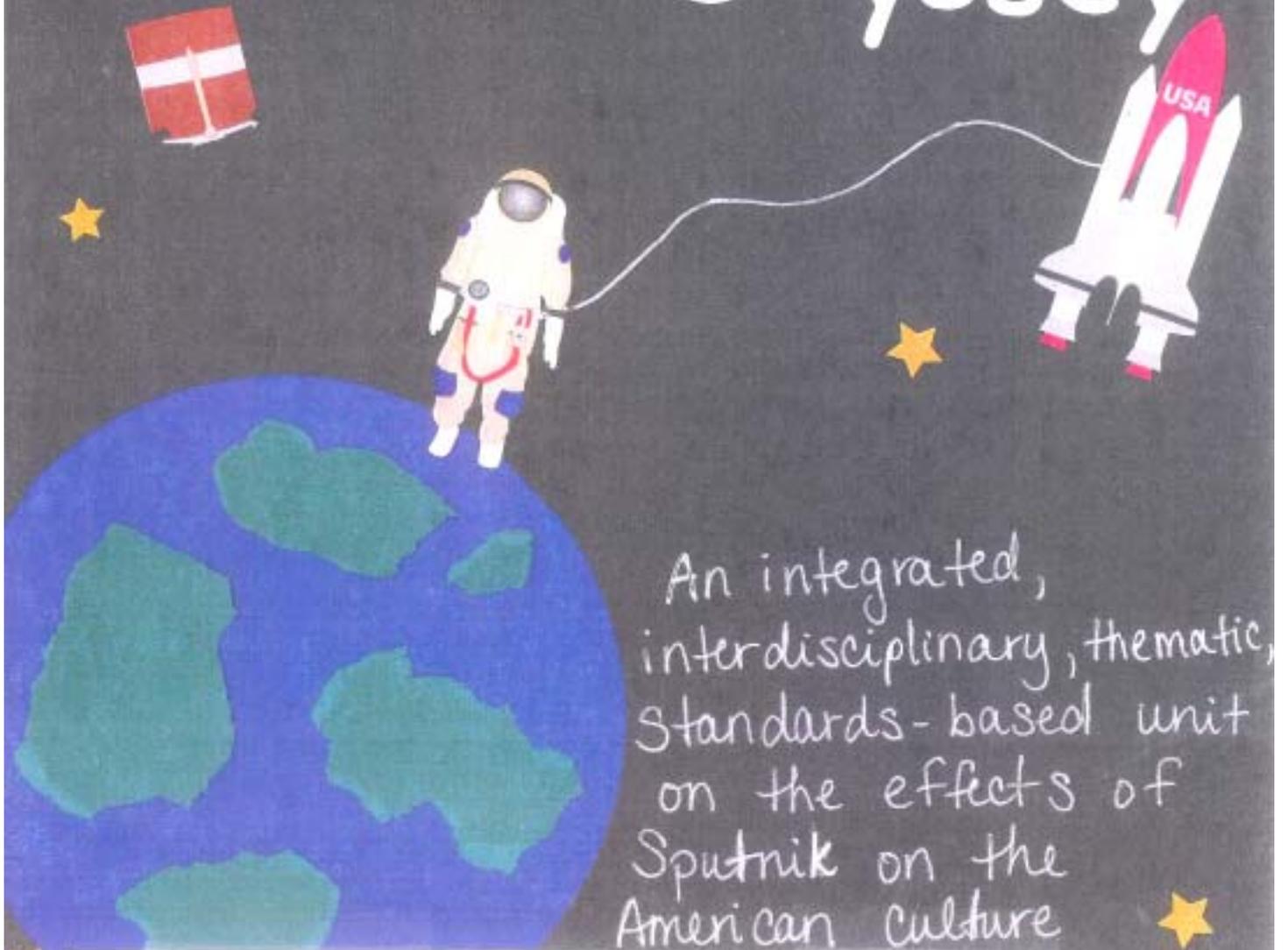


To Infinity and Beyond: A 2006 Space Odyssey



An integrated,
interdisciplinary, thematic,
standards-based unit
on the effects of
Sputnik on the
American culture

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OVERVIEW

I. **CONTENT:**

This unit is important as it studies the historical, technological, political, and potential global ramifications of space travel that revolutionized our life as we know it.

Unit Overview: Alignment with National / State / District Pupil Performance Standards

Overarching Benchmarks / Standards / Goals for **COMPLETE** unit of study:

Benchmark 1: AZ Science Strand 1: Scientific Inquiry Concepts 1-4: Observations and predictions, testing, analyzing and evaluating and communicating results

Benchmark 2: AZ Science Strand 2: Concepts 1-2: History of science as a human endeavor and the nature of scientific knowledge

Benchmark 3: AZ Science Strand 3, Concept 2: Science and technology in society

Benchmark 4: AZ Science Strand 5, Concept 2: motion and forces

I-SEARCH INDEPENDENT RESEARCH PROJECTS FOR GIFTED AND TALENTED STUDENTS: PROJECT BASED LEARNING FOR MULTIPLE INTELLIGENCES

1. **PARADOXES:**

We use “peace-keeping” missiles as a deterrent to war. Create a collection of political cartoons depicting the irony of this term.

2. **ATTRIBUTES:**

Research astronauts John Glenn, American and Yuri Gagarin, Soviet – the first humans in space. Complete a Venn diagram comparing and contrasting the two. There should be at least six attributes listed under each astronaut.

3. **ANALOGIES:**

How is the space exploration like the westward expansion?

4. **DISCREPANCIES:**

When the first astronauts returned from the moon, they were quarantined for fear of unknown diseases. If they had brought with them a bacteria that kills off cancerous cells, calculate the number of lives that would have been saved since their return in 1969.

5. **PROVOCATIVE QUESTIONS:**

Why are we researching life on mars when the moon is so much closer?

6. **EXAMPLES OF CHANGE:**

How would you redistribute federal funds if all space exploration was cancelled?

7. **EXAMPLES OF HABIT:**

Several modern day societies or religious groups (e.g., Amish) have chosen not to take advantage of technological advances. Research one of these groups and use this information to write an oral report to be presented in class.

8. **ORGANIZED RANDOM SEARCH:**

Review the U. S. space exploration program that was implemented from 1960 until the present. If you could go back in time and revise their plan, how would you change it. Create a flow chart and timeline that shows the goals you would have set.

9. **SKILLS OF SEARCH:**

Create a scientist's journal describing experiments being currently conducted in space.

10. **TOLERANCE FOR AMBIGUITY:**

Create an editorial essay presenting the viewpoints of two people from the 1960s that expresses their conflicting views on how Rock 'n Roll will affect the attitude and future of America's youth.

11. **INTUITIVE EXPRESSION:**

Folk Ballads were a popular form of communication in the 1960s. Write a folk ballad about walking on the moon.

12. **ADJUSTMENT TO DEVELOPMENT:**

Research the Challenger Explosion of 1986. What caused the explosion and could have anything been done to prevent the explosion? Create an editorial to submit to the New York Times to explain your findings and opinions.

13. **STUDY CREATIVE PEOPLE AND PROCESS:**

Consider an architect, a fashion designer, and a writer from the 1960s. Using a Venn diagram, show what experiences they have in common.

14. **EVALUATE SITUATIONS:**

Hold a press conference detailing that life has been discovered in space.

Research 3 physicists whose earlier work made flight and space travel possible. Describe their specific contributions and provide visual representations of the concepts they discovered in a PowerPoint presentation.

15. **CREATIVE READING SKILL:**

Write a description of space so that someone who is blind can "see" the view.

Read the Space poems found at this website:

<http://www.geocities.com/Heartland/1133/spacepoems.html>,

Write a description of space so that someone who is blind can "see" the view.

* I added this because I noticed there was no reading included here!

16. **CREATIVE LISTENING SKILL:**

After listening to three pieces of music, three pieces of poetry, or three plays from the 1960s, write your own piece reflective of American culture during this time.

17. **CREATIVE WRITING SKILL:**

Write a law that preserves the safety of space travel. Write a science fiction story involving space travel as part of daily life.

18. **VISUALIZATION SKILL:**

Design a wardrobe for the Build-A-Bear company that depicts the fashion trends of the 1960's

**ACADEMIC / CRITICAL THINKING SKILLS
ANALYZING HUMAN ACTIVITIES! (AHA!)**

1. PRODUCING, EXCHANGING, AND DISTRIBUTING [ECONOMICS]

STATE STANDARD: Arizona Social Studies S5C1PO1B

The student will analyze the implications of scarcity:

B: Factors of production (e.g., natural, human, and capital resources, entrepreneurship and technology)

Essential Question: How did the Soviet Union's launch of Sputnik change the producing, exchanging and distributing in the United States?

Textbook or Database: World History Textbook, Economics Textbook and Internet Search Engines

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Watch scene from October Sky when the students use binoculars to look at the Soviet's satellite, Sputnik, moving over the atmosphere.

Students will read page 970 in the World History textbook outline the section. List the vocabulary words and define them.

Formative Assessment: Students will turn in their list from above.

COMPREHENSION:

Students will predict how the United States competing with the USSR in the "Space Race" will affect the job market in the United States. What type of education will people need to be employed in those careers? Use the Internet and textbook for your research and be prepared to share your answers with the class the following class.

APPLICATION

Anchoring Activity / Anticipatory Set: Play the song "Money" by Pink Floyd to introduce how Sputnik might influence their chosen career.

Students will create a (class / team product): Prepare a personal narrative, a diary entry. The date of your entry should be in November 1957, the month following the soviets launch of Sputnik on October 4. Imagine you are a senior in high school. How will the launching of sputnik influence your post-high school plans? Will it affect your major in college, attending a technical school or a job you can enter right out of high school?

Formative Assessment / Rubric for Product: Have students peer assess diary entries with provided "Diary Entries" rubric.

Multicultural and/or ESL and/or Bilingual Link: Human Intelligence (international embedded spying)

Mathematics/Science Link and/or Humanities Link: Wages, Supply and Demand for Labor & Human Capital

School-to-Career/Tech Prep Link: Career Options

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: Watch scene from control room in Apollo 13 when the astronauts need to fix the problem in 25 minutes.

Students will: Role play and use critical thinking skills to solve the problem.

Team Product: Student's will produce their solution with the supplies provided: construction paper, glue, cardboard, paper clips and rubber bands.

Summative Assessment: Grade project with "construction" rubric.

INDIVIDUAL JOURNAL ASSIGNMENT

What do you see yourself doing in 10 years to support yourself and or family financially?

HOMELINK

Interview someone who was a high school student between 1969 and 1975 and ask how the Space Race influenced their education.

2. TRANSPORTATION

State Standard # Arizona Workplace Standard 3WP-P4-PO1

Students will be able to demonstrate the ability to adapt new information to changing situations and requirements.

Essential Question: How does transportation relate to mastery learning of the changes in the United States culture after the launch of Sputnik?

Textbook or Database: Transportation: www.fhwa.dot.gov/interstate/faq.htm

GPS: www.wordwebonline.com/en/GPS

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Listen to the song “Born to Be Wild” by Steppenwolf.

