

Living in Deep Space

Astronaut Survival Systems Presentation Project

This project combines research, science understanding, collaboration, and communication as students investigate how astronauts survive in deep space and present their findings as a team.

SCROLL
to take a look inside!



WHAT STUDENTS DO

1. Each group member researches one survival system (oxygen, food, temperature, waste, water)

2. Students write out their individual responses

3. The group builds one presentation together

4. Group presents to the class

Role 3: Food Systems Specialist
Figure out how astronauts eat, prepare meals, and stay nourished in a very small spacecraft.

Research questions to answer

1. What kinds of foods are used on Orion and why are they chosen?
2. How are meals prepared in space when there is no normal kitchen?
3. Why must space food be safe, compact, and easy to eat in microgravity?
4. How do nutrition, storage, crumbs, waste, and power limits affect food choices?
5. What improvement would you suggest for food or meals on a future deep-space mission?

Helpful reminder Food is not only about hunger. It also affects health, mood, storage space, preparation, and waste.

Your individual submission must include:

- Clear answers to the guiding questions
- At least 2 specific details or examples from your research
- One realistic improvement idea for future missions
- Key vocabulary you use in your presentation

Use the following space for your notes

Individual Written Submission

Use this page to turn your research into a clear explanation. Submit this page for your individual grade.

Name	
Group role	
Explain your system	Explain how this system helps astronauts survive during a 10-day mission.
Use evidence	Add at least 2 specific facts, examples, or details from your research.
Suggest an improvement	Describe 1 realistic improvement for future missions and explain why it would help.
Vocabulary to include	Use at least 3 important science or mission words connected to your role.

Group Presentation Planning Template

Plan your deck before you start building it. Use the same layout, font choices, and visual style across the whole presentation.

Slide #	Slide title	What must be included	Who speaks?
1	Mission challenge	Introduce the 10-day mission and why survival systems matter.	Shared
2	Oxygen / air	Explain oxygen supply, carbon dioxide removal, and cabin safety.	Student 1
3	Water	Explain storage, delivery, uses, and limits of water.	Student 2
4	Food	Explain food types, meal preparation, and nutrition concerns.	Student 3
5	Temperature control	Explain how the spacecraft stays safe in extreme hot and cold.	Student 4
6	Waste management	Explain how waste is handled in microgravity.	Student 5
7	Improvements / conclusion	Summarize what your team would improve for future missions.	Shared

Presentation tips

- Keep each content slide focused on one big survival system.
- Use labels, diagrams, icons, or photos that help teach the audience.
- Avoid copying large blocks of text onto your slides.
- Practice transitions so the presentation sounds smooth from one speaker to the next.

