:
The Captain should be a student who can speak clearly and think on his or her feet. Level-headed students with strong leadership skills tend to make good Captains.

First Officer

The First Officer is responsible for ensuring that the captain's orders are carried out. The First Officer will assume command in the event that the Captain is disabled.

Embedded Concepts:
Situational analysis, teamwork, leadership, summarization, oral communication, multitasking

Selection Suggestions:
The First Officer should be a student who interacts easily with his or her peers, follows directions, and exhibits strong leadership abilities. Students who pay close attention to detail tend to make good First Officers.

Second Officer

The First Officer is responsible for ensuring that the captain's orders are carried out. The First Officer will assume command in the event that the Captain is disabled.

Embedded Concepts:
Situational analysis, teamwork, leadership, summarization, oral communication, multitasking

Selection Suggestions:
The Second Officer should be a student who interacts easily with his or her peers, follows directions, and exhibits strong leadership abilities. Students who pay close attention to detail tend to make good Second Officers.

Pilot & Navigator (1 or 2 students, depending on the simulator)

The Pilot and Navigator are responsible for navigating the ship. This involves understanding the current location, charting a course to the destination, and steering the ship.

Embedded Concepts:
Cartography, 2D representations of 3D space, compass directions, velocity and inertia, acoustics

Selection Suggestions:
The Pilot should be a student with strong spacial perception skills and the ability to multitask well. Students who play video games in their spare time and have a good sense of direction tend to make effective Pilots. However, hyperactive students are **discouraged** from being Pilots.

Biologist

The Biologist is responsible for mutating and controlling the onboard Chimera, a genetically modifiable creature that can be adapted to the needs of the mission.

Embedded Concepts:
Genetics, mutation, tradeoff of scarce resources, zoology, addition and subtraction

Selection Suggestions:
The Biologist should have a relatively strong number sense. Students with a love for plants or animals tend to make good Biologists.

Physicist

The Physicist is responsible for operating the ship's Versabeam, an energy beam with several different abilities. The physicist is also in charge of strategically allocating the ship's power supply.

Embedded Concepts:
Planning, tradeoff of scarce resources, effects of radiation, multitasking

Selection Suggestions:
The Physicist should be a student with quick reaction skills and a strong understanding of cause-and-effect relationships. Students who are interested in science tend to make good Physicists.

Engineer (2x)

The Engineers are responsible for making sure that all ship systems function properly. This involves repairing damaged systems and creating ammunition for the ship's weapons and Versabeam.

Embedded Concepts:
Following instructions, pattern recognition, additive color mixing, planning, multitasking

Selection Suggestions:
The Engineers should be strong readers who are good at following directions. Students with good attention to detail and interest in mechanical processes tend to make good Engineers.

Hacker

The Hacker is responsible for hacking into enemy computers. The Hacker is also in charge of strategically allocating the ship's computer capacity.

Embedded Concepts:
Technology literacy, computer engineering, artificial intelligence, tradeoff of scarce resources

Selection Suggestions:
The Hacker should be a student who is patient and pays close attention to detail. Students interested with computers and gaming tend to make good Hackers.

Gunner

The Gunner is responsible for using the ship's weapon systems to protect the crew from threats. The Gunner is also in charge of transforming the ship into different forms, depending on the needs of the mission.

Embedded Concepts:
Planning, tradeoff of scarce resources, timing, cause and effect

Selection Suggestions:
The Gunner should be a student with quick reaction skills and a strong understanding of cause-and-effect relationships. Level-headed students tend to make good Gunners. Hyperactive or aggressive students are **discouraged** from being the Gunner.

Security Chief

The Security Chief is responsible for ship wide safety and security. This involves controlling the ship's shield, stealth, and cybersecurity systems.

Embedded Concepts:
Planning, strategic thinking, tradeoff of scarce resources, IT security, leadership

Selection Suggestions:
The Security Chief should be a student who is a good team player with leadership skills. Students who are self-starters and pay close attention to detail tend to make good Security Chiefs.

Security Guard (2x)

The Security Guards are responsible for maintaining order and safety within the ship. They defend the ship from invaders, investigate shipboard disturbances, and respond to security alerts.

Embedded Concepts:
Investigative inquiry, reporting, law enforcement, teamwork, forensics

Selection Suggestions:
The Security Guards should be students who are good at following directions and have strong writing skills. Outgoing students tend to make good Security Guards.