Students will think of one of their favorite places to drive to and describe the route to get there.

Formative Assessment: Students will turn in their directions to their favorite place.

COMPREHENSION:

Students will calculate the shortest route from school to Disneyland using the interstate system and a road map.

APPLICATION

Anchoring Activity / Anticipatory Set: Clip from the movie *Cars* when Sally is talking to Lightning McQueen about Route 66

Students will create a (class / team product): First, individually, students will use a given a list of directions to determine an undisclosed destination. Then they will work in teams. Team A will create a list of directions to a destination from a given list of 100 destinations and will trade with Team B. Team B will determine what Team A’s destination is based on the directions given.

Formative Assessment / Rubric for Product: Successful completion of the above activity.

Multicultural and/or ESL and/or Bilingual Link: Show students a picture of a speed limit sign from another country that measures distance in kilometers instead of miles, (for example – speed limit 100 km/hour). Ask students to think of a place where this sign may be found.

Mathematics/Science Link and/or Humanities Link: converting miles per hour to meters per second

School-to-Career/Tech Prep Link: map reading and scale factor conversion, civil engineering, GIS

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: Listen to the song “I Get Around” by the Beach Boys

For a fictional state, **students will** work as a class to design an interstate system to connect this state to its neighbors.

Team Product: Students will redesign the Phoenix transportation system.

Summative Assessment: Completion of the above activity

INDIVIDUAL JOURNAL ASSIGNMENT

What do you think transportation will be like for your grandchildren? What will change and what will stay the same?

HOMELINK

Ask your family how changes to the interstate system have improved vacationing.

3. COMMUNICATIONS

State Standard # Arizona America History S1C9PO2 (F)

Students will be able to describe aspects of American post-World War II domestic policy -- Space Race and technological developments

Essential Question: How does the Universal Theme of **Communications** create mastery learning of essential concepts in this unit?

Textbook or Database: American History Textbook, Internet Search Engines and NASA Project

KNOWLEDGE

Anchoring Activity / Anticipatory Set: United Streaming Video on Sputnik (primary source)

Students will, categorize the different uses of the function of satellites, from the brainstorm.

Formative Assessment: As above.

COMPREHENSION:

Students will choose one category of satellite technology and explain how it can be used. Write on a 4X6 note card. Post on a bulletin board. Students will do a gallery walk and look at the other information their classmates discovered.

APPLICATION

Anchoring Activity / Anticipatory Set: Interpret text messages; Students create their own text message for “long-hand” written on the board.

Students will create a (class / team product): Find an article about the space race from a piece of literature on the internet, magazine or book and translate a main idea sentence into “instant messaging shorthand”.

Formative Assessment / Rubric for Product: Use rubric to assess the quote the student picked and their shorthand text translation.

Multicultural and/or ESL and/or Bilingual Link: Same as application – shorthand text messaging is new language.

Mathematics/Science Link and/or Humanities Link: Science: Natural versus Man-made Satellites; Math: Escape Velocity

School-to-Career/Tech Prep Link: What jobs at INTEL or Boeing are associated with the satellite industry?

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: song “I Heard it through the grapevine” by Gladys Knight and the Pips

Team Product: In a small group (3-5) create a rap song about proper cell phone etiquette.

Summative Assessment: Submit an article to a magazine about what life without satellites would be like. Use magazine article rubric from Rubistar.

INDIVIDUAL JOURNAL ASSIGNMENT

Write directions for your grandma on how to text message on a cell phone.

HOMELINK

Interview a person who was alive when the Soviet's launched Sputnik and as how it make them feel or how it changed their lives at work, school or home.

4. PROTECTING AND CONSERVING

State Standard # HSSC S3C2 PO1-5

Students will be able to develop viable solutions to a need or problem.

Essential Question: How can the world use of energy be changed to accommodate the growing population?

Textbook or Database:<http://www.nationalgeographic.com/xpeditions/lessons/16/g912/energydebate.html>

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Theme song from Beverly Hillbillies

Students will list uses for each energy source.

Formative Assessment: Teacher writes ways students came up with on the board.

COMPREHENSION

Students will categorize the list into renewable/non-renewable; Google to check missed resources

APPLICATION

Anchoring Activity / Anticipatory Set: Mad Max movie clip of earth in future with limited resources

Students will create a (class / team product): Make a video of places at the school where energy is not being used efficiently.

Formative Assessment / Rubric for Product: <http://www.nuuanu.k12.hi.us/chun/course/vidrubric.html>

Multicultural and/or ESL and/or Bilingual Link: Compare US energy consumption with a neighboring country.

Mathematics/Science Link and/or Humanities Link: Calculate the percentage of fossil fuel sources used by the US.
http://energy.cr.usgs.gov/energy/stats_ctry/Stat1.html#ConsumptionUvsW

School-to-Career/Tech Prep Link: Research career opportunities related to resource management, conservation, and energy.

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: video clip from "Soylent Green" where people discover what they are eating

Students will participate in a mock hearing of the U.S. Senate Committee for Energy and Natural Resources. The hearing is being held to determine whether or not to explore for renewable energy sources on a specific parcel of public land.

Team Product:

Students will compile the speeches into a "minutes of the hearing" document.

Summative Assessment: Have students write counterarguments to the position they represented in the committee hearing. They should identify groups most likely to disagree with their positions and list three issues these opponents would raise and what their arguments might be.

INDIVIDUAL JOURNAL ASSIGNMENT

Write a paragraph of how your life would change if the world ran out of gasoline.

HOMELINK

Have students take action by writing a letter or sending an e-mail to their congressional representatives.

5. PROVIDING EDUCATION

ESSENTIAL QUESTION: How does the Universal Theme of **Providing Education** create mastery learning of essential concepts in this unit?

Textbook or Database:

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Astronaut testing scene from “The Right Stuff” movie

Students will generate a list of the requirements for becoming an astronaut.

Formative Assessment: compare their list with a list from NASA

COMPREHENSION

Students will create a list for astronaut qualifications for an astronaut going on a Mars journey. They should take into consideration the time constraints, physical conditions and mental processes that are required of these candidates.

APPLICATION

Anchoring Activity / Anticipatory Set: Song “I Believe I can Fly” by R. Kelly

Students will create a (class / team product):

Formative Assessment / Rubric for Product:

Multicultural and/or ESL and/or Bilingual Link: Compare a list of astronaut qualifications from the United States with the requirements from other countries.

Mathematics/Science Link and/or Humanities Link: The student will design a basic math test (up through algebra $\frac{3}{4}$) to assess a candidate’s math ability.

School-to-Career/Tech Prep Link: Explore the educational requirements for becoming as astronaut.

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: The scene from “The Right Stuff” that shows different groups of people trying to become astronauts (for example circus performers, sports figures)

Students will: Design a rubric for grading the project.

Class/team/individual product: The students will create a print ad campaign to solicit candidates for a new “astronaut school.” They will design the curriculum for this school, including academic and on-academic subjects. (For example: calculus, physics, problem solving, physical conditioning, emotional conditioning)

Summative Assessment: Successful completion of the above project, as graded by the class designed rubric.

INDIVIDUAL JOURNAL ASSIGNMENT

Imagine that you are going to go on a space trip to Mars. It is the night before you leave. What do you do? Who do you see? What do you eat?

HOMELINK

Discuss with your family what career paths they want to take or what career paths they considered taking.

6. MAKING AND USING TOOLS AND/OR TECHNOLOGY

Arizona Science standard: # HSSC S6 C2 PO 11 & 12

The student will be able to describe the origin, life cycle and behavior of hurricanes and other weather events and the conditions that cause them.

ESSENTIAL QUESTION: How have new technologies improved our ability to predict weather and severe storms (hurricanes)?

Textbook or Database: Earth Science text and newspapers, weather databases

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Videoclip from hurricane Camille or any other major hurricane (see <http://www.hurricanevideo.citymax.com/page/page/570059.htm> for sources).

Students will draw and identify weather map symbols and terms depicted in 5 sequential daily weather maps.

COMPREHENSION

Students will compare their lists with those from other groups and compile a ‘master list’ of weather symbols. Then they will examine each 5-day set of weather maps and infer regular patterns. **Formative assessment:** Arrange 5 new weather maps in chronological order and explain (in writing) the reasons for their ordering, and complete a weather map for the following day.

APPLICATION

Anchoring Activity / Anticipatory Set: Song: “Storm” by Billy Joel

Students will create a (class / team product): Design, build and test hurricane-proof houses made with limited resources (American Red Cross activity) <http://www.tallytown.com/redcross/hurrproof.html> using the rubric provided on the activity sheet.

Multicultural and/or ESL and/or Bilingual Link: Determine wind direction kinesthetically, using the idiom, “with the wind to your back, low pressure is on your left”.

Mathematics/Science Link and/or Humanities Link: Calculate the volume and surface area of the house model each student built

School-to-Career/Tech Prep Link: Videoclip: Doppler radar and its uses (“On the Gulf: Coastlines in Danger” available at http://www.unitedstreaming.com/search/searchResults.cfm?N=0&Nty=1&Ntk=All&blnSearchInit=true&Ntt=doppler&Nr=d_Asset_Type%3AVideo&btnFormHeaderSearchGo.x=0&btnFormHeaderSearchGo.y=0)

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity: “Stormy Weather” by Billy Holiday or Frank Sinatra

Students will: track and predict the time and location of a hurricane's landfall using data and maps from the U.S. Weather Service at <http://www.cotf.edu/ete/modules/sevweath/sevweath.html>

Class/team/individual product: Produce a hurricane tracking map.

Summative Assessment: Keep a 5 day weather diary during which a hurricane approaches and strikes your town. Include changes in weather factors (temperature, barometric pressure, wind speed and direction) and describe the geography of your fictional location.

INDIVIDUAL JOURNAL ASSIGNMENT

Hurricane or tornado? If you had to live through one or the other, which would you choose and why?

HOMELINK

Record a story from a family member about the scariest storm they ever experienced.

7. PROVIDING RECREATION

State Standard: SHSS1C1PO1; R09-S3C1, R10-S3C1, R11-S3C1, and R12-S3C1; SHS S5C2PO 5.

Student will be able to

Evaluate scientific information for relevance to a given problem.

Use Newton's 3rd Law to explain forces as interactions between bodies (e.g., a table pushing up on a vase that is pushing down on it; an athlete pushing on a basketball as the ball pushes back on her). (font change)

Essential Question: How does gravity affect the way that toys work?

Textbook or Database: <http://quest.nasa.gov/space/teachers/liftoff/toys.html>

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Play with yo-yos and Slinkys.

Students will list the toys they loved playing with as a child that did not require electricity.

Formative Assessment: As a class, generate a list of the top 10 toys from childhood.

COMPREHENSION

Students will determine which of the toys listed above need gravity to work.

APPLICATION

Anchoring Activity / Anticipatory Set: Watch Toys in Space NASA video about Slinkys

Students will create a (class / team product): Using a current toy ad, rewrite it for how it would work in a gravity-free environment, like on the Space Station.

Formative Assessment / Rubric for Product: Students will brainstorm the requirements for this assignment and the teacher will write a rubric based on this student input.

