



Space: The Future Frontier

Unit Summary

Students research the issue of space exploration by investigating specific space missions and the development of different space technologies. They then use the *Showing Evidence Tool* to synthesize their research and sort out the pros and cons of space exploration and create a product of their choice to support their presentation, supporting one side or the other. Students then participate in a debate over whether space exploration should continue and, if so, who should be responsible for funding.

Curriculum-Framing Questions

- **Essential Question**
Why do we explore?
- **Unit Questions**
How does space exploration benefit us?
Should space exploration continue to be funded? If so, how?
- **Content Questions**
What are the main events that have affected space exploration?
What technological (electronic, communication, or digital) improvements have resulted from the exploration of space?

Assessment Processes

View how a variety of student-centered [assessments](#) are used in the Space: The Future Frontier Unit Plan. These assessments help students and teachers set goals; monitor student progress; provide feedback; assess thinking, processes, performances, products; and reflect on learning throughout the learning cycle.

Instructional Procedures

Week 1: Build Background Knowledge

Discuss the Essential Question: *Why do we explore?* Give students five minutes to write in their journals all they know about space exploration. Tell students that they may include specific missions, astronauts, outcomes of space exploration, and anything else that comes to mind, but emphasize that they should not stop writing during these five minutes. Ask students to look over their lists and share their ideas. Have them create a web or other graphic organizer to record their ideas. Ask students to consider what more they want to know about space exploration. They can record their thoughts in their journals. For homework, assign students to ask their parents what they know about space exploration and be prepared to share their responses with the class. Pose the question: How does space exploration benefit us? Encourage students to share their ideas with the whole group. Divide students into small groups, and assign each group an approximately five-year period between the founding of the National Aeronautics and Space Administration (NASA) in 1958 and the present. Using all available classroom resources, each group researches space missions and milestones in national and international space exploration during their assigned time period. For each mission, students should include:

- Name of mission
- Goals of the mission (if an exploration of a planet, then give planet overview: size, composition, distance from the sun and earth, ability to support life)

At a Glance

Grade Level: 6-8

Subject: Earth Science

Topics: Space Exploration

Higher-Order Thinking

Skills: Synthesis, Justification

Key Learnings: Evaluating

Evidence, Cost-Benefit

Analysis, Persuasive Writing

Time Needed: Three weeks,

45-60 minutes daily

Background: Utah, United States

Things You Need

[Assessment](#)

[Standards](#)

[Resources](#)

- Country participating in the mission
- Estimated cost and how it was funded
- Successes and failures
- Contributions and effects (include ways knowledge gained from mission have been used on Earth)
- Type of technology used (telescope, rocket, satellite, etc.)

After the groups research and gather the above information, split them into jigsaw groups. Assemble one person from each five-year period into a new group. In these new groups, students each have three minutes to tell the other group members about the space exploration information they collected. After that, have the group create a timeline using spreadsheet software and give a presentation that addresses these two questions:

- What are the main events that have affected space exploration?
- What technological (electronic, communication, or digital) improvements have resulted from the exploration of space – how did this benefit us on earth?

Pass out and review the [timeline checklist](#) with students to help guide them through the activity. Assess the timelines focusing on their use of higher-order thinking skills to address the above components.

Week 2: Introducing the Project

Present to students the following scenario:

As a member of a special task force you will be researching the future of space exploration. Your task is to weigh the pros and cons of spending billions of dollars on space exploration, and propose written recommendations to the President and his cabinet on whether he should cut back, maintain, or expand the U.S. space program. In addition, you will participate in a debate over the issue of whether space exploration should continue and, if so, who should be responsible for funding.

Talk to students about the fact that life beyond space is a topic that has undergone much debate. There are many questions they must think about such as: How much of the taxpayers' money is being spent on the space program? Could the money be better spent? Are the potential scientific benefits too marginal to justify the costs, or is this a wise investment in the future of mankind?

To acquire background knowledge for creating claims and to get students discussing the topic of space exploration, have students read the following articles: [Pros and Cons for Exploring Space*](#) and [Is Space Exploration Worth the Cost?*](#). Use these articles as the basis for a [Socratic Seminar*](#). The technique is derived from an ancient form of discourse—Socratic dialogue, where students seek deeper understanding of complex ideas through thoughtful discussion. After reading the articles, give students the prompt that will be used with the *Showing Evidence Tool*: Can we justify the cost of space exploration? Remind students they must be able to identify and refute possible counter arguments to their point of view.

Ask students to analyze their thoughts on their own by writing in their journals. This pre-writing activity should stimulate the critical thinking process prior to the discussion.

Distribute the [discussion rubric](#) and ask students to review before proceeding with the next activity. Group students in a circle and pose the question: *Can we justify the cost of space exploration?* Elicit responses from students and have them support their positions by citing evidence from the articles. Encourage students to question one another's reasoning and ask each other follow-up questions. All subsequent questions in the seminar should be based on the students' ideas and contributions in response to the initial question. Ask students to use the [discussion rubric](#) to assess their skills during the Socratic discussion. Review these self-assessments and offer feedback as necessary.