Doctor

The Doctor is responsible for the well-being of the crew. This involves everything from maintaining crew morale to performing emergency medical operations.

Embedded Concepts:
Human anatomy, medicine, toxins, healthcare, blood cells

Selection Suggestions:
The Doctor should be a student who is comfortable multitasking and pays close attention to detail. Students with interest in biology tend to make good Doctors.

Communications

The Communications Officer is responsible for incoming and outgoing communications, both written and verbal. This also includes decrypting encoded messages.

Embedded Concepts:
Written communication, waveform amplitude and frequency, encryption

Selection Suggestions:
The Communications officer should be a student with excellent reading and writing skills. Students with good spatial perception and a passion for reading tend to make good Communications officers.

Deck Chief

The Deck Chief is also responsible for monitoring internal and external sensors and performing detailed scans of the objects the ship encounters.

Embedded Concepts:
Forensics, 2D representations of 3D space, pressure, atmospheric conditions

Selection Suggestions:
The Deck Chief should be a student who is comfortable multitasking and pays close attention to detail. Students with strong reading and writing skills tend to make good Deck Chiefs.

Mission Materials

Details about your specific mission

SUCCESSION

In whose hand will the kingdom stand?

COMPARATIVE POLITICS – MONARCHY, DIRECT DEMOCRACY, AND REPUBLICS – NUCLEAR ISOTOPES AND RADIOACTIVE DECAY – MARINE BIOLOGY – SEPARATION OF CHURCH AND STATE – SPACE EXPLORATION – CORONATION, INHERITANCE, AND ELECTIONS – CHECKS AND BALANCES IN THE U.S. GOVERNMENT

DREAM FLIGHT ADVENTURES

SUCCESSION

Mission Overview

A crisis is unfolding! The King of the planet Megara has died, and no successor has been chosen. The entire world is in political uproar. Many factions now vie for the throne, and unless a new King is chosen soon the planet will break out into civil war.

By tradition, the Oracle of Delphi is responsible for appointing the new King, but at the time of the King's death she was far away on a distant world. When she heard of the King's death she immediately began returning home to Megara, but she never arrived! Her ship's signal was last detected taking a shortcut through the Rogue System—a notorious hideout of the Orion Pirates.

Fearing the worst, the Priests and Priestesses of Delphi have called upon the Infinity Knights—the renowned protectors and peace and justice throughout the universe—to find the missing Oracle and return her safely back to Megara. Only then will she be able to resolve the conflict, appoint a new King, and restore peace.

But that's not all! Several other factions are trying to find the Oracle first to force her hand. Will the Infinity Knights be able to rescue the Oracle, reconcile the political tensions, and avert a civil war?

Standards-Based Curriculum

Comparative politics
Monarchy, direct democracy, and republics
Nuclear isotopes and radioactive decay
Marine biology
Separation of church and state
Space exploration
Coronation, inheritance, and elections
Checks and balances in the U.S. government

Higher Order Thinking

What was the founding fathers' reasoning behind how they set up the U.S. government?
What are the advantages and disadvantages of democracy? Monarchy? Democratic republics?
Under what conditions should decisions be made by majority rule? When shouldn't majority rule be used?
How should societies handle minority interests?
What roles do longtime traditions play in rapidly changing societies?
What is the fine line between competitive rivals and enemies?

SUCCESSION

Mission Introduction

A crisis is unfolding! The King of the planet Megara has died, and no successor has been chosen. The entire world is in political uproar. Many factions now vie for the throne, and unless a new King is chosen soon the planet will break out into civil war.

By tradition, the Oracle of Delphi—one of Megara's most sacred spiritual leaders—is responsible for appointing the new King. Thousands of years ago Megara was chaotic, uncontrolled, and plagued with war as people fought against each other for power. Hoping to save the people from their own greed, the Oracle of Delphi appointed a King for the entire world, and peace was restored. Ever since that time, when one King dies the Oracle of Delphi appoints a new one from among Megara's five Noble Houses.

This tradition has preserved peace on Megara for thousands of years. But this time, things are different. A large group of commoners known as the Plebians are demanding that one of their own be named King. They claim that the current system is a flawed, outdated, and superstitious way to choose a King. The five Noble Houses naturally resist this movement, and tensions are on the rise. It's only a matter of time until the conflict erupts into civil war.