Multicultural and/or ESL and/or Bilingual Link: Investigate toys from other countries.

Mathematics/Science Link and/or Humanities Link: Determine the speed of a pull-back car by measuring the distance it travels in a specified amount of time.

School-to-Career/Tech Prep Link: Investigate careers of items and/or concepts that were once considered toys or playing, (for example video games).

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: Watch the dominoes section of the Toys in Space video from NASA

Students will: Design a Rube Goldberg toy that will work as well in zero gravity as it does on earth.

Class/team/individual product: Chose one toy and build it. Present their toy to the class.

Summative Assessment: The class will decide if the new toy will work in zero gravity.

INDIVIDUAL JOURNAL ASSIGNMENT

If you were a kid living on the Space Station, which toys would you bring with you from home and why?

HOMELINK

Discuss with your family their favorite toys. Would these toys work in zero or micro gravity conditions?

8. ORGANIZING AND GOVERNING

State Standard: Arizona Science standard: HSSC S6 C3 PO2

Student will be able to identify and classify celestial bodies in order to discern and communicate the possibilities of extra-terrestrial colonization by earthlings.

ESSENTIAL QUESTION: If the human population is running out of room on planet Earth, where should we go next?

Textbook or Database: any earth science textbook, Internet

KNOWLEDGE

Anchoring Activity: Scene from “Contact” where Jody Foster discusses extra-terrestrial colonies.

Students will identify, describe, and match the various celestial bodies in our universe and their locations, relative to earth.

COMPREHENSION

Students will research, chart and summarize the current goals of space programs in 3 specific countries, including the United States.

APPLICATION

Anchoring Activity: View the film clip from “Red Planet” where the astronauts discuss the reasons for their mission.

Students will create a (class / team product): Read “Fly My Stuff to the Moon”, and debate who has the right to explore space: private corporations, individual countries or international organizations? (Challenger activity p 12-14: <http://www.challenger.org/lessons/82.pdf> and use rubric provided in website.

Multicultural and/or ESL and/or Bilingual Link: Relate the current policies of space exploration to that of Manifest Destiny

Mathematics/Science Link and/or Humanities Link: Which countries are involved in the International Space Station? To what monetary extent? **OR** plot our NASA budget over the past 40 years.

School-to-Career/Tech Prep Link: Videoclip: Biosphere II field trip

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: Film clip from “Total Recall”, where Arnold realizes the politics behind the terra-forming of Mars.

Class/team/individual product: Write a global ‘Bill of Rights’ that all countries should abide by regarding the exploitation of any other celestial bodies.

Summative Assessment: Peer evaluation of groups’ Bills of Rights products.

INDIVIDUAL JOURNAL ASSIGNMENT

Just because we can develop the technology to colonize another planet, should we?

HOMELINK

Find and submit 2 articles in the local news that relate to this topic

9. MORAL, ETHICAL AND SPIRITUAL BEHAVIOR

Standard/Objective: (Lunar Development Conference on Space Ethics) “Understand the ethical dilemmas about the development and implementation of a twenty-first century model for commercial space development & exploration.” The principles are:

1. We are committed to ensuring a free market economy off-Earth.
2. We will consider the effects of all off-Earth development on future generations that will live and work in space and on Earth.
3. We agree to treat outer-space with respect, concern, and thoughtful deliberation, regardless of the presence or absence of life forms.
4. We will strive to be a good steward of space and all its economic resources.

Source: www.spacefuture.com – Dr. David M. Livingston of *Livingston Business Solutions*

Student will be able to understand the potential dilemmas and discuss the development and implementation of a code ethics for space.

ESSENTIAL QUESTION: How does the Universal Theme of Moral, Ethical and Spiritual behavior apply to future space exploration and development?

Textbook or Database: www.ethics.org/today and www.spacefuture.com

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Watch a clip from the movie Contact where the main character (Jodi Foster) sees her father that has died in “heaven.”

Students will describe laws they think we should have to govern space travel and the moon

Formative Assessment: Name a law that you think would be unethical to require for space travel.

COMPREHENSION

Students will read the 1979 Moon Treaty and choose 3 laws to explain why the United Nations may have felt it was necessary to include.

APPLICATION

Anchoring Activity / Anticipatory Set: Prepare safety laws that you think are important to space travel.

Students will create a (class / team product): Student will modify the Moon Treaty to create their own set of laws that they feel would be important to space travel. Students will defend each law with an explanation stating its importance.

Formative Assessment / Rubric for Product: “Treaty Decision Rubric”

Multicultural and/or ESL and/or Bilingual Link: How may other countries culture view space travel?

Mathematics/Science Link and/or Humanities Link: What are some “laws” that govern our world through science or mathematics?

School-to-Career/Tech Prep Link: What careers in space may be available in 50 years?

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: A movie clip about Alcatraz

The students will think creatively about possible outcomes associated with a prison in space.

Class/team/individual product: Imagine that the United States created a high security prison in space. What would be some positive outcomes? What would be some possible negative outcomes? Is it ethical to create a prison in space?

Summative Assessment: Turn in the results from the above activity.

INDIVIDUAL JOURNAL ASSIGNMENT

If you were deciding which prisoners should be sent to the space prison, who would you send and why?

HOMELINK

Ask your family members if they think it is ethical to send prisoners into space.

10. AESTHETIC NEEDS

State Standard # Arizona Art Standard 2AV-P1-PO1 and PO 2

Student will be able to analyze and interpret how elements of time and place influence the visual characteristics, content, purpose and message of works of art.

ESSENTIAL QUESTION: How do aesthetic needs relate to mastery learning of the changes in the United States culture after the launch of Sputnik?

Textbook or Database: <http://www.mccallstudios.com/mccall/>

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Watch the video “In the Studio with Dr. Robert T. McCall (Creating the Centennial of Flight Mural celebrating 100 years of aviation accomplishments).”

Students will describe laws they think we should have to govern space travel and the moon

Formative Assessment: Based on Mr. McCall’s art, list some feeling’s you think he has towards space travel. How do you think he would feel about the laws you listed earlier?

COMPREHENSION

Students will read a statement from the author about his passion for painting pictures of space. Students will explain an event from their childhood that influenced their decision to like or dislike something specific.

APPLICATION

Anchoring Activity / Anticipatory Set: movie clip from Apollo 13 when Jim Lovell (Tom Hanks) is standing in his back yard admiring the beauty of space

Students will create a (class / team product): Student will modify the Moon Treaty to create their own set of laws that they feel would be important to space travel. Students will defend each law with an explanation stating its importance.

Formative Assessment / Rubric for Product: Successful defense for each law

Multicultural and/or ESL and/or Bilingual Link: Research some rules/laws that other countries have set up to protect the beauty of space.

Mathematics/Science Link and/or Humanities Link: What are some “laws” that govern our world through science or mathematics?

School-to-Career/Tech Prep Link: artist

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: Look at some different pieces of art from Robert McCall

The students will think creatively about possible outcomes associated with a prison in space.

Class/team/individual product: Students will create their own piece of artwork depicting space or space travel from their perspective.

Summative Assessment: Turn in the results from the above project

INDIVIDUAL JOURNAL ASSIGNMENT

Write a description of your artwork and its importance to you.

HOMELINK

Ask your friends and family about something they are passionate about.

11. SOCIAL STUDIES

State Standard # AZ Social Studies S1C9PO2

Student will be able to analyze the international developments after World War II and during the Cold War with emphasis on the space race and the United States relationship with the Soviet Union.

ESSENTIAL QUESTION: How did the launch of Sputnik by the Russians change the American government?

Textbook or Database: Textbook or Database: World History Textbook, Economics Textbook and Internet Search Engines

KNOWLEDGE

Anchoring Activity / Anticipatory Set: President Kennedy’s inaugural speech about the moon challenge. ” We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard.” Rice University – Kennedy’s announcement to send a man to the moon and return him safely to earth in this decade (1960s). Watch scene from October Sky when the students use binoculars to look at the Soviet’s satellite, Sputnik, moving over the atmosphere.

Students will brainstorm modes of air travel.

Formative Assessment: Make a list as a class of these modes of travel.

COMPREHENSION

Students will explain chronologic order of the history of air travel.

APPLICATION

Anchoring Activity / Anticipatory Set: Listen to “Fly Me to the Moon.” (Frank Sinatra)

Students will create a (class / team product): Create a book for primary students (1 sentence and 1 picture per page) describing the history of flight.

Formative Assessment / Rubric for Product: See attached

Multicultural and/or ESL and/or Bilingual Link: Find terms in the native language that would describe various flight technologies.

Mathematics/Science Link and/or Humanities Link: Velocity

School-to-Career/Tech Prep Link: Careers in Air Travel

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: Watch the rocket launch in Apollo 13.

Class/team/individual product: illustrate on a timeline the history of time travel.

Summative Assessment: Illustrated timeline; assess with attached “Illustrated Timeline” rubric.

INDIVIDUAL JOURNAL ASSIGNMENT

How important to you think space exploration is in the future or our world? What may we discover and how could that help or hurt earth’s future.

HOMELINK

Find 3 websites that are dedicated to the history of travel.

12. SCIENCE

Arizona State Standard: HSSC S1 C 1-4

Student will be able to design, conduct, analyze and communicate the results of an experiment.

ESSENTIAL QUESTION: How do scientists conduct experiments and evaluate the experiments of others?

Textbook or Database : Any Science Textbook

KNOWLEDGE

Anchoring Activity: Watch the video clip in “Apollo 13” where they have to build the CO₂ scrubber from the materials they have in the space craft.

Students will identify and define the terms used in experimentation through the activity: “How can you keep an ice cube from melting?” **Formative assessment:** student-generated visual organizer or chart

COMPREHENSION

Students will propose an experimental design for ice cube melting that reflects their understanding of the scientific process.

APPLICATION

Anchoring Activity / Anticipatory Set: Will It Go Round In Circles? By Billy Preston

Students will create a (class / team product): list of independent variables, dependent variables and constants they can use in testing factors that affect the hang-time of paper helicopters. **Formative assessment:** Check for accuracy

Multicultural and/or ESL and/or Bilingual Link: In what ways did your ancestors conduct research?

Mathematics/Science Link and/or Humanities Link: Compare the writing styles of a recipe with a scientific procedure for sentence structure and voice.

School-to-Career/Tech Prep Link: Generate a list of 10 science careers that would employ scientific methods.

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: video clip from The Nutty Professor (nearly any scene)

Students will: Design, conduct, analyze and communicate the results of an experiment manipulating 2 variables.

Class/team/individual product: Written lab report and whiteboard presentation

Summative Assessment: Peer evaluation using lab report rubric

INDIVIDUAL JOURNAL ASSIGNMENT

Which part of the scientific process do you find the easiest, the most challenging, and why?

HOMELINK

Find an example of scientific research in the newspaper or on TV and explain it to your family

13. MATH

State Standard # Arizona state math standards: S3C2PO4 & S3C3PO6, 7

Student will be able to sketch a graph that models a given contextual situation; write a linear algebraic sentence/equation that represents a data set that models a given contextual situation.

ESSENTIAL QUESTION: How does the mathematics of racing relate to mastery learning of how apply graphs to given situations?