Practice Using the Tool

Before proceeding with the next activity, click [here](#) to set up the Space: the Future Frontier project in your workspace. Introduce students to *Showing Evidence* by having students log into their *Showing Evidence* team space. Tell them they will be building on the dialogue they began on space exploration during the Socratic Seminar.

- Direct students to create a claim based on the question: *Can we justify the cost of space exploration?*
- Show students how to add, describe, and rate evidence. As a class, articulate the connections among the pieces of evidence, and how each piece works to support or weaken the claim.
- Discuss the idea of reliable evidence. Have students make a checklist of things that they might find out that would help them decide whether the evidence they are using is reliable. Some of the following questions could end up on this reliability checklist: What are the biases you see in this source? How current is the information? Is the author an authority on the subject? Is the author expressing fact or opinion? What is the author trying to convince us to believe or do? Who is the intended audience? What is the purpose of the source? From the checklist create a class rubric to judge the quality of the evidence.
- Demonstrate how to link evidence to a claim to show that the evidence either strengthens or weakens the claim. Explain that when they bring the evidence over into the Claims Workspace, they need to make a judgment call. Now they are evaluating the evidence to see if it helps or hurts their claim. Sometimes a piece of evidence could even be used to support or oppose the same claim. It depends on how they interpret and discuss the evidence.
- Discuss how to determine the rating for the support or opposition of the claim. Explain that they're only evaluating how this one piece of evidence supports or opposes the claim. When making this rating, they are not to consider how reliable the source is or whether they think the evidence is true - that assessment was done in the earlier

rating.

- Explain that a new claim can be added as more evidence is gathered.
- Tell students they will work in teams so they can discuss their developing ideas.
- Model how student teams will peer review each other's work.
- Discuss the comments feature, and agree on how it will be used.

Use the Tool

Assign each student team another team's work to review. Have students continue to research the topic and build their case. Check in frequently both in person and asynchronously during prep time to guide work. Students may conduct a [space exploration poll](#) to gather further evidence.

Remind students that in order to be sure an argument is convincing, it is important to consider the opposing view. Require students to find evidence that weakens their claim in order to be prepared for any counterarguments that may come up in the debate. Use the Comments feature to give feedback, redirect effort, suggest new avenues of study, or ask for clarification about a team's thinking. Remind students to review and comment on their assigned team's work. Discuss with the students the kind of comments they are expected to give and get additional ideas from the students. Explain they are expected to make a minimum of three comments. Direct them to use the [project rubric](#), reliability checklist, and discussions they've had to help provide good feedback to the other team. Remind student teams that they should not make comments about whether they think the outcome is wrong or right, but instead base their comments on the quality of the argumentation.

Examine the Showing Evidence Activity

The *Showing Evidence Tool* space below represents one team's investigation in this project. The workspace is functional. You can double-click on the evidence or comments to read the team's descriptions.

Project Name: Space: the Future Frontier (Click here to set up this project in your workspace)

Prompt: Can we justify the cost of space exploration?

VIEW-ONLY MODE As a viewer, you can view but cannot edit this project.

Claim	Support	Quality	Evidence
YOUR CLAIM We should continue to invest in space exploration.	★★★★	★★★★	Technological advances in many fields
Your Explanation The cost of space exploration is justified because we have gained many technological advancements through this investment.	★★★★	★★★★	Poll supports continued exploration
Your Rating ★★★★★	★★★★★	★★★★	Spin-offs from space exploration
We found mostly support for continued space exploration because of the technology we gain. How we	★★★	★★	Not gathering relevant information
	★★★	★★	Money should be spent to solve problems on
	★★	★★	Humans face risks when exploring space
YOUR CLAIM We should use robots not humans to explore space.	★★★★	★★★★	Humans face risks when exploring space
Your Explanation This is saying that we should use robots instead of humans to explore space.	★★★★	★★	Unmanned spacecraft are cheaper than
Your Rating ★★★★★	★★★★★	★★★★	22 astronauts have died on manned space flights
	★★★	★★	Humans can improve and repair equipment
	★★	★★	Humans can use their

EVIDENCE BIN

- ★★★★ Spin-offs from space exploration
- ★★★★ Poll supports continued exploration
- ★★★★ Technological advances in many fields
- ★★ Not gathering relevant information
- ★★ Money should be spent to solve problems on
- ✓ Already invested a lot of time and money
- ★★★★ Humans can use their minds to adapt to new
- ★★★★ Humans can improve and repair equipment
- ★★★★ Humans face risks when exploring space
- ✓ Unmanned spacecraft are cheaper than
- ★★★★ 22 astronauts have died on manned space flights

Week 3: Create Persuasive Product

From their research findings, instruct students to create a persuasive product that reflects their recommendations to the President and his cabinet. Allow students to choose the medium they want to use for publishing their work. Some suggestions for student products are: written essay, [brochure](#), newsletter, or [electronic slideshow](#). Make sure students address the following questions:

- How does space exploration benefit us?
- What are the costs involved with space exploration?
- Should space exploration continue to be funded? If so, who should fund the exploration?