To make matters worse, the current Oracle, a young girl, has not been able to take any action. At the time of the King's death she was receiving training at a monastery on a distant world. When she heard of the King's death she immediately began returning home to Megara, but she never arrived! Her ship's signal was last detected taking a shortcut through the Rogue System—a notorious hideout of the Orion Pirates.

Fearing the worst, the Priests and Priestesses of Delphi have called upon the Infinity Knights—the renowned protectors and peace and justice throughout the universe—to find the missing Oracle and return her safely back to Megara. Only then will she be able to resolve the conflict, appoint a new King, and restore peace.

Your mission is to travel to the Rogue System, locate the missing Oracle, and return her safely back to Megara. The only clue we have is that her vessel had a nuclear reactor powered by Uranium. Your ship's sensors may be able to detect Uranium Isotopes leading you to her.

But that's not all. One of the more militant Houses on Megara—the House of Ares—has dispatched a rescue team of its own. They will also be searching for the Oracle, and if they find her first they will force her to appoint one of their own House to be the new King. You must not allow this to happen! You must reach the Oracle first to ensure that she appoints the new King without interference.

And last but certainly not least, beware of the Orion Pirates! Intelligence about the Rogue System is spotty at best, but according to rumor it is infested with Orion Pirates, and they are notoriously ruthless!

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Lesson Plans & Curriculum-based Activities

Helpful tools to extend the magic before and after the mission

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Name _____

Infinity Knights Job Application

In the near future you will embark on an exciting Dream Flight Adventures mission. You and your peers will become members of the *Infinity Knights*, the protectors of peace and justice throughout the universe. Together, you will operate a fantastic ship to accomplish a challenging mission. It will not be easy, and you will need to work as a team to be successful.

It is a great honor to serve with the *Infinity Knights,* and every station on your ship is important. Review the ship's stations at www.DreamFlightAdventures.com/simulators/. Pay attention to how your crew must work together and think about the stations that interest you most.

Identify the three stations where you'd most like to serve. Write a persuasive essay describing why you'd be a good choice for these positions. Describe why you are interested in the roles and how you think you would do a good job. Share how these positions relate to past experiences you've had or goals you have for the future. Use the space below or separate sheets of paper to write your persuasive essay.

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Name _____

Pre-Mission Diary

Read the *Mission Introduction* for your upcoming Dream Flight Adventures mission. Write a journal entry describing how you feel about the mission. What do you think it will be like? What will you do? What challenges will you face, and how do you plan on handling them? Use the space below or a separate sheet of paper if you need more room.

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Making Models of Atoms & Isotopes

During the *Succession* simulation, students will learn about radioactive isotopes and apply their understanding to locate a missing spaceship. To build upon this learning, considering using the following hands-on project, provided by our partners at www.science-class.net.

This project can be done either **before** or **after** the *Succession* simulation.

CHEMISTRY

Name_____

Making Models of Atoms & Isotopes

Problem: To build 3 – dimensional models of the hydrogen atom.

Background Information: An **atom** is defined as a small particle that makes up most types of matter. Atoms are so small it would take about 1 million of them lined up in a row to equal the thickness of a human hair. Atoms are made up of even smaller particles. The largest of these particles are **protons**, **neutrons** and **electrons**. The identity of a type of matter depends on the number of protons in the nucleus of an atom of that type of matter. All atoms of the same type of matter have the same number of protons in the nucleus. For example, ***all*** carbon atoms have six protons.

Not all atoms of the same type of matter have the same number of neutrons. Most carbon atoms have 6 neutrons, although some have more and some have less. Atoms of the same type of matter that have different numbers of neutrons are called **isotopes**. Most types of matter have isotopes.

Re-write the main ideas of the background information here:

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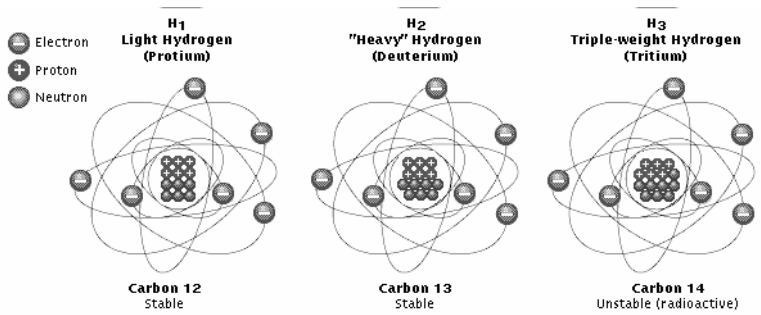
The atomic mass, or mass number, can be used to identify isotopes. The mass number of a type of matter is the number of protons and neutrons in one atom of that matter. In our example of carbon, 6 protons + 6 neutrons = 12 particles in the nucleus; the mass number = 12. The name for this isotope is Carbon – 12.
The symbol for Carbon – 12 is:

Mass Number → ^{12}
Atomic Number → $_{6}$ C

Diagrams of carbon isotopes:



Isotopes are used in many ways. Many are used in cancer therapy. Some are used to help identify the age of objects and locate buried cables.