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Chariots of Fire (song) or movie clip.

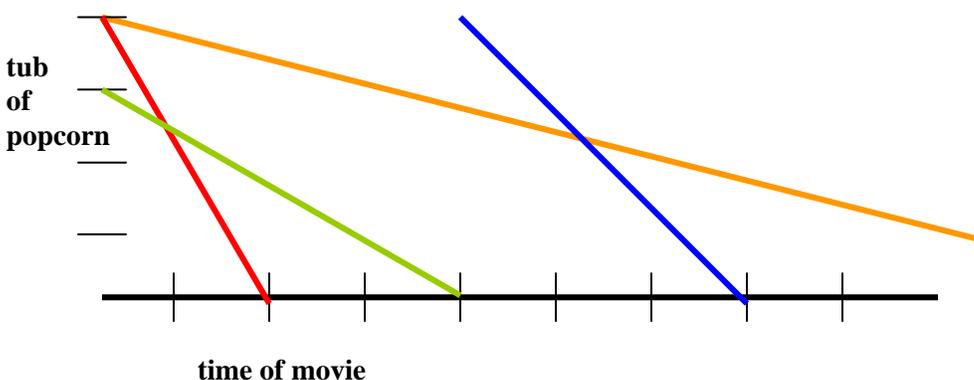
<http://www.artistdirect.com/nad/store/artist/album/0,,179870,00.html>

Students will list 5 or more famous real/fictional races throughout history. (For example: Rat race, space race, Iditarod, Kentucky derby, tour de France, tortoise and hare, race to the top of Everest)

Formative Assessment: Students round robin answers as teacher writes on board. Students discuss why racing is so important to the human condition? What factors would effect the performance of a race? How can you tell from a graph of the contestants who is the fastest, slowest, winner, loser, etc?

COMPREHENSION

Given the graph of several individual eating 12 oz. tub of popcorn during a 2 hour movie, compare their rates. Write an equation for each of the lines and a paragraph to describe each individual. Which person is most like you?



Race Car Driver

Your uncle is a race car driver. One day you decide to go watch a race. Your uncle began the race well but got a flat tire 2.5 minutes into it and had to stop. You collected the following data while you were watching the race:

| Time | Distance |
|------|----------|
| 0 | 0 |
| 0.5 | 0.5 |
| 1 | 1 |
| 1.5 | 1.75 |
| 2 | 3 |
| 2.5 | 4.5 |
| 3 | 4.5 |
| 3.5 | 4.5 |
| 4 | 4.5 |
| 4.5 | 4.5 |
| 5 | 4.5 |

Construct a graph of your uncle's race with distance as the dependent variable and time as the independent variable. What was happening to your uncle's speed (not distance) between $t=0$ and $t=2.5$? Between $t=2.5$ and $t=5$? How does your graph illustrate these changes in speed? Write an equation of the line from $t=0$ to $t=2.5$. If your uncle could have continued at this speed, how far would he have gone after 15 minutes?

APPLICATION

Anchoring Activity / Anticipatory Set: Teacher reads the story of the Tortoise and the Hare.

Students will create a (class / team product): Students create a graph that shows relationship between time and distance for both the tortoise and the hare. (Teams)

Formative Assessment / Rubric for Product:

Multicultural and/or ESL and/or Bilingual Link: <http://www.iditarod.com/>

Mathematics/Science Link and/or Humanities Link:

<http://www.webbikeworld.com/books/moto-guzzi-racing-story.htm>

<http://www.aliciapatterson.org/APF0504/Reid/Reid.html>

School-to-Career/Tech Prep Link:

<http://www.racingmuseum.org/education/index.asp>

<http://www.nas.nasa.gov/About/Education/education.html>

<http://www.racingschools.com/rs/>

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: Students will use a data acquisition tool (e.g., PASCO probe ware motion detector) to gather live data and produce a graphical output of the acquired data. Students will convert their average walking speed with that of what it is on the moon. What is the shortest amount of time it would take to walk from one end of the school to the other end of school? How many times could you walk around the track if it was on the moon?

Class/team/individual product: Graph the comparison of walking rate of earth versus moon.

Summative Assessment:

INDIVIDUAL JOURNAL ASSIGNMENT

Describe a race you participated in personally. What did it feel like? Did you win or lose?

HOMELINK

Talk with a family member about a racing event they attended and what happened that day.

14. HUMANITIES/LITERATURE

State Standard # Arizona Writing Standard 3W9-P1-PO1

Student will be able to Write a **personal narrative** that:

- describes a sequence of events, focusing on one incident experienced by the author
- sets scenes and incidents in specific times and places
- describes with specific details the sights, sounds and smells of the scenes
- uses **figurative language** (e.g., **simile, metaphor, personification**)

ESSENTIAL QUESTION: How does the discipline of Literature relate to mastery learning of the changes in the United States culture after the launch of Sputnik?

Textbook or Database: *Rocket Boys* by Homer H Hickam, Jr.

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Watch the clip from the movie *October Sky* when the boys are trying unsuccessfully to launch rockets.

Students will describe the way they think the boys were feeling during this time.

Formative Assessment: *Compile a list of feelings and explain why they think the boys would be feeling that way.*

COMPREHENSION

Students will read Chapter 2: Sputnik from *Rocket Boys* by Homer H Hickam, Jr.
Defend the way Homer was feeling at this time in his life.

APPLICATION

Anchoring Activity / Anticipatory Set: listen to the song “Rocket Man” by Elton John

Students will create a (class / team product): narrative describing the ripple effect of AIMS on their life.

Formative Assessment / Rubric for Product: peer edit, checking for complete thoughts and supporting information

Multicultural and/or ESL and/or Bilingual Link: government regulations on graduation requirements in other countries

Mathematics/Science Link and/or Humanities Link: prioritize government spending

School-to-Career/Tech Prep Link: write a career plan that includes a path for your life passing AIMS and a path for not passing AIMS

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: listen to the song “Celebrate” by Kool and the Gang

The student will think of an important event in your life.

Class/team/individual product Write an autobiography about the event you thought of

Summative Assessment: Peer editing according to the 6 traits rubric.

INDIVIDUAL JOURNAL ASSIGNMENT

Why was that event important to you? How did it change you?

HOMELINK

Ask your family members to share an important event in their life.

15. CULTURE

State Standard # Arizona state social studies standards S1C9PO5

Student will be able to: describe life (e.g., transportation, communication, technology, medical, entertainment, growth of suburbs) in the U.S. during the Post War period.

ESSENTIAL QUESTION: How did the launching of Sputnik in 1957 affect the culture of American society?

Textbook or Database: <http://en.wikipedia.org/wiki/1960s>

KNOWLEDGE

Anchoring Activity / Anticipatory Set: 1960s yearbook almanac from www.unitedstreaming.com

Students will discuss what it was like to be an American teenager in the 1960s.

Formative Assessment: compile a class list of life in the 1960s. Predict what life as a teen in the 2000's will be remembered as.

COMPREHENSION

Students will watch the video The Polio Panic,

(<http://www.unitedstreaming.com/search/assetDetail.cfm?guidAssetID=2D21C2FF-648A-4187-82B5-C3DAA38D3224>) and relate polio to AIDS. Find the similarities and differences.

APPLICATION

Anchoring Activity / Anticipatory Set: <http://kclibrary.nhmccd.edu/decade60.html>
Song: "Go Ask Alice" by Jefferson Airplane

Students will create a (class / team product): Examine handout about drug warning. Design your own drug warning about a drug currently available for a contemporary audience.

Formative Assessment / Rubric for Product As a class, decide on the rubric for this assignment.

Multicultural and/or ESL and/or Bilingual Link: What drugs are unacceptable in your culture that is acceptable in other cultures?

Mathematics/Science Link and/or Humanities Link: Graph the exponential growth of the number of people with polio in the 20th century.

School-to-Career/Tech Prep Link: pharmacist, medical doctor, researcher for a pharmaceutical company

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: Joni Mitchell's song "Woodstock"

Watch the video

<http://www.unitedstreaming.com/search/assetDetail.cfm?guidAssetID=1C47B49F-A410-42B5-9A6D-2B7C7962F332>

Class/team/individual product: You are the director of Evening Star Productions. You are going to put on a "Woodstock in the desert –2006." What will you change from the original Woodstock to make sure the same problems do not arise? What groups will you invite? Design a logo. How will you limit the number of people who attend? The original Woodstock was called "3 Days of Peace and Music." What will the theme of your Woodstock be?

Summative Assessment: Rubric

INDIVIDUAL JOURNAL ASSIGNMENT

Imagine that you are the parent of a child who is at Woodstock. You hear the television reports about the chaos, and the drug use. How do you feel?

HOMELINK

Talk with your family about what they remember about the 1960s.

16. PHYSICAL EDUCATION - US Physical Fitness Program

State Standard # Arizona State Physical Education/Health Standard 6CH-P4-PO1

Student will be able to construct and health and wellness personal activity log for at least one week.

ESSENTIAL QUESTION: How does the discipline of Physical Education relate to mastery learning of the changes in the United States culture after the launch of Sputnik?

Textbook or Database: <http://www.fitness.gov/>

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Listen to the song "Let's Get Physical" by Olivia Newton John

Students will list activities they do to stay physically active.

Formative Assessment: Compile a list of activities as a class.

COMPREHENSION

Students will read the recommendations in the current governmental fitness program the "President's Challenge." Explain how these recommendations were incorporated into your PE class.

APPLICATION

Anchoring Activity / Anticipatory Set: Listen to the song "From Your Seat" and do the actions that go along. (<http://www.songsforteaching.com/learningstation/tlsgfseat.htm>)

Students will create a (class / team product): Write a song that has actions that go along to get students active.

Formative Assessment / Rubric for Product: Present their songs to the class and have the class follow along with the appropriate actions.

Multicultural and/or ESL and/or Bilingual Link: research fitness programs in other countries

Mathematics/Science Link and/or Humanities Link: Keep track of the number of steps you walk using a pedometer. Measure your stride. Figure out how many miles you walk in a day, in a week, in a month. Extrapolate to determine how many miles you will walk if you live to be 80 years old, starting with today.

School-to-Career/Tech Prep Link: personal trainer

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: listen to the song “Impossible” from Rogers and Hamerstein’s Cinderella

Class/team/individual product: Read the timeline of the development of the US Physical Fitness Program. Suppose you were the president of the United States today. What program would you create to help better the country? What would be your cause?

Summative Assessment: peer edit, checking for complete thoughts and supporting information

INDIVIDUAL JOURNAL ASSIGNMENT

Keep a journal of all of your physical activities for two weeks. What could you change to improve your activities?

HOMELINK

Ask a family member to go for a walk, play a game, or play a sport with you.

17. VOCATIONAL/TECHNICAL ARTS

State Standard:

Arizona Workplace Skills Standard

1WP-P8; PO1; PO2

1WP-P9. PO1

The student will be able to:

1. infer and locate the meaning of unknown or technical vocabulary;
2. determine the meaning of unknown technical vocabulary, using available resources;
3. summarize information from reading material, clearly and succinctly articulating its major points and proposals; identify major points from written materials; summarize major points clearly and concisely.