Assess students' persuasive products using the [project rubric](#). Distribute the rubric before students begin writing and go over the criteria so they know what is expected of them.

Set aside a day for students to present their findings to the President and his cabinet. Encourage audience members to take notes and generate questions to ask the teams after each presentation. As a final activity, facilitate a debate and encourage students to defend their reasoning using justification from research. End the final activity with a comprehensive debriefing session discussing the initial question Why do we explore? again. Give students the opportunity to express any relevant observations they may wish to make. Assess students ability to orally synthesize their learning during the debate and debriefing using anecdotal notes.

Prerequisite Skills

- Experience with multimedia publishing and word processing software
- Familiarity with persuasive writing
- Basic understanding of bias and reliability when researching on the Internet

Differentiated Instruction

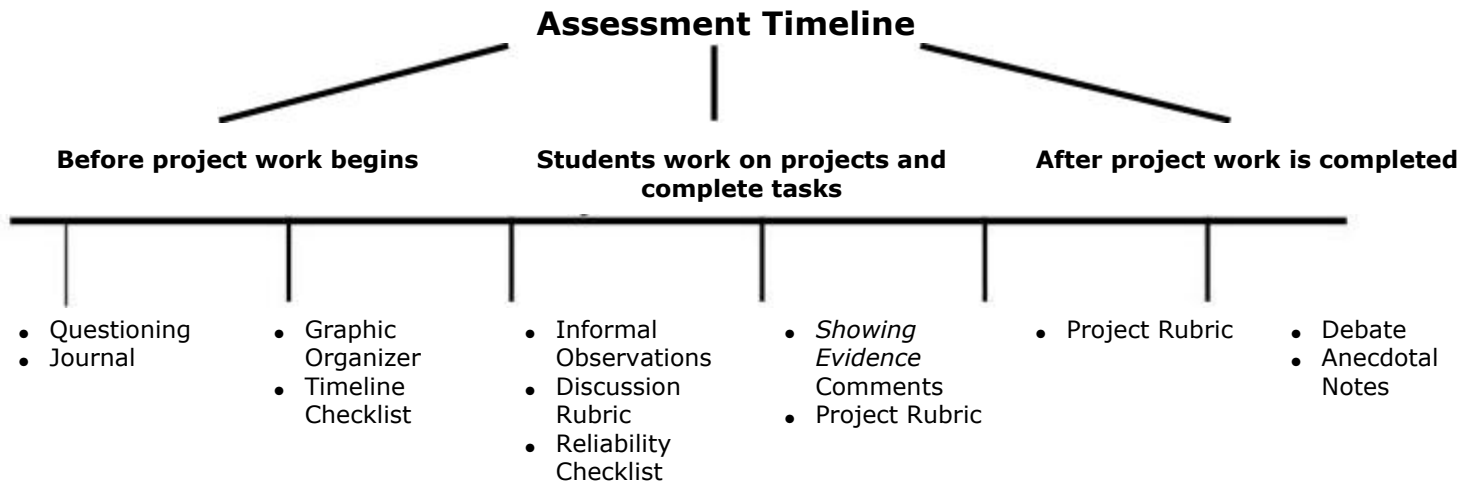
- **Resource Student:**
Give additional assistance, extra work time, and task modifications as needed. Allow the student to use compensatory skills to complete assignments, such as oral presentation instead of final written essay.
- **Gifted Student:**
Students can extend their understanding of space exploration by developing a presentation with recommendations on whether and how humans will be able to adapt to space travel.
- **English Language Learner:**
Develop a glossary for students with vocabulary words related to the unit and help English Language Learners define the words throughout the unit.

Credits

Karren Perry is a sixth-grade teacher and technology facilitator in Salt Lake City, Utah. She participated in the Intel® Teach Program, which resulted in this idea for a classroom project. A team of teachers expanded the plan into the example you see here.

Showing Evidence Tool: Space Assessment Plan

Assessment Plan



Assess students through journal responses, informal observation while they participate in different activities, and feedback provided by students and teacher while using the *Showing Evidence Tool*. Use the [timeline checklist](#), [discussion rubric](#), [reliability checklist](#), and [project rubric](#) to help students monitor their progress and understand the expectations throughout the project. Assess the final projects using the [project rubric](#).

Showing Evidence Tool: Space Content Standards and Objectives

Targeted Content Standards and Benchmarks

Utah State Standards:

Science

Standard 1

Describe new areas of scientific and technological activity that have been generated by space research and exploration.