The gas hydrogen has three isotopes. The most common isotope of hydrogen has a nucleus that is made up of one proton and no neutrons. More than 99% of hydrogen is this isotope. It is sometimes called **Protium**. A hydrogen atom that has one proton and one neutron in its nucleus is called **Deuterium**. Deuterium is not radioactive. Water made from deuterium is called heavy water because the extra neutron makes it heavier. It is used in nuclear reactors. The third isotope of hydrogen is known as **Tritium**. It has one proton and two neutrons in its nucleus. It is radioactive. It is formed in the upper atmosphere by nuclear reactions caused by cosmic rays.
Each isotope of hydrogen has one electron.

Models are often used for things that are too small or too large to be observed or that are too difficult to be understood easily. In the case of atoms, scientists use large models to explain something that is too small to be looked at. Models of the atom are used to explain data or facts that were gathered experimentally.

Materials:
Small colored marshmallows Toothpicks

Procedure:

1. Read the background information, then fill in the chart below:

Isotope	# of Protons	# of Neutrons	# of of Electrons
Protium			
Deuterium			
Tritium			

2. Pick a color of marshmallow to represent protons: _____
3. Pick a color of marshmallow to represent neutrons: _____
4. Pick a color of marshmallow to represent electrons: _____
5. How many protons will you need to make a model of each of the three isotopes? _____
6. How many neutrons will you need? _____
7. How many electrons will you need?_____
8. Have your teacher check and initial your answers.
9. Get the correct number & color of marshmallows to make the three isotope models.
10. Make a model of each isotope of hydrogen by attaching the marshmallows to each other with the toothpicks.
11. Have your teacher check your models and initial this paper when you are finished.

Teacher initials:

Models Correct

Data:

Draw a diagram of each model. Show each proton, neutron, and electron. Label the parts. Color the diagram.

Protium	**Deuterium**	**Tritium**

Applications & Questions:

1. Define isotope:

2. Is an isotope an atom? Explain your answer.

3. the symbol for one of the isotopes of Uranium is $^{235}_{92}U$

   How many protons does this atom have?
   How many neutrons does this atom have?
   How many electrons does this atom have?
   What is the mass number of this atom?
   What is the atomic number of this atom?

4. What is the symbol for the carbon atom that has 6 protons and 8 neutrons?

"A New Way" — Comparative Politics Debate

This class activity is designed for use **after** students have completed the *Succession* mission.

Background

During the mission, students will have encountered many fictional characters and groups, including a key character called the "Oracle of Delphi." The Oracle of Delphi is a sacred figure in Megaran tradition and is tasked with using divine revelation to appoint a new King for the planet, as the former King has recently died. Thousands of years ago Megara experimented with democracy, but the chaotic mix of competing opinions led to years of bitter war. The Priests and Priestesses of Delphi restored peace by creating the tradition of Oracle-appointed succession that still exists today.

The current Oracle is a young girl who received a vision that "knights from the stars will show a new way for the Megaran people." Following this vision, she diverted her course and crash- landed in a remote ocean. The students were tasked with rescuing the Oracle, and along the way they will have met two other fictional groups who are also trying to reach the Oracle, but for different reasons:

The House of Ares wants to find the Oracle so they can influence her to appoint one of their own as the new King. The House of Ares is the most militant of Megara's five Noble Houses. Because Megara is not currently at war, it is unlikely that the Oracle would choose someone from the House of Ares to be King without intervention.

The Plebians seek to apprehend the missing Oracle of Delphi before the student crew or any of Megara's five Noble Houses can rescue her. The Plebians are commoners, and for thousands of years the entire planet has been ruled by Kings selected from among the five Noble Houses. While this may have sufficed long ago, times have changed and the common people of Megara now call for a reformed government in which they too have a voice. While the current succession process does not specifically prohibit the Oracle from selecting a commoner as King, this has never occurred in Megara's history and the Plebians are convinced that the whole political system is rigged.