ESSENTIAL QUESTION: How did the soviets launch of Sputnik change vocational education and technical arts?

Textbook or Database: Internet

KNOWLEDGE

Anchoring Activity / Anticipatory Set: Watch computer security commercial, where the employer is explaining to his boss the security system using words like “think-a-ma-jig” and “doo-hickey”, etc. After watching the commercial, explain what jargon is and that in technical careers they have their own jargon.

Students will as a class, create a list of “teenager” jargon.

Formative Assessment: Students will write down the list of “jargon” and take it home for the oldest family member in the house to evaluate to see how many words or phrases they don’t understand.

COMPREHENSION

Students will read an article from a science or technology magazine and will rewrite the article and will circle each “jargon word”. Students are only required to copy 100-125 words of text from the article.

APPLICATION

Anchoring Activity / Anticipatory Set: Watch a video clip from Jurassic Park when they are explaining how they took the DNA from a mosquito that they found frozen and used it to create dinosaurs. Students will listen for the jargon used.

Students will create a (class / team product): Students will create a timeline and list technical and scientific jargon words from 1954 (the launch of sputnik) through today. Students should have at least 20 terms and should draw or paste 5 pictures that are associated with the jargon words.

Formative Assessment / Rubric for Product: Teacher will assess timelines with attached rubric.

Multicultural and/or ESL and/or Bilingual Link: Cultural Jargon

Mathematics/Science Link and/or Humanities Link: Jargon in Literature

School-to-Career/Tech Prep Link: Jargon in Careers

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

Anchoring Activity / Anticipatory Set: Have an overhead of a page from a page from a computer programming book.

Students will: Bring from home, or download online, an instruction book or operation manual for a piece of technology.

Team Product: Student's will pair up and give presentations of their product from the instruction book or operational manual and explain what the jargon means.

Summative Assessment: Grade project with "presentation" rubric.

INDIVIDUAL JOURNAL ASSIGNMENT

Why is important to understand who your audience is when you are speaking?

HOMELINK

Interview a family member of jargon they used when they were in high school or currently on the job?

MORAL / ETHICAL / SPIRITUAL REASONING AND DILEMMAS FOR CHARACTER EDUCATION

TEN ETHICAL DILEMMAS

(Must be set in context of unit, but must also relate to the lives of today's students)

STATE STANDARD # Arizona Science Strand 3

ESSENTIAL QUESTION: How does the content of this unit reflect **character education** through Moral and Ethical dilemmas?

1. **Producing, Exchanging, and Distributing** [Economics]

ESSENTIAL QUESTION: How does the **Human Activity** of **Producing, Exchanging and Distributing** create moral/ethical dilemmas?

DILEMMA:

At one point during their mission, the Apollo 13 astronauts discovered a problem with the carbon dioxide levels rising. Imagine that they only had enough oxygen to save 2 of the 3 astronauts. If you don't decide which 2 will survive, all will perish. How do you make the call on which astronauts live and which one will die

2. **Transportation**

ESSENTIAL QUESTION: How does the **Human Activity** of **Transportation** create moral/ethical dilemmas?

DILEMMA:

You are going to transport nuclear waste on the interstate on a regular basis. There are two different routes that you can choose from. One route is direct, quick and inexpensive but it passes within ¼ mile of 3 schools on the way. The other route is indirect, longer and more expensive, but it does not pass near any schools. Which route do you chose for your drivers to take?

3. **Communications**

ESSENTIAL QUESTION: How does the **Human Activity** of **Communications** create moral/ethical dilemmas?

DILEMMA:

Your friend is planning on meeting in person a new friend that she made on-line. You are concerned about your friend, since she has been using a false profile, which says that she is 18. Should you tell someone in authority (for example, her family, your family, a member of the school staff) about her plans?

4. **Protecting and Conserving**

ESSENTIAL QUESTION: How does the **Human Activity** of **Protecting and Conserving** create moral/ethical dilemmas?

DILEMMA:

You own a pristine parcel of land that has been used as an example of desert habitat. The government would like to buy your land to make it into a preserve for future generations to enjoy. A private investor also would like to purchase your land so that he can develop it into beautiful homes for many families. The developer will pay you 25 times as much as the government will for the same amount of land. What do you do?

5. **Providing Education**

ESSENTIAL QUESTION: How does the **Human Activity** of **Providing Education** create moral/ethical dilemmas?

DILEMMA:

You are the admissions director for the Astronaut Academy. There is one spot available. There are two highly qualified candidates. You are under pressure from your funding source to promote equality and diversity in your program. Candidate K has a GPA of 4.2 (on a 4.0 scale). Candidate P has a GPA of 4.1, and is a member of an underrepresented group. Which candidate do you choose?

6. **Making and Using Tools and/or Technology**

ESSENTIAL QUESTION: How does the **Human Activity** of **Making and Using Tools and/or Technology** create moral/ethical dilemmas?

DILEMMA:

You are a local government authority figure. You know that a natural disaster will occur and order an evacuation of all citizens. A group of people decide not to evacuate. You have the ability to force them to move so that they will be safe from the impending disaster. Do you force them to do so?

7. **Providing Recreation**

ESSENTIAL QUESTION: How does the **Human Activity** of **Providing Recreation** create moral/ethical dilemmas?

DILEMMA:

You have a friend who has invented a new toy. The toy is marketable and will make your friend a lot of money. Your fiend does not get a patent on this toy, but you know that it is important to do so. You do not tell your friend that he needs this. Instead you are considering applying for the patent yourself. You can get and hold it and then collect royalties on this toy. Do you apply for the patent?

8. **Organizing and Governing**

ESSENTIAL QUESTION: How does the **Human Activity** of **Organizing and Governing** create moral/ethical dilemmas?

DILEMMA:

Researchers discover that certain moon rocks provide an unlimited source of energy. We have the ability to safely and efficiently mine rocks from the moon. Other countries do not have this ability. Should you share these resources with other countries?

9. Moral, Ethical and Spiritual Behavior

ESSENTIAL QUESTION: How does the **Human Activity** of Moral, Ethical and Spiritual Behavior create moral/ethical dilemmas?

DILEMMA:

You have the ability to build a prison in space. The cost for running this prison will be significantly less than the same size prison on earth. The living conditions in the space prison will be below the standards for the earth prison. We do not have research on the long-term effects of micro-gravity on the human body. Do you build the prison? What types of prisoners do you send?

10. Aesthetic Needs

ESSENTIAL QUESTION: How does the **Human Activity** of Aesthetic Needs create moral/ethical dilemmas?

DILEMMA:

You are a high school art teacher. Your students have spent a significant amount of time studying space and gravity. Their projects (of futuristic space) will be displayed for the community on an Art Walk, which is held on an annual basis. While evaluating their works, you notice that one student’s work graphically depicts violence. Do you display this project?

**PRODUCTIVE THINKING SKILLS
DIVERGENT / CREATIVE THINKING**

1. BRAINSTORM MODEL

A. BRAINSTORM ALL OF THE _____.

- AHA #1: ways that the Soviets launching Sputnik will affect the United States economy and the economic relationship with the USSR.
- AHA #2: ways people travel on vacation.
- AHA #3: that satellites affect daily life in America.
- AHA #4: current energy sources.
- AHA #5: characteristics of an astronaut.
- AHA #6: adjectives for today’s weather
- AHA #7: toys you loved playing with as a child.

B. BRAINSTORM AS MANY _____ AS YOU CAN THINK OF.

- AHA #8: Brainstorm as many ways that humans could use another planet.
- AHA #9: problems with space exploration and commercial development
- AHA #10: vehicles for flight
- AHA #11: modes of air travel
- AHA #12: Brainstorm as many ways that people experiment in everyday life.
- AHA #13: famous races
- AHA #14: autobiographies

C. HOW MANY WAYS CAN YOU COME UP WITH TO _____?

- AHA #15: peacefully protest issues you don’t agree with
- AHA #16: burn 100 calories
- AHA #17: refer to a friend (ex: homey, buddy, pal, etc.)
- Random Brainstorm: say hello or goodbye

Random Brainstorm: How many ways can you come up with to change the design of a paper airplane?

Random Brainstorm: How many ways can you come up with to measure the length of an object without a ruler?

Random Brainstorm: How many ways can you come up with to travel to Canada?

Random Brainstorm: How many ways can you come up with to total 39?

2. **VIEWPOINT MODEL (Human or Animate) USE CULTURAL LITERACY TERMS**

A. HOW WOULD _____ LOOK TO A(N) _____?

AHA #1: a satellite in the sky; caveman

AHA #2: an open road; headlights

AHA #3: cell phone; pioneer -OR- text message; English professor

AHA #4: refrigerator; Julius Caesar

AHA #5: the Hubble telescope, Galileo

AHA #6: How would a storm surge look to a nearby mountain?

AHA #7: Xbox360, a child living in the 1600s

AHA #8: How would star look to a planet?

B. WHAT WOULD A _____ MEAN FROM THE VIEWPOINT OF A(N) _____?

AHA #9: tourist space travel; Martian

AHA #10: night sky, artist

AHA #11: satellite moving through the atmosphere; star

AHA #12: How would a conclusion look to a hypothesis?

AHA #13: Pair of Air Jordan's; runner in a marathon

AHA #14: typewriter, contemporary author

AHA #15: computer hacker, protester from the 1960's

AHA #16: exercise ball, child

AHA #17: newspaper headline from October 5, 1957; George Washington

C. HOW WOULD Ludwig Von Beethoven VIEW THIS?

(Use one person from history here)

1: rap music

2: a crewcut

3: a mini-shirt and go-go boots

4: an Ipod

5: a modern American city like Phoenix

6: his music used in a cartoon

3. **INVOLVEMENT MODEL (Personification / Inanimate object brought to life)**

A. HOW WOULD YOU FEEL IF YOU WERE _____?

AHA #1: a college application for MIT

AHA #2: the (ignored) speed limit sign

AHA #3: a rotary phone

AHA #4: the light bulbs that did not work for Thomas Edison

AHA #5: an abacus

AHA #6: the eye of a hurricane

AHA #7: a slinky in space

B. IF YOU WERE A _____, WHAT WOULD YOU (SEE, TASTE, SMELL, FEEL, etc.)?

AHA #8: If you were a Mars land-roving robot, what would you feel and sense?

AHA #9: solar system

AHA #10: star

AHA #11: Sputnik (see, taste, smell, feel, etc.) as you are launched

AHA #12: If you were a theory, what would you sense in the people around you?

AHA #13: Indy 500 car; sound like

AHA #14: an inventor

C. YOU ARE A _____. DESCRIBE HOW IT FEELS.

AHA #15: sound speaker at Woodstock

AHA #16: "fit" teenager

AHA #17: Apple II Computer in 2006

Random Involvement / Personification: surface of the moon when the first astronauts stepped on you

Random Involvement / Personification: the first electric guitar

Random Involvement / Personification: the discarded stages of a rocket

Random Involvement / Personification: Princess telephone

4. CONSCIOUS SELF-DECEIT MODEL

A. SUPPOSE _____. WHAT _____.

AHA #1: you could create a new high school class? What would it be?