Standard 3

Students will understand the relationship and attributes of objects in the solar system.

Language Arts/Media

Standard 1

Oral Language: Students develop language for the purpose of effectively communicating through listening, speaking, viewing, and presenting.

Standard 3

Students locate resources and access information within resources.

Standard 4

Students engage and extract information.

Student Objectives

Students will be able to:

- Evaluate and select information resources that are understandable, available, relevant, current, valid, and authoritative.
- Classify information based on fact and opinion.
- Select and evaluate information resources for objectivity (for example, information that does not show prejudice, stereotyping, bias, and propaganda).
- Identify key events in the development of space exploration.
- Understand the relationship and attributes of objects in the solar system.
- Describe new areas of scientific and technological activity that have been generated by space research and exploration.
- Demonstrate an understanding of the costs, benefits, and challenges of space exploration.

Showing Evidence Tool: Space Resources

Materials and Resources

Printed Materials

- Literature on space from the school and public library

Internet Resources

- National Aeronautics and Space Administration (NASA)
www.nasa.gov/externalflash/Vision/main.html*
Educational resources on all aspects of space studies
- BBC Science and Nature
www.bbc.co.uk/science/space/exploration/index.shtml*
Collection of space articles including a timeline of events that shaped space travel
- The Space Site
www.thespacesite.com/space/future/whygo.php*
Discussions on the history and future of space exploration
- The White House
www.whitehouse.gov/news/releases/2004/01/20040114-3.html*
Remarks by the President on United States space policy
- Space.com
www.space.com/news/nsf_space_poll_000620.html*
Article detailing a study which shows public support of a Mars trip
- Space Daily
www.spacedaily.com/news/oped-04b.html*
Newspaper article discussing whether space exploration is worth the cost
- America's Debate
www.americasdebate.com/forums/index.php?s=058866005c4066088f37a54a8647d528&showtopic=910&st=0&#entry11087*
Collection of posts discussing the benefits of space exploration
- BBC News
http://news.bbc.co.uk/1/hi/talking_point/2718035.stm*
Comments discussing the issue of space exploration
- Space Today Online
www.spacetoday.org/Astronauts/SpaceTourists.html*
Article discussing space tourism
- Space Future
www.spacefuture.com/archive/benefits_of_commercial_passenger_space_travel_for_society.shtml*
Discussion of the benefits of commercial passenger space travel
- MSN Encarta
http://encarta.msn.com/encyclopedia_761556756_5/Space_Exploration.html*
Article discussing the history and future of space exploration
- National Space Society
http://chapters.nss.org/letters/archives/2004/02/space_program_b.html*
Letter to the editor detailing the benefits of space exploration
- The Society of Performers, Artists, Athletes, and Celebrities for Space Exploration, Inc.
www.stars4space.org/Benefits.html*
Article describing the technological benefits gained from space exploration
- International Space Station
www.shuttlepresskit.com/ISS_OVR*
Overview of the International Space Station
- Space Today Online
www.spacetoday.org/Rockets/X_Prize.html*
Article discussing the Ansari X Prize and the privatization of space exploration
- NASA Space place
<http://spaceplace.jpl.nasa.gov/en/kids>*
Collection of games, animations, projects, and facts about Earth, space, and technology
- Science Friday Kids' Connection
www.sciencefriday.com/kids/sfkc20030207-1.html*
Includes an audio clip discussing the future of space exploration after Columbia

- BBC Newsround
http://news.bbc.co.uk/cbbcnews/hi/teachers/citizenship_11_14/subject_areas/scientific_development/newsid_3397000/3397051.stm*
- Learning resources focusing on the space exploration debate
- ThinkQuest
www.thinkquest.org/library/cat_show.html?cat_id=169*
- Various Webquests on space exploration

Other Resources

- Invite speakers who work in professions related to space exploration.

Technology – Hardware

- Internet connection for independent research and tool use

Technology – Software

- Multimedia software to create final presentations

Timeline Checklist

- We have answered the following questions in our timeline:
 - What are the main events that have affected space exploration?
 - What technological (electronic, communication, or digital) improvements have resulted from the exploration of space?
- We have prepared to answer the following question in the presentation of our timeline:
 - How did the technological improvements from the exploration of space benefit us on earth?
- We have included all appropriate titles and labels.
- All of our facts are accurate and explained in detail.
- All of our facts are in sequential order and are related to other facts.
- Our facts are presented in a consistent and accurate scale.
- We have included appropriate pictures, graphics, or other media.
- Our work is neat, attractive, and legible.
- Our work is free of mechanical errors.
- We have cited all our sources.
- We have divided the presentation among our team members.
- We have practiced our parts and provided feedback for improvement.
- We have anticipated questions and are prepared to answer them.