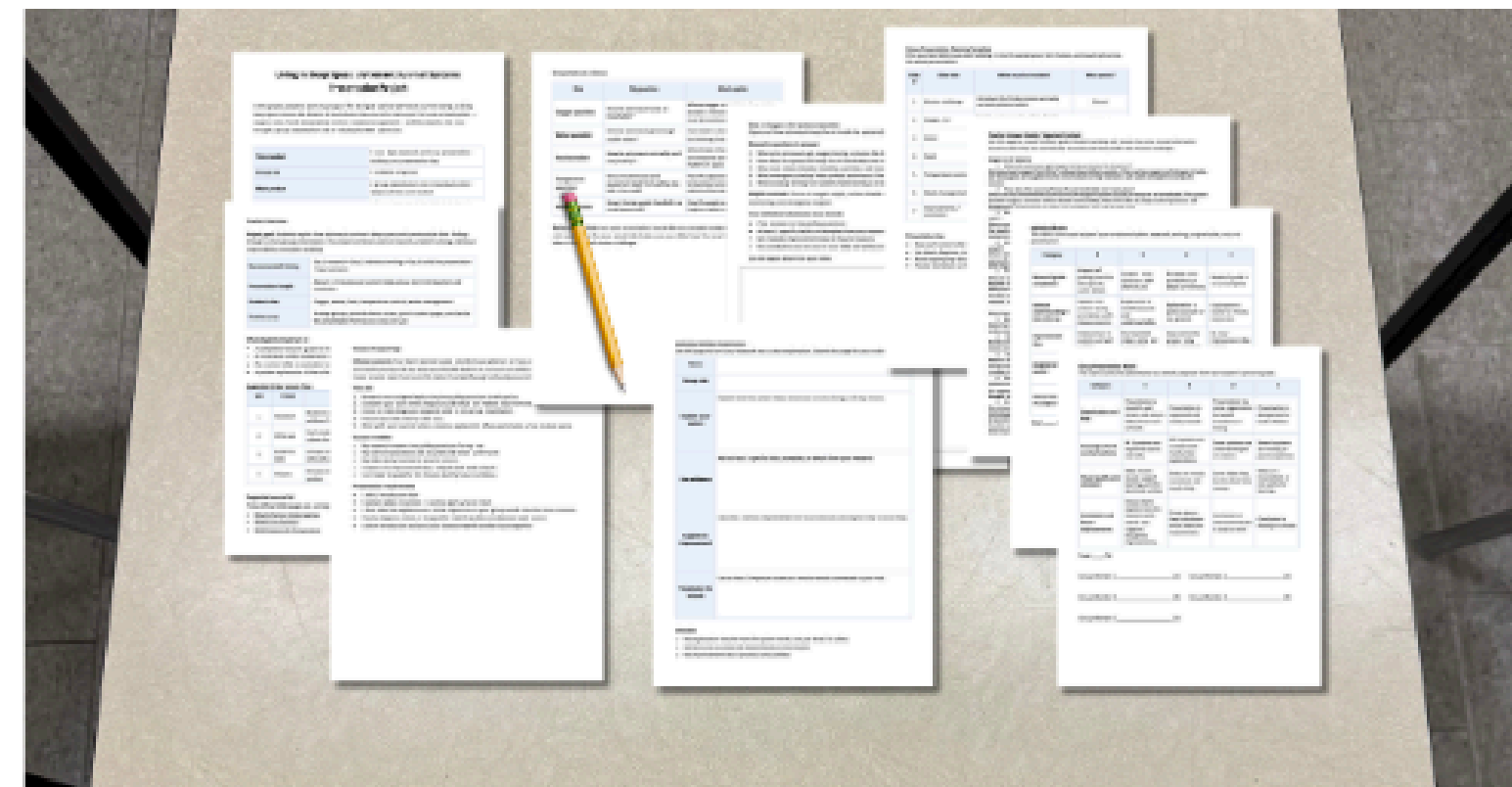


THE PROBLEMS YOU FACE

- Limited time to create engaging projects that build research, speaking, and science understanding.
- Need collaborative activities that keep every student accountable for their own learning.
- Difficulty finding meaningful presentation projects that are structured, engaging, and easy to grade.

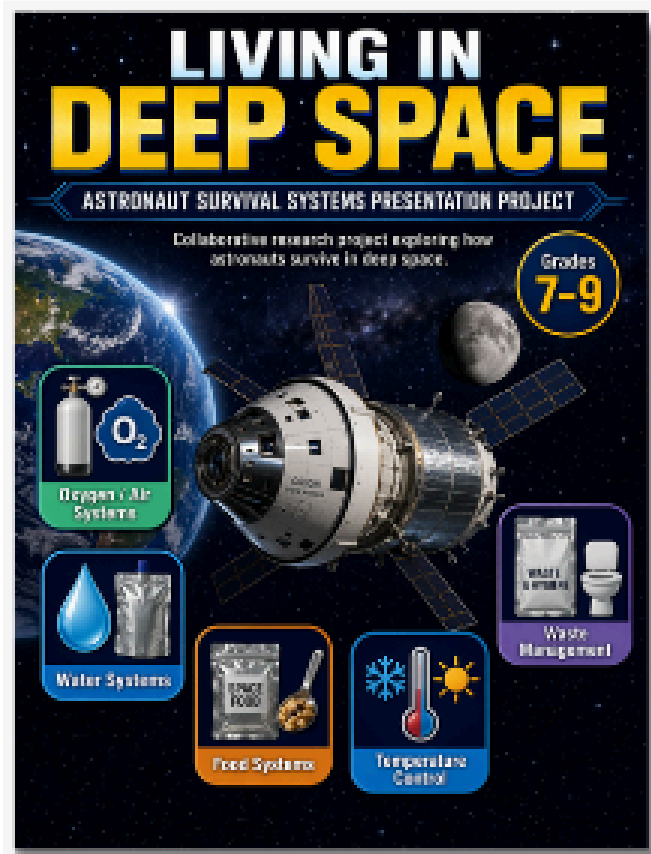
HOW IT BENEFITS YOUR STUDENTS

- Connects science research to real-world space survival systems.
- Builds collaboration and presentation skills.
- Supports planning, organization, and clear communication.
- Encourages science-based problem solving.



What Will Your Students Learn?