AHA #2: there were no speed limit signs. What would the roads be like?

AHA #3: there were no fossil fuels. What would traveling in a car be like?

AHA #4: energy was free. How would our society change?

AHA #5: acrobats were chosen to be astronauts instead of pilots. What would the space program be like?

AHA #6: the weather changed without warning, how would that affect your life?

AHA #7: energy was rationed and you could no longer charge and iPod or play a videogame. How would that change the work ethic of America teenagers?

AHA #8: you discovered life on Mars, what would you tell your friends, your governor, your president?

AHA #9: there was a tourist space station. What would it be like to have a family vacation in space?

B. YOU CAN _____. WHAT _____?

AHA #10: design a postage stamp, would it look like

AHA #11: Stop sputnik from being launched; would change in American History

AHA #12: You can decide what all scientists can research. What areas would you pursue?

AHA #13: meet the winner of the Iditarod; do you ask them

-OR-change the format of the Indy 500; do you change

AHA #14: go back in time, time would you go back to

AHA #15: prevent American involvement in the Vietnam War. What would the medical system look like for Baby Boomers?

AHA #16: take physical education out of the required credits, would Americans look like 10 years later

AHA #17: Go back in time and be a kid in 1957; what jargon would you use in every day language

Random: Be president for the year 1976, what would you try to achieve?

Random: Invent/discover a new element, what properties would it have?

Random: Change one event that happened in the 1960's, what would it be?

Random: Visit any object in space, what would it be?

5. FORCED ASSOCIATION MODEL **USE CULTURAL LITERACY TERMS HERE**

A. HOW IS _____ LIKE _____?

AHA #1: Diploma; boarding pass

AHA #2: Ghost town; piggy bank

AHA #3: text message; math

AHA #4: cow manure; a wire

AHA #5: Sputnik, Einstein

AHA #6: a cloud, a tardy pass?

AHA #7: iPod, cheeseburger

B. GET IDEAS FROM _____ TO IMPROVE _____.

AHA #8: Get ideas from Donald Hall (our current poet laureate) for exploring space.

AHA #9: The development of Disneyland; the planning of space vacation destinations

AHA #10: sunset, school spirit

AHA #11: The space race; the global fight on terrorism

- AHA #12: Michael Crichton (author of *Jurassic Park*); science fiction
 AHA #13: The Tortoise and the Hare; your daily life
 AHA #14: planes, cars

C. I ONLY KNOW ABOUT _____. EXPLAIN _____ TO ME.

- AHA #15: pharmaceutical drugs; recreational drugs
 AHA #16: body weight, physical fitness
 AHA #17: laymen technology terms; jargon technology terms
 Random: gravity; microgravity
 Random: fireplaces; microwave ovens
 Random: handwritten letters; email
 Random: home-cooking; fast food

6. **REORGANIZATION / SYNECTICS MODEL**

A. WHAT WOULD HAPPEN IF _____?

- AHA #1: there was no tape on the rocket?
 AHA #2: gas was \$0.03/gallon? \$30/gallon?
 AHA #3: it was ok for cell phones to ring in class?
 AHA #4: automobiles were never invented? –OR-- there were no governmental agencies regulating energy resources
 AHA #5: you could buy a degree instead of earning it?
 AHA #6: weather never changed
 AHA #7: adults played with toys and kids didn't

B. SUPPOSE _____ (HAPPENED) WHAT WOULD BE THE CONSEQUENCES?

- AHA #8: Suppose flight was not possible.
 AHA #9: North Korea developed a satellite that could launch missiles
 AHA #10: there was no artwork
 AHA #11: The USSR was the first to walk on the moon.
 AHA #12: Suppose that all scientific research was suddenly banned.
 AHA #13: it became easy to visit the moon
 AHA #14: there wasn't any gravity / there wasn't any air travel

C. WHAT WOULD HAPPEN IF THERE WERE NO _____?

- AHA #15: music
 AHA #16: gyms
 AHA #17: jargon
 Random: heat
 Random: other planets in our solar system
 Random: stars besides our sun
 Random: humans brave enough to be astronauts
 Random: man-made satellites

CULTURAL LITERACY

1. **Dates:**

- October 1957: Soviets Launch Sputnik
- 1958: The United States Creates NASA
- 1958: US Launches an Artificial Satellite
- 1959: Luna 2 Reaches the Moon (Soviet)
- April 12, 1961: First Human to Orbit the Earth (Soviet)
- 1961: First American in Space

- 1962: Cuban Missile Crisis
- 1962: First American Orbits the Earth
- 1962: US Satellite Mariner 2 Flies Past Venus
- 1963: First Woman in Space (Soviet)
- 1963: Nuclear Test Ban Treaty
- 1965: US Satellite Mariner 4 Flies Past Mars
- July 20, 1969: Man on the Moon
- 1970: Venera 7 lands on Venus (Soviet)
- 1971: First Manned Space Station (Soviet)
- 1971: Mars 3 drops capsule on Mars (Soviet)
- 1973: US Space Station Launched into Orbit
- 1973: Apollo Program Ended
- 1986: Challenger Explosion Killing 7 Astronauts

2. Names:

- Sputnik
- Astronaut
- Cosmonaut (Soviet Astronaut)
- Drone (unmanned spy airplane)
- Satellite
- Space Shuttle
- Apollo
- Challenger
- NASA
- Bay of Pigs
- Atomic Bombs
- Fat Man and Little Boy
- Manhattan Project
- Ground Zero
- International Space Station
- Post-Sputnik Boom
- Thermonuclear
- Cuban Missile Crisis
- Explorer I
- Mariner 2
- Mars3
- Mariner 4
- Venera 7
- Luna 2
- Intercontinental Ballistic Missiles
- Gemini Program
- Hubble Space Telescope

3. Proper Names:

- Neil Armstrong
- Buzz Aldrin
- Yuri Gagarin
- Houston, TX
- John Glenn
- John F. Kennedy
- Fidel Castro
- Dwight Eisenhower

- Openheimer
- Albert Einstein
- Nikita Khrushchev
- Alan Shepard
- Senator Joseph McCarthy
- Lee Harvey Oswald
- Valentina Tereshkova
- Ivan Ivanovich
- Robert Goddard

4. Ideas:

- Light Years
- Space Travel
- Universal Time
- Weightlessness
- Extra Terrestrial
- Mercury Program
- Artificial Intelligence
- International Partnerships
- Containment
- Domino Theory
- McCarthyism
- Red Scare
- Brinkmanship
- Nuclear Holocaust
- Aeronautics
- Martians – little green men
- ABM (SALT) Treaty
- SDI (Star Wars)
- SETI
- UFOs
- Moonrise
- The world is flat

5. Phrases

- “That’s one small step for man, one giant leap for mankind.”
- “Shoot for the moon.”
- “Moonstruck”
- “Reach for the stars.”
- “It’s not rocket science.”
- “The final frontier.”
- “Houston, we have a problem.”
- “Turning out long-range missiles like sausages.”—Khrushchev
- “Beam me up Scotty.”
- “Dark side of the moon.”
- “Far side of the moon.”
- “To the moon, Alice!”

RESOURCES

I. **BIBLIOGRAPHY – Teacher / Professional Books and Resources**

World History: Patterns of Interaction – Teacher Resource Book

The American Nation – Teacher Resource Book
any earth science textbook-Teacher Resource Book

<http://en.wikipedia.org/wiki/1960s>

www.ethics.org/today

www.spacefuture.com

<http://www.mccallstudios.com/mccall/>

Search Engines on Internet

Rocket Boys

by Homer H Hickam, Jr.

Will It Go Round In Circles?

by Billy Preston

II. BIBLIOGRAPHY

The Space Publications Guide to Space Careers (Paperback)

by Scott Sacknoff, David Leonard, Leonard David

Women of Space: Cool Careers on the Final Frontier: Apogee Books Space Series 38 (Apogee Books Space Series)

by Laura S. Woodmansee

Hugh L. Dryden's career in aviation and space (SuDoc NAS 1.15:112843)

by Michael H. Gorn

Astronauts: Life Exploring Outer Space (Extreme Careers)

by Chris Hayhurst

Engineering Ethics: Balancing Cost, Schedule, and Risk - Lessons Learned from the Space Shuttle

by Rosa Lynn B. Pinkus, et al

A Place in Space: Ethics, Aesthetics, and Watersheds

by Gary Snyder

An Ethic for the Age of Space: A Touchstone for Conduct Among the Stars

by Lawrence LeShan

Sputnik: The Shock of the Century

by Paul Dickson

Russia's Sputnik Generation: Soviet Baby Boomers Talk About Their Lives (Indiana-Michigan Series in Russian and East European Studies)

by Donald J. Raleigh

Defending the Nation : U.S. Policymaking to Create Scientists and Engineers from Sputnik to the 'War Against Terrorism'

by Juan C. Lucena

Schoolhouse Politics: Lessons from the Sputnik Era

by Peter B. Dow

III. Educational Films / Videos

Astronauts & Other Exciting Careers in Space

Director: Edward W. Flanagan

CNN Perspectives Presents Cold War: Vol. 4 After Stalin 1953-56/Sputnik 1949-61 VHS

Space Mission: Reaching for the Stars (2005)

Exploring Space: The Quest for Life (2005)

NASA Pre-history

Columbus precursor mission from the old world to the new(1492),

Jules Verne prototype Apollo Spacecraft (1865),

1956

Early Zero-g Concept (1956)

1961

Original Mercury Astronauts Selected,

The Evolution of Manned Spacecraft (1961-1981),
First American, Alan Shepard, launched into space, May 5, 1961

1962

JFK Rice Stadium Space Race Speech (September 12),
Who Will Win the Race to the Moon?,
"Godspeed, John Glenn."

1963

Morph of original lunar lander design into later and final version

1965

Start of Gemini Program (March),
Americans walk in space (June)

1969

First Launch of Men to Walk on the Moon (July 16),
"Houston...the eagle has landed!" (July 20, 1969),
Man's First Step on the Moon (July 20),
The SECOND man on the Moon (July 20),
Man's First Flag on the Moon (July 20)

1970

Rescue of Apollo 13(April 11-17),
Apollo 13 Crew Photo Morph

1971

Man's First Golf Shot on the Moon (February),
First Man Driven Moon Car, Apollo 15, (July-August),
Apollo 15 performs Galileo's Feather-Hammer experiment on Moon (July-August)

1981

Launch of Space Shuttle (April)

1986

Tragic Explosion of Challenger (January 28),
President Reagan's Challenger Eulogy (January 28),

1998

Godspeed Again, John Glenn.

2001

Honoring those who died on September 11th.

2002 and Beyond

Evolution of Apollo to a Star Ship

IV. Commercial Films / Videos

The Abyss (1989)
Alien (1979).
Aliens (1986).
The Alpha Incident (1977).
The Angry Red Planet (1959).
Apollo 13 (1995).