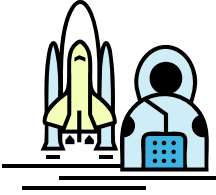
Discussion Rubric

	4	3	2	1
Engagement	<p>I enjoy class discussions because I learn from hearing other people's points of view.</p> <p>While I am listening to my classmates' comments, I connect what they are saying to my own experiences and opinions and draw conclusions about the topic being discussed.</p> <p>I listen to my classmates' comments with an open mind, but I think carefully about how they support their opinions.</p> <p>When I am not talking, I show I am interested in the discussion by taking notes and exhibiting appropriate body language, such as eye contact, smiling, and nodding.</p>	<p>I enjoy class discussions because it is interesting hearing what my classmates have to say about a topic.</p> <p>While I am listening to my classmates' comments, I think about what they are saying.</p> <p>I think about the validity of what my classmates are saying.</p> <p>I show that I am paying attention to the discussion with my body language.</p>	<p>I sometimes enjoy class discussions.</p> <p>Sometimes I think about what my classmates are saying during a discussion, but sometimes my mind wanders.</p> <p>Sometimes I think about whether my classmates' comments are correct.</p> <p>I usually show that I am paying attention, but sometimes I look like I am not interested in the discussion.</p>	<p>I sometimes enjoy class discussions because I can just listen or daydream and not do any work OR I think discussions are usually a waste of time.</p> <p>I usually think about something else during a discussion.</p> <p>I often look like I am not paying attention to the discussion.</p>
Interaction	<p>I contribute my own appropriate experiences and opinions when they fit naturally into the flow of the discussion.</p> <p>I make comments that enhance and build on those comments that were made before me by questioning, summarizing, paraphrasing, and elaborating.</p> <p>I explain why my opinions and</p>	<p>I contribute my own experiences and opinions appropriately.</p> <p>I build on others' comments.</p> <p>I support my comments with good reasons and reliable sources.</p>	<p>Sometimes I contribute my experiences and opinions.</p> <p>My comments are usually on topic, but sometimes they do not connect to what the speakers before me said.</p> <p>Sometimes I give good reasons for my opinions, but sometimes my</p>	<p>I rarely contribute my experiences and opinions.</p> <p>My comments are often off the topic and meant to disrupt the discussion not enhance it.</p> <p>I often express opinions that have no credible support.</p>

	comments are worth listening to by using good reasoning and referring to reliable sources of information.		reasoning is not sound and my sources are not credible.	
Collaboration	<p>I enthusiastically contribute to discussions, but I am careful not to talk too much.</p> <p>I encourage all my classmates to speak by asking them questions and noticing when they look like they want to say something.</p> <p>I use a variety of strategies, such as questioning and humor to respond to comments I disagree with.</p> <p>I listen carefully when people disagree with my opinions to see if they have valid points, and I change my mind if their arguments are convincing.</p> <p>I follow the established rules for discussion in my class.</p>	<p>I speak, but not too much, during discussions.</p> <p>I encourage my classmates to speak by asking questions.</p> <p>I consider different viewpoints and respond to them respectfully.</p> <p>When my classmates disagree with me, I consider their points of view.</p>	<p>I sometimes speak too little or too much during discussions.</p> <p>Sometimes I respond respectfully to comments I disagree with, but sometimes I get upset.</p> <p>When my classmates disagree with me, sometimes I take it personally and get upset.</p>	<p>I hardly ever speak during a discussion OR I monopolize the discussion by speaking way too much.</p> <p>I often get angry and say inappropriate things in response to comments I disagree with.</p> <p>When my classmates disagree with me, I often get upset and respond inappropriately.</p>
Reflection	<p>I think back on what I learned in a discussion and use that in my future studies.</p> <p>I reflect on my participation in a discussion and set goals for how I could be a better participant in the future.</p>	<p>I think back on what I have learned in a discussion.</p> <p>I think about how well I did in a discussion and set goals for improvement.</p>	<p>Sometimes I think about what I learned in a discussion.</p> <p>Sometimes I reflect on my participation in a discussion and think about how I could do better the next time.</p>	<p>I rarely think about what I learned in a discussion.</p> <p>I hardly ever think about how I could improve my participation in discussions.</p>