NO PREP - Just Print and Go



Students research how astronauts survive in space and work in groups to create a presentation explaining the systems needed for a 10-day mission.

STUDENTS DEVELOP THEIR RESEARCH, COLLABORATION, & PRESENTATION SKILLS.

- **Living in Deep Space Mission Challenges**
- **How Astronauts Survive During a Mission**
- **Oxygen and Air Systems in Space**
- **Water Storage, Use, and Conservation**
- **Food Systems and Nutrition in Space**
- **Temperature Control in Deep Space**
- **Waste Management and Hygiene in Space**
- **The Orion Spacecraft and Survival Systems**
- **Limited Space, Mass, Power, and Supplies**
- **Researching Real-World Space Mission Systems**
- **Explaining Science Through Writing and Speaking**
- **Collaborating to Create a Group Presentation**

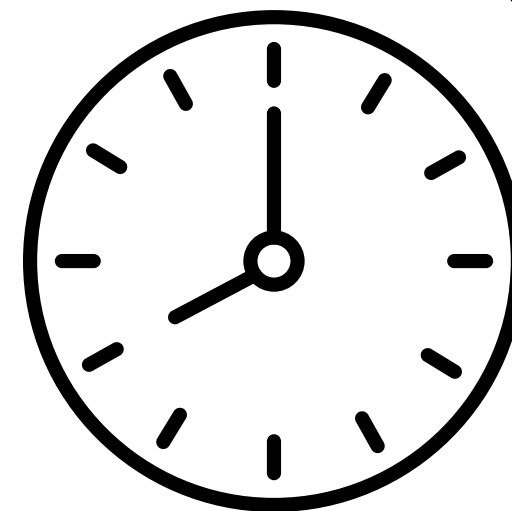
Time & Materials

Easy Grading

Designed for 4 class days total:
Day 1 for research
Day 2 for the individual write-up
Day 3 for building the presentation
Day 4 for presenting to the class

Students need Chromebooks or other devices for research, plus the printed project pages and access to any presentation format you choose, such as Google Slides, PowerPoint, or Canva.

Includes clear individual and group rubric that make grading simple by scoring research, science understanding, improvement ideas, slide quality, oral presentation, and the presentation as a whole.



Individual Rubric
This rubric scores each student's personal contribution: research, writing, assigned slide, and oral presentation.

Category	4	3	2	1
Research guide completion	Answers all guiding questions with specific, useful details.	Answers most questions with clear details.	Answers some questions but details are limited.	Research guide is very incomplete.
Science understanding in the write-up	Explains the system clearly, accurately, and in mission context.	Explanation is mostly accurate and understandable.	Explanation is partly accurate or too general.	Explanation is unclear or mostly inaccurate.
Improvement idea	Improvement is realistic and well justified.	Improvement makes sense and is explained.	Improvement is weak or only partly explained.	No clear improvement idea is given.
Assigned slide quality	Slide is clear, informative, visual, and easy to learn from.	Slide is clear and mostly informative.	Slide is somewhat useful but lacks clarity or detail.	Slide is incomplete or hard to follow.
Oral presentation of assigned part	Speaks clearly, stays prepared, and teaches the topic well.	Speaks clearly and covers the key ideas.	Presentation is uneven, rushed, or partly unclear.	Student is not prepared or does not clearly explain the topic.

Group Presentation Rubric
This rubric scores the presentation as a whole, separate from each student's personal grade.

Category	4	3	2	1
Organization and flow	Presentation is smooth, well timed, and easy to follow from start to finish.	Presentation is organized and mostly smooth.	Presentation has some organization but weak transitions or timing.	Presentation is disorganized or hard to follow.
Coverage of all 5 survival systems	All 5 systems are explained clearly and fully.	All 5 systems are included with mostly clear explanations.	Some systems are underdeveloped or uneven.	Several systems are missing or poorly explained.
Visual quality and cohesion	Slides match, visuals support learning, and the deck feels unified.	Slides are mostly consistent and visuals help.	Some slides help, but the deck feels uneven.	Slides are inconsistent or not useful for learning.
Conclusion and future improvements	Group clearly explains how the mission works overall and suggests thoughtful improvements.	Group gives a clear conclusion and at least one improvement.	Conclusion or improvement idea is weak or brief.	Conclusion is missing or unclear.

Total: ____/16

Group Member 1 _____/36 Group Member 2 _____/36

Group Member 3 _____/36 Group Member 4 _____/36

Group Member 5 _____/36

Teacher Instructions

Individual and Group Planning Pages

Individual and Group Rubrics and Answer Key



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Connect!*