This conflict has come to a poignant climax in recent months. The former King's death has coincided with the rising popularity of a commoner called Janus. Janus comes from a common background but is articulate, passionate, and commands 70% of the popular vote. If the people were given the choice, Janus would lead Megara by a landslide.

The House of Ares detests the Plebians and their popular champion Janus. They view them as an extreme threat to the status quo, which has been maintained for thousands of years.

If the students completed their mission successfully, they will have rescued the Oracle from her snare and she will have told them about her vision. The students will also have become quite familiar with both the House of Ares' and the Plebians' goals and intentions. The students will have discovered that the only way to ensure the safety of the Oracle and deal with the political upheaval on Megara is to take the Oracle back to the Infinity Knights Headquarters where they can help the Oracle find a "new way" for her people, as predicted in her vision. This sets the stage for a the following class discussion.

Part 1 — Two-sided Debate

Divide the class into two groups. Assign one group to represent the House of Ares' point of view and assign the other to represent the Plebians' position.

Instruct the students to research **factual historic evidence** in support of their sides' position.

Specifically, students representing the House of Ares should research evidence highlighting the benefits of monarchies, appointed leadership, and long-time traditions. Students representing the Plebians should research the benefits of pure democracies, the separation of church and state, and elections.

Instruct the students to adhere to goals of the side they represent, regardless of their own personal opinions. Encourage the students to consider objections from the opposing side and prepare rebuttals accordingly.

Give the students sufficient time to adequately explore the issues. Assign the research as homework if desired.

When adequate exploration has occurred, conduct a classroom debate where students can persuasively share their findings. Arrange the seats so students in one group sit together opposite the other group. Moderate the debate by calling on one student at a time, first on one side, and then on the other. Instruct each student to present what they consider to be the most compelling and persuasive argument in favor of their side's position. Rotate through the students until everyone has had a chance to share their thoughts.

Encourage the students to build upon the ideas their classmates suggest and to rebut against the arguments of the opposing side. Use appropriate follow-up questions to explore the factual and historic evidence the students present in favor of their cases.

Moderate the discussion to maintain an appropriate discussion adhering to objective discussion of the facts and free from personal attacks against students.

Part 2 — Collaboration, Creativity, and Compromise

Now that the class has fully explored the perspectives of the two fictional groups, it is their find a "new way" for the Megaran people.

Divide the class into small groups of three or four students each. Instruct each group to brainstorm new forms of government and ways to select leaders. Remind the students that their solutions must be appease both sides of the debate—the House of Ares and the Plebians. No side will be able to have everything the way they want it, so the students must propose compromises for both sides.

Encourage the students to integrate concepts they have learned about politics and governments, which may include: separation of powers, checks and balances, representative democracies, etc.

Instruct the student teams to take notes of their discussion and write their ideas down.

Allow each group to present their recommended solution to the class, summarizing their decision, highlighting key compromises, and explaining the rationale behind their decisions.

If desired, after each group has presented consider letting the class select a single proposal—or combine elements from multiple proposals—as a recommended "new way" for the Megaran people.

Mission Debrief Class Discussion Guide

Your students will encounter a wide variety of educational topics in their Dream Flight Adventures mission. After the mission is complete, use this guide to lead your students in a class discussion to explore these topics in more depth.

Consider dividing your students into small groups to discuss each question and then share their group's opinion with the entire class. Be sure to let every student's voice be heard. Dream Flight Adventure missions are multi-faceted, and each student is exposed to a slightly different part of the story. Let every student share their thoughts and experiences so the entire group can benefit.

Suggested thought-provoking questions for *Succession* are:

What was the founding fathers' reasoning behind how they set up the U.S. government?

What are the advantages and disadvantages of democracy? Monarchy? Democratic republics?

Under what conditions should decisions be made by majority rule? When shouldn't majority rule be used?

How should societies handle minority interests?

What roles do longtime traditions play in rapidly changing societies?

What is the fine line between competitive rivals and enemies?

If you could do the mission again, what would you do differently?

How do you relate to the characters, events, or issues that you encountered during the mission?

What parts of the mission were the most challenging?

What new things did you learn during the experience?

Name _____

Multimedia Mission Memoir

Reflect on your recent Dream Flight Adventures mission and prepare a multimedia project that tells about your experience.