Space: The Future Frontier Project Rubric

	4	3	2	1
Statement of Claim	Accurately creates a claim that clearly and directly answers the prompt and does not confuse the claim with other information.	Accurately creates a claim that answers the prompt, but may confuse the claim with other information.	Claim is somewhat unclear in how it answers the prompt and may mistakenly include information that does not require support.	Fails to create a claim that directly answers the prompt. Identifies information that does not require support.
Explanation of Claim	Explanation of claim specifically provides detailed information on the level of support the space program should have.	Explanation of claim provides a brief amount of information on the level of support the space program should have.	Explanation of claim provides vague information on the level of support the space program should have.	Explanation of claim provides no information on the level of support the space program should have.
Analysis of Evidence	Analysis shows sophisticated understanding of how evidence relates to and supports or opposes claim. Rationale of support/non-support reflects deep understanding.	Analysis shows basic understanding of how evidence supports or opposes the claim. Rationale of support/non-support may not reflect depth of understanding.	Analysis shows vague understanding of how evidence relates to the claim. Rationale of support/non-support reflects a superficial understanding.	Analysis shows understanding of evidence/ claim relationship is non-existent or inconsistent. Rationale does not support rating.
Recommendations	Recommendation includes 4 or more strong reasons that reflect well-developed understanding of depth and/or complexity of the future of the space program based upon evidence gathered. Conclusion is clearly related to claim.	Recommendation includes 3 reasons that reflect adequate understanding of the future of the space program based upon evidence gathered. Conclusion is clearly related to claim.	Recommendation includes 1 -2 reasons that reflect basic understanding of the future of the space program based upon evidence gathered. Conclusion is not clearly related to claim.	Recommendation is not related to claim and/or does not show relationship between claim and evidence. No understanding of the future of the space program is evident.
Presentation	Shows awareness of the audience and anticipates important concerns. Maintains consistent persuasive tone throughout.	Shows awareness of audience and anticipates most concerns. Demonstrates a persuasive tone.	Reflects little awareness of audience and fails to anticipate most concerns. Lacks consistent persuasive tone.	Reflects no awareness of audience. Language and tone is unclear
Presentation Method	Presentation tool is well chosen and enhances the message significantly.	Presentation tool is appropriate and adequately supports the message.	Presentation tool is not well-chosen as it does not help to support the message.	Choice of presentation tool is inappropriate and interferes with the message.



Who Should Fund the Space Program?

(The questions for this survey were adapted from:
www.2think.org/spacepoll.shtml)



Your assignment is to survey 6 people. Have them vote for their choice. If they choose “**other**”, have them explain why.

Name: _____

To what degree should we explore space?

- There shouldn't be a space program.
- We should reduce our efforts to explore space.
- We should continue our efforts at current levels.
- We should have a much more comprehensive space program including a possible manned mission to Mars.
- Other

How should space exploration be funded?

- Resources--even from the private sector--should all be spent on our world's current problems.
- All funding should come from the private sector.
- Governments should continue to provide the bulk of the funds for space exploration.
- We should have increases in our taxes, and/or decreases in other spending areas to fund space exploration.
- Other

Name: _____

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- Other

Space Technological Advancements Have Helped Us All.

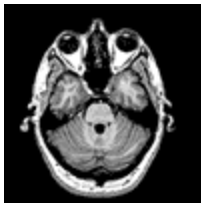
Space exploration has helped us all around the world. NASA developed digital image processing for its Apollo mission. Now this technology is used all the time by doctors and hospitals to record images of the human body. We have also invented satellite television, cell phones, scratch resistant lenses, artificial hearts, and more.

If we keep exploring space we may find out more things that may help us, and with men going to other planets we may find out even more about our Solar System. We think we should continue space, for hope of finding out more things about space, and to discover other technological advancements that will help us have a better life here on earth.

Space Spin-offs



TV Satellite Dish



Medical Imaging



Bar coding



Firefighter suites

Bibliography

We found the information and pictures we used in this brochure at the sites listed below.

<http://www.whitehouse.gov/news/releases/2004/01/20040114-3.html>

<http://spaceplace.jpl.nasa.gov/en/kids/spinoffs2.shtml>

<http://msnbc.msn.com/id/5942268/>

<http://www.scaled.com/projects/tierone/>

http://techtran.msfc.nasa.gov/at_home/hospital3.html



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Instructional Technology

Should Space Exploration Be Continued ?



By
Cameron and Tommy

Should We Quit Space Exploration ?

Introduction

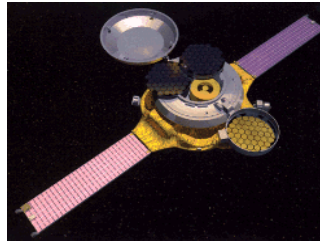
Do you want to quit space Exploration ? Do you want to stop the development of further space inventions, such as us landing on different planets, discovering things that can be really helpful on earth? We have just started, we can't stop now.

Many of people want to cancel space exploration. But we think space exploration should continue and be funded by private corporations. Even President Bush is for space exploration. In a speech at the White House he talked about continuing space exploration. President Bush also talked about spending more time and money into space exploration.