Armageddon (1998).
The Arrival (1996).
Beyond the Rising Moon (1988).
Beyond the Stars (1989).
The Black Hole (1979).
Buck Rogers in the 25th Century (1979).
Capricorn One (1978).
Chariots of Fire (1981)
Close Encounters of the Third Kind (1977).
Conquest of Space (1955)
Contact (1997)
The Day the Earth Stood Still (1951).
Deep Impact (1998).
Disney's Ducktales: Space Invaders (1990).
Dog Star Man (1964).
E.T.--The Extra-terrestrial (1982).
Explorers (1985)
First Men in the Moon (1964).
Flight of the Navigator (1986).
From the Earth to the Moon (1958).
Hangar 18 (1980).
Ice Pirates (1984).
Independence Day (1996).
Invaders From Mars (1953).
Invasion of the Body Snatchers (1978).
It Came From Outer Space (1953).
Journey to the Far Side of the Sun (1969).
Jurassic Park
Kronos (1957).
The Last Starfighter (1984).
Lifepod (1993).
Lost in Space - Season 3, Vol. 1 (1965)
Mac and Me (1988).
The Martian Chronicles, Parts I-III (1979).
Men in Black (1997)
Metamorphosis -- the Alien Factor (1993).
Meteor (1979).
Mission to Mars (2000)
Moon 44 (1990).
Muppets From Space (1999).
Nightfall (1988).
October Sky (1999)
Outbreak (1995)
Outland (1981).
Ray Bradbury's Chronicles -- The Martian Episodes (1993).
The Right Stuff (1983)
Robinson Crusoe on Mars (1964).
Roswell -- the UFO Cover-up (1994).
Soylent Green (1973)
Space Cowboys (2000)
Space Jam (1996)
Space Mission: Reaching for the Stars (2005)
Star Odyssey (1977)
Star Quest (1994).
Star Trek--The Motion Picture (1979)

Star Wars (1977)
Star Wars: Episode I - The Phantom Menace (1999)
Starflight One (1983)
Target Earth (1978)
Total Recall (1990)
2001: A Space Odyssey (1969)
2010: The Year We Make Contact (1984)

A listing of movies A – Z of space related movies with plot:
http://www.windows.ucar.edu/tour/link=/art_and_music/films.html

V. **Literature / Language Arts** (on reserve in Media Center for interest reading)

Fiction

Deorbit: Stem Cell Rescue

by Neil Mavis

Into Space

by Ganeri, Anita

Life on Mars

by Getz, David

Look at the night.

by O'Hearn, Michael

Welcome to Moon Base

by Ben Bova

The Rocket Company

by Patrick J. G. Steinnon and David, M. Hoerr

The Martian Chronicles

by Ray Bradbury

The Shockwave Rider

by John Brunner

Earth to Stella!

by Simon Puttock and Philip Hopman

Hubert Invents the Wheel

by Claire & Monte Montgomery

The Tom Swift Books

by Francis J. Molson

The Space Eagle Operation Star Voyage

by Jack Pearl

The Hardy Boys: Skyfire Puzzle

by Franklin W. Dixon

Advanced Model Rocketry

compiled by Michael A. Banks

Heinlein's Juveniles: Growing Up in Outer Space

by C. W. Sullivan III

Mike Mars Around the Moon

by Donald A. Wollheim

The Formulaic and Rites of Passage in Andre Norton's Magic Series

by Roger C. Schlobin

Stella Brite and the Dark Matter Mystery

by Sarah Latta and Meredith Johnson

Journey Between Worlds

by Sylvia Louise Engdahl

Pieces of Another World

by Mara Rockliff and Salima Alikhan

First Men in the Moon

by H.G. Wells

Non-Fiction

To Space and Back

by Sally Ride

The Space Publications Guide to Space Careers (Paperback)

by Scott Sacknoff, David Leonard, Leonard David

Women of Space: Cool Careers on the Final Frontier: Apogee Books Space Series 38 (Apogee Books Space Series)

by Laura S. Woodmansee

Hugh L. Dryden's career in aviation and space (SuDoc NAS 1.15:112843)

by Michael H. Gorn

Astronauts: Life Exploring Outer Space (Extreme Careers)

by Chris Hayhurst

Moonrush

by Dennis Wingo

Return to the Moon

by Harrison H. Schmitt

Return to the Moon,

by Rick Tumlinson

Making Space Happen

by Paula Berinstein

Cosmos

by Carl Sagan

Lunar Bases and Space Activities of the 21st Century

by W. W. Mendell

The Once and Future Moon

by Paul D. Spudis

The Lunar Base Handbook

by Peter Eckart

Dragonfly: Nasa and the Crisis Aboard Mir

by Bryan Burrough

Failure is Not an Option: Mission Control From Mercury to Apollo 13

by Kranz, Gene

Rocketman: Astronaut Pete Conrad's Incredible Ride to the Moon and Beyond

by Howard A. Klausner, Nancy Conrad

Encyclopedia of Space Exploration

by Angelo, Joseph A

A Man on the Moon

by Andrew Chaikin, Tom Hanks

Flight: My Life in Mission Control

by Kraft, Christopher C.

Home on the Moon

by Marianne Dyson

Space Station Science

by Marianne Dyson

To Fly

by Wendie Old and Robert Andrew Parker

VI. **Poetry (at least 10)**

Through the Vanishing Point: Space in Poetry and Painting

Herbert Marshall. McLuhan (Hardcover - January 1968)

Frontier of going: An anthology of space poetry; (Panther science fiction): John Fairfax

Spaceways: An Anthology of Space Poetry: John L. Foster

The Boys First Flight: Gary Soto

Tragedy in Space: Sylvia Engdahl

An Ode to the Memory of Sir Isaac Newton: Allan Ramsay
Star-gazers: William Wordsworth
The Fallen Star: George Darley
The Secret of the Universe: Edward Dowden
To the Evening Star: T. Campbell
Star Thought: Frances Shaw
Can Teach Space poems
Space poetry
Space poems
Space Poetry on the TV Show
Space poetry: Judith A. Lindberg
Interstellar Space: Jan Haag
Space: Lenka Otap
Space Poetry and Songs
50,000 Years From Home: Daniel A. Stafford
UFO Night: Daniel A. Stafford
"The Universe Awaits...": James Carpenter
Space Poems
<http://search.yahoo.com/search?ei=utf-8&fr=slv1-mdp&p=space%20poetry>

VII. **Drama** (Stage Productions)

Moon Dreams -- Broadway-style musical in celebration of the 50th anniversary of the German Rocket Team coming to Huntsville, AL to work at Marshall Space Flight Center.

VIII. **Art Works**

A Chesley Bonestell Space Art Chronology
by Melvin Schuetz
Through the Vanishing Point: Space in Poetry and Painting
by Herbert Marshall. McLuhan (Hardcover - January 1968)
The Art of Mark A. Garlick
<http://www.space-art.co.uk/>
Science Fiction Weekly
<http://www.scifi.com/sfw/gallery/gallery.html>
The Art of Robert McCall
by Robert McCall
List of 64 Space Art Books
<http://www.iaaa.org/gallery/library.html>
Space Books Database (Children and Adults)
<http://www.alexart.com/Books2.html>

IX. **Music**

View From Space” With Heavenly Music
“Money” by Pink Floyd
“I Heard it through the grapevine” by Gladys Knight and the Pips
Theme song from “Beverly Hillbillies”
“I Believe I can Fly” by R. Kelly
“Storm” by Billy Joel
“Rocket Man” by Elton John
“Celebrate” by Kool and the Gang
“Woodstock” by Joni Mitchell
“Let’s Get Physical” by Olivia Newton John
“Impossible” from Rogers and Hamerstein’s Cinderella
“Fly Me to the Moon” by Frank Sinatra
“Man on the Moon” by REM

- A link of many genres of songs (and their lyrics) that are about the moon:

<http://www.moonlightsys.com/themoon/tunes.html>

X. Resource People / Mentors

Alan Shepard

[Life Magazine Archives – "I Know It Can Be Done and I Want to Do It"](#)

In his own words, Alan Shepard talks about trying to become the first human in space.

[Mercury 3 – Freedom 7](#)

NASA's official summary of the mission that made Shepard the first American in space.

[Apollo 14](#)

NASA's official summary of the mission that put Shepard back into space and landed him on the moon.

[The Hall of Science and Exploration](#)

Interview and biography with Alan Shepard. Includes video and audio clips.

[Alan Shepard, First American Astronaut, Dies at 74](#)

NASA's official tribute to Shepard.

[NASA's Alan Shepard Photos](#)

Links to several official NASA photos of Shepard, from his Mercury and *Apollo* days, as well as more recent photos.

[A Fond Farewell to Alan Shepard](#)

A nice tribute to Shepard from the Astronaut Scholarship Foundation and Astronaut Scholars Honor Society. Includes video and audio clips.

Virgil "Gus" Grissom

[Life Magazine Archives – "You Just Don't Have Time to Get Frightened"](#)

In his own words, Gus Grissom talks about venturing into space.

[Life Magazine Archives – Put Them High on the List of Men Who Count](#)

Coverage of the tragic accidental fire which killed three astronauts, including Grissom, during a routine pre-flight test.

[Life Magazine Archives – For the Heroes, Salute and Farewell](#)

Coverage of the funeral services for the three *Apollo 1* astronauts killed in an accidental fire.

[Apollo 1](#)

NASA's official summary of the *Apollo 1* accident.

[Apollo 1 Examination](#)

A more thorough look by NASA at the *Apollo 1* tragedy, including an investigation and results.

[National Air and Space Museum – Disaster at Pad 34](#)

NASA's summary of the *Apollo 1* tragedy

Scott Carpenter

[Life Magazine Archives – "This Is Something I Would Give My Life For"](#)

In his own words, Scott Carpenter discusses going into space.

[Mercury 7 – Aurora 7](#)

NASA's official summary of Carpenter's 5 hour spaceflight.

[Scott Carpenter](#)

The Astronaut Connection's biography on Carpenter.

Wally Schirra

[Life Magazine Archives – "There Won't Be Time to Send for the Manual"](#)

In his own words, Wally Schirra talks about going into space.

[Mercury 8 – Sigma 7](#)

NASA's official summary of Wally Schirra's 9-hour spaceflight.

[Gemini VI-A \(7\)](#)

NASA's official summary of Gemini VI-A in which Schirra's spacecraft was to rendezvous in space with Gemini VII.

[Apollo 7](#)

NASA's official summary of *Apollo*'s first manned flight. Schirra served as commander of the three-person crew.

Gordon Cooper

[Life Magazine Archives – "I've the Normal Desire to Go a Little Higher"](#)

In his own words, Gordon Cooper talks about Project Mercury

[Mercury 9 – Faith 7](#)

NASA's official summary of the final flight of Project Mercury -- Gordon Cooper's first spaceflight.

[Gemini V](#)

NASA's official summary of Gordon Cooper's second spaceflight, an 8-day mission in which the spacecraft had problems with its fuel cells.

Donald "Deke" Slayton

[Life Magazine Archives – "This Is Going to Be One Hell of a Thrill"](#)

In his own words, Deke Slayton describes the experience of training for space.

[Apollo-Soyuz Test Project](#)

Slayton, the only Mercury astronaut not allowed to fly in a Mercury mission, Slayton finally got his moment in space with the *Apollo-Soyuz* Test Project. Read NASA's official summary.