Be creative and draw upon any type of multimedia to create your project. Possible examples include posters, collages, short stories, PowerPoint presentations, dioramas, plays, podcasts, animations, videos, music, or comic books.

In your project, be sure to address the following questions:

- What happened during your mission? Summarize the events.
- What was your responsibility?
- What did you do in your mission? What were the results?
- If you could do the mission over again, what would you do differently?
- How do you relate to the characters, events, or issues that you encountered during the mission?
- What parts of the mission were the most challenging?
- What parts of the mission were the most exciting?
- What new things did you learn during the experience?
- Did the mission change the way you think about anything? If so, what, and how has your perspective changed?

Be prepared to share your project with your peers and to describe why you chose the form of multimedia you did.

Enrichment Materials

Resources for deeper inquiry and advanced students

The following third-party resources are recommended as enrichment materials for gifted or advanced students.

Space Exploration

Videos

Discovery Channel *Curiosity* series videos, including expert interviews, TV clips, and online quizzes.
http://dsc.discovery.com/tv-shows/curiosity/topics/space-exploration.htm

Websites

NASA Kid's Club, including online activities, games, and videos for a variety of skill levels.
http://www.nasa.gov/audience/forkids/kidsclub/flash/index.html

List of space exploration missions by decade, with links to in-depth articles for each.
http://space.about.com/od/spacemissions/tp/MissionsByDecade.htm

KidsAstronomy.com, including games, worksheets, and interactive media about astronomy.
http://www.kidsastronomy.com/deep_space.htm

Constitution

Websites

Interactive Constitution, which lets students search the Constitution and find relevant passages and explanations.
http://free.ed.gov/subjects.cfm?subject_id=19

Primary constitution documents from the Library of Congress.
http://www.loc.gov/rr/program/bib/ourdocs/Constitution.html

Additional Instructor Resources

Celebrate the Constitution teacher tips from Scholastic
http://teacher.scholastic.com/scholasticnews/indepth/constitution_day/teachers/index.asp?article=teacher

Checks and Balances in the Government

Websites

Checks and Balances: Defining Governmental Authority, by Martin Kelly
http://americanhistory.about.com/od/usconstitution/a/checks_balances.htm

Additional Instructor Resources

Checks and balances lesson plan from PBC Newshour
http://www.pbs.org/newshour/extra/teachers/lessonplans/socialstudies/scotus_powers.pdf

Separation of Church and State

Videos

Discovery Channel short video on the origin of the separation of church and state.
http://curiosity.discovery.com/question/separation-church-state-term-originate

Websites

Liberty for All? five-part PBS webisode, featuring timelines, glossary, images, and online quizzes.
http://www.pbs.org/wnet/historyofus/web03/index.html

Comparative Politics

Videos

C-SPAN Classroom video library on Comparative Government
http://www.c-spanclassroom.org/Topics/CG/Comparative-Government.aspx

Websites

Interactive database matrix displaying rich data on world governments.
http://world-leaders.findthedata.org/

Comparing Governments article at USHistory.org.
http://www.ushistory.org/gov/13a.asp

Ancient Marine Biology

Videos

BBC *Walking with Dinosaurs: The Cruel Sea* episode.
http://www.youtube.com/watch?v=aJVcXreX5_c&feature=fvwrel

Websites

Article summarizing key facts about the ancient liopleurodon.
http://dinosaurs.about.com/od/aquaticdinosaurs/p/liopleurodon.htm

Dino Fact File: Liopleurodon
http://www.abc.net.au/dinosaurs/fact_files/sea/liopleurodon.htm

Elements, Isotopes, and Radioactive Decay

Videos

BBC short video entitled *Atoms and Isotopes*.
http://www.bbc.co.uk/learningzone/clips/atoms-and-isotopes/10662.html

Hunting the Elements, a two-hour NOVA special from the producers of *Making Stuff.*
http://www.pbs.org/wgbh/nova/physics/hunting-elements.html

Websites

Lawrence Berkeley National Laboratory's *Exploring the Table of Isotopes*.
http://ie.lbl.gov/education/isotopes.htm

Chem4Kids.com's short article about atomic isotopes.
http://www.chem4kids.com/files/atom_isotopes.html

Interactive web edition of the NOVA Elements iPad app.
http://www.pbs.org/wgbh/nova/education/physics/nova-elements.html