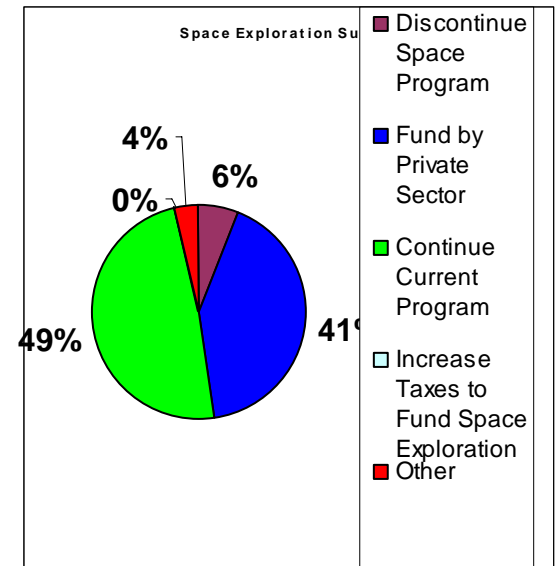
Privatizing Space Exploration

The satellite Genesis (you see to the right) cost \$264 million dollars, took three years to build, and it crashed in a desert. We were unable to gather the information it got from the sun. That satellite was made by government and failed to operate.



When the United States was doing an arctic research expedition, both government and privatized corporations participated. Privatized corporations did it well and did it cheap, but the government's was costly and they didn't find out as much.

The spaceship you see to the right is called Spaceship One. This spaceship was made by a private corporation. This spaceship won the X Prize of 10 million dollars. It broke through the atmosphere and showed people that space exploration can be continued and funded by private corporations.



Space Exploration Survey

Out of the 110 people we surveyed about space exploration 90% voted to continue space exploration which tells us people do think space exploration is important.

The World of Space Exploration



By

Rebecca and Shylee

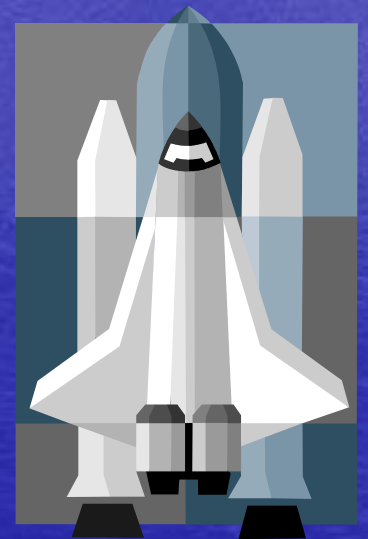


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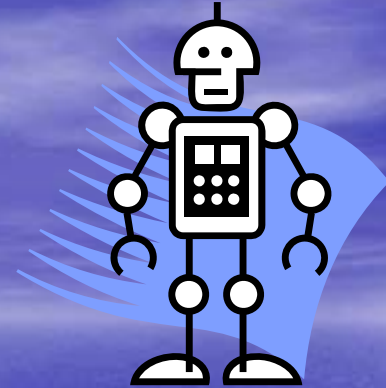
Our Opinion

Our opinion on whether we should continue or discontinue space exploration.

We think that we should continue space exploration and send humans up into space. We think that space is an important part of our world and that we should still explore it, so we can learn as much as we can to learn about our own world.



Humans vs. Robots



Claim :

Humans can do more when we send them into space.

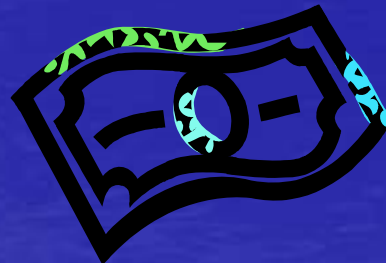
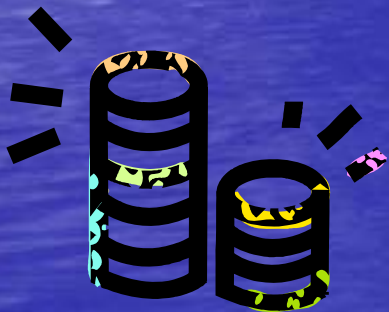
Machines are capable of doing only what they have been programmed to do. The human mind, however, can analyze a situation and adjust plans accordingly. When astronauts go into space, they can bring special tools with them, not to mention human hands, but most importantly, the world's most versatile computer--the human mind.

The Cost of Space Exploration

Claim:

15.47 billion dollars is the NASA budget.

Here are \$976.3 billion dollars – almost a trillion - spent every year in the US on pets, toys, gambling, alcohol and tobacco. It is 63 times the amount spent on space exploration – with the difference that NASA has not destroyed lives as the alcohol, tobacco and gambling have.