[Deke Slayton Airfest](#)

Biography of Slayton from air festival named in his honor.

John Glenn, The Astronaut

[Life Magazine Archives – "Space Is at the Frontier of My Profession"](#)

In his own words, John Glenn talks about being part of Project Mercury.

[John Glenn: Three Orbits to History](#)

An excellent interactive, multimedia exploration of the Space Race and John Glenn's Friendship 7 mission. A "must" to check out.

[Mercury 6 – Friendship 7](#)

NASA's official summary of Glenn's historic Friendship 7 mission.

[Mercury Orbits the Earth](#)

Lengthy article from American History magazine about Glenn's historic spaceflight.

[Life Magazine Archives – "Glenn's First Flight"](#)

Excellent reprint of a series of articles following Glenn's original flight, his family's reaction, and the country's reaction. Several photos exclusive to Life magazine, plus a lengthy essay from Glenn himself.

[Friendship 7 Image Gallery](#)

NASA's directory of 80 different photos, mostly black and white, but some color, of Glenn's Friendship 7 mission and training.

[John Glenn: He's Not Just History Anymore](#)

Includes historical photos and articles from Glenn's original orbit, along with more recent articles about his return to space.

[Q&A with John Glenn](#)

John Glenn answers the public's questions in this popular National Space Society component.

John Glenn, The Man

[Muskingum College](#)

John Glenn's hometown college where he received a Bachelor's Degree in Engineering.

XI. Field Trips

Challenger Space Center in Peoria, AZ

<http://www.azchallenger.org/education.field.trips.htm>

Lowell Observatory in Flagstaff, AZ

<http://www.lowell.edu/Public/>

Embry-Riddle in Prescott, AZ

<http://www.erau.edu/pr/tours/index.html>

Dorrance Planetarium in Phoenix, AZ

<http://www.azscience.org/planetarium.php>

Smithsonian National Air and Space Museum in Washington, DC

<http://www.nasm.si.edu/museum/>

Chabot Space and Science in Oakland, CA

<http://www.chabotspace.org/>

Kitt Peak Observatory in AZ

<http://www.noao.edu/outreach/kpvc/SchoolTours.html>

XII. Other Material (CD-ROM, Laser Disc, Internet sites, etc.)

[The Space Race - from CD-ROM Access](#)

[ARRLWeb: Sputnik 1 Launched **Space Race** 43 Years Ago](#)
[Air, **Space**, Science, and **Math**: Women in Science and Technology](#)
[SPACE.com -- **Math** Problem Bedevils \\$1.3-billion NASA Satellite](#)
[Space Day - Dedicated to Extraordinary Achievements in **Space** - Focus of **Space** Science Education](#)
[TeacherSource . **Math** . **Space** Activities | PBS](#)
[USATODAY.com - **Space** race cited in push for **math** teachers](#)
[Space Medicine 1-2](#)
[Careers in **Space Medicine** Summary - Careers in **Space Medicine** Information](#)
[HighBeam Encyclopedia - **space medicine**](#)
[Living in **Space**: Teacher **Resources**](#)
[Robert Lentz's **Space Resources**](#)
[NASA Science: Satellite Tracking](#)
[The Guardians.com - **Peace In Space**](#)
[Chronology of **Sputnik/Vanguard/Explorer** Events 1957-58](#)
[Sputnik 1 - Milestones of Flight](#)
[Basics of Moving Around in **Space**](#)
[Mining in **space**](#)
[HSF - **Space Shuttle** Benefits](#)
[Space Effects on Sat. Sys. \(U\)](#)
[UN **Space Laws**](#)

Science Fiction story writing: [SF WRITING ACTIVITY](#)

[www.hq.nasa.gov/alsj](#) - Apollo crew transcripts (an original source)
[www.inconstantmoon.com](#) - lunar phases & observing
[nssdc.gsfc.nasa.gov/planetary/planets/moonpage.html](#) - government-checked moon facts.
[www.nasm.edu/apollo/](#) - Apollo spacecraft & missions.
[www.moonsociety.org](#) - Debate moon ideas with members of the Moon Society.
[www.otterdad.dynip.com/als/index.html](#) - Observe the Moon with American Lunar Society members.
[www.lpl.arizona.edu/SIC/impact_cratering/intro/](#) - Learn about craters & lunar cataclysm.
[planetarynames.wr.usgs.gov/moon/moonTOC.html](#) - Official names & data of moon features.
[//lunar.arc.nasa.gov/education/index.htm](#) - Lunar Prospector lesson plans.
[//lunar.arc.nasa.gov/education/lessons.htm](#) - Exploring the Moon Teacher's Guide.
[amesnews.arc.nasa.gov/erc/moonSlides/index.htm](#) - Share the moon with friends using this free slide show.
[kvtr.elte.hu/tnp/nineplanets/pxmoon.html](#) - Cool images of the moon.
[www.hq.nasa.gov/office/pao/History/SP-4214/contents.html](#) - NASA Apollo history book.
[www.hq.nasa.gov/office/pao/History/SP-350/toc.html](#) - Apollo history by experts.
[aa.usno.navy.mil/data/](#) - What was the moon phase when you were born? Moon phases past and future.
[csupomona.edu/~tassi/moon.htm](#) - Moon folk tales/myths (The Whole Moon Page listed in HOME ON THE MOON is no longer available).
[home.earthlink.net/~paltner/moon/sf_moon.html](#) - The moon in science fiction.
[www.museum.vic.gov.au/planetarium/solarsystem/moon.html](#) - See the southern hemisphere's "upside-down" moon.

Space Station Sites

[www.mariannedyson.com/stationhistory.html](#) - An unpublished chapter of Space Station Science, History of Space Stations.
[ag-99.de/spacenet/main/main.html](#) - Complete ISS crew/mission data.
[spaceflight.nasa.gov](#) - Current station and shuttle flights, including online video.
[discoveryschool.com/schooladventures/spacestation/](#) - Interactive ISS assembly activity.
[www.boeing.com/defense-space/space/spacestation/](#) - Check status of modules. ISS prime contractor, Boeing.
[www.shopnasa.com](#) - Best place to buy a [scale model of ISS](#) & other stuff.
[www.spaceflight.nasa.gov/realdata/sightings/](#) - Find when ISS will pass over your city.
[www.space.com/](#) - Watch launches & spacewalks using real-time TV.

Astronomy Sites

[www.astro.wisc.edu/%7Edolan/constellations/constellations.html](#) - Learn your constellations!

www.fourmilab.com/yoursky - Get star charts for your lat/long or city.
www.fourmilab.ch/solar/solar.html - Can't find Mars? See where the planets are right now.
hubblesite.org/newscenter/ - See the latest Hubble images & news.
chandra.nasa.gov/ - See the latest Chandra X-ray images & news.
ads.harvard.edu/books/hsaa/idx.html - Charts, graphs, lists, definitions: a college astronomy textbook online.

Space Education Resources

www.mariannedyson.com/columbiaquotes.htm - Quotes from the Columbia crew, families, VIPs, kids, and an explanation of what happened in layman's terms.
www.mariannedyson.com/remembercolumbia2.htm - Remember Columbia - photos & information.
[://teacher.scholastic.com/space/tguide.htm](http://teacher.scholastic.com/space/tguide.htm) - Space timeline, chapter stories (by Dyson, though no byline given), & teacher resources.
education.jsc.nasa.gov/K12/K12.htm - K-12 student opportunities.
http://www.jsc.nasa.gov/Bios/astrobio_activepos.html - Astronaut bios and photos by name.
www.astronautix.com - Encyclopedia facts and photos about space vehicles, missions, people.
microgravityuniversity.jsc.nasa.gov - Fly on the Vomit Comet! NASA Student Flight Opportunities Program.
www.uiuc.edu/ro/floatn - Dyson's KC-135 flight with Univ. of Illinois students.
spacelink.nasa.gov/ - NASA educational site for teachers and students.
www.marssociety.org/ - Enter contests, go on trips, support space via the Mars Society.
www.nss.org/ - Look for a local chapter and join the National Space Society.
www.geocities.com/clearlakechap - the Houston area NSS chapter supports student projects.
www.hobbyspace.com/index.html - Find books, collectibles, interest groups, all kinds of space hobbies.
www.aerospaceguide.net/women_in_space/index.html - Women in space information.
www.echolist.com - Space Books for Kids Directory.

Writing for Children Resources

www.mariannedyson.com/writespace.htm - What it's like to be a writer. Some of my adventures and experiences in my newsletter.
www.scbwi.org/ - Get published by joining the Society of Children's Book Writers & Illustrators!
www.scbwi.org/pubs.htm - Select "SCBWI Publications" then "From Keyboard to Printed Page" for manuscript prep.
www.scbwi-houston.org - Meet SCBWI authors (including me) & attend conferences in Houston.
www.cbcbooks.org/ - Learn the market: Children's book publishers' addresses.
www.cobblestonepub.com/pages/magmain.htm - Odyssey magazine, for middle & high school science. They take NF and occasional Science Fiction.
www.aip.org/aip/writing/winchild.html - Read the American Inst. of Physics winners for science writing.
groups.yahoo.com/ - Get advice by joining NFforKids group.
www.tonibuzzeo.com/visitsauthorswhovisitschools.html - Use this author/librarian's list to choose an author to visit your school.
www.katiedavis.com - This dynamic children's writer and artist has programs for younger kids.
www.childrenswriter.com - Subscribe to this monthly newsletter for market tips, advice, and quarterly contests.

Science Fiction Resources

www.ralan.com/ - Ralan's complete SF market list.
www.sff.net/people/Geoffrey.Landis/ - Landis knows his physics and writes the best short stories ever.
www.sff.net/people/asaro/ - Older readers (especially young women) will enjoy romantic SF by Asaro.
www.dendarii.com - Warning! Don't start reading a Bujold book right before bed. There are no good stopping places!
www.mariannedyson.com/sfspin.html - Try writing a SF story in your classroom or with friends.

Life & Politics Sites

www.spacequotes.com - Read author Sylvia Engdahl's collection of quotes of reasons to explore space. (Use in letters to politicians!)

www.kuksoolwon.com - Be ready for space through exercise. Try the Martial Art of Kuk Sool Won.

thomas.loc.gov/ - Who supports space? Follow the Science and Appropriations bills.

www.vote-smart.org/index.phtml - Be an informed voter: names & addresses of politicians.

www.newspapers.com/usa_news.htm - Stay informed: Read US newspapers.

nasa.org - Rotary National Award for Space Achievement. Get your company to be a sponsor.

Other Recommended Sites

<http://www.nasa.gov/home/index.html?skipIntro=1>

<http://www.nasa.gov/audience/foreducators/topnav/schedule/about/index.html>

<http://vesuvius.jsc.nasa.gov/er/seh/movies.html#HISTORY>

http://www.uen.org/utahlink/tours/tourFames.cgi?tour_id=14274

http://rhea.la.asu.edu/spl/education/resources/nasa_television

<http://www.spacewander.com/USA/usa1x05.html>

<http://reference.aol.com/space/main>

<http://planetary.org/home/>