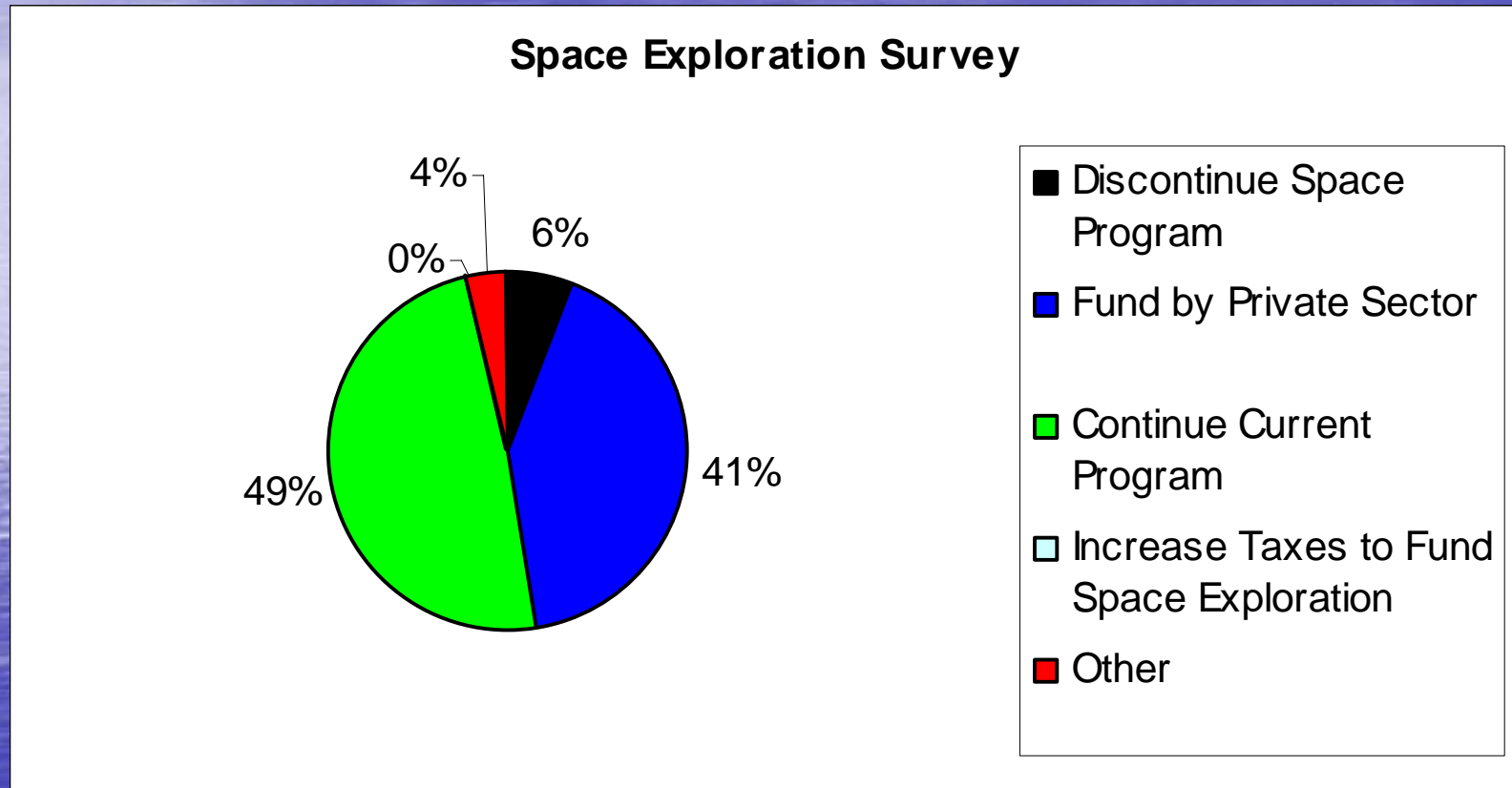
Technological Advancements

Claim:

Technological advancements are worth the cost.

The exploration of space has led to advances in weather forecasting, in communications, in computing, search and rescue technology, robotics, and electronics. Our investment in space exploration helped to create our satellite telecommunications network and the Global Positioning System. Medical technologies that help prolong life -- such as the imaging processing used in CAT scanners and MRI machines -- trace their origins to technology engineered for the use in space.

Space Exploration Survey



In a survey we conducted of 110 people all but 10% felt we should continue to explore space.

In conclusion...

In Conclusion humans should be sent into space although it is a bigger risk, it is a bigger reward because humans can analyze the situation better. They can find us evidence, on the other hand robots can only do what they are programmed to do. Also some people think that space exploration costs so much, but they are wrong! Space exploration costs 15.47 billion dollars on the other hand, Americans spend 2-63 times that amount on drugs, alcohol, toys, and pets every year.

For these reasons, we think that space exploration should continue and we should continue to send humans into space.

Bibliography

You can find all the information on these sites:

- <http://www.spacedaily.com/news/oped-o4b.html>
- <http://liftoff.msfc.nasa.gov/news/2003/news-human.asp>
- <http://www.whitehouse.gov/news/releases/2004/01/20040114-3.html>
- <http://aerospacescholars.jsc.nasa.gov/HAS/cirr/ss/3/5.cfm>
- <http://office.microsoft.com/clipart/default.aspx?lc=en-us>

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