

Observing Earth and Humanity

Learning Activity – Celebrating Diversity from Space Association of Space Explorers

Developed by: Steve Jones



Description

Students will be learning about life onboard the International Space Station, and how it affects perspectives of our home planet. While reflecting on the diversity seen in the images from the presentations, students will create pieces that can be used in a public event at the school to celebrate diversity.

Grade Level

High School (9-12)

Duration

1-2 days

Materials:

- [Celebrating Diversity from Space](https://www.earthmusictheater.org/Your-Playlist) movie (<https://www.earthmusictheater.org/Your-Playlist>)
- High-resolution images from NASA's astronaut photography collection
- Map of Earth or digital globe for reference
- Computers or tablets (optional)
- Projector and sound system

Learning Goals

1. Understand the role of the ISS as an orbiting observatory for Earth science and human studies.
2. Recognize the diversity of astronauts on the ISS and their unique perspectives on Earth.
3. Interpret Earth imagery through scientific, geographic, and cultural lenses.

NGSS Standards:

HS-ESS2-2: Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

HS-ESS3-1: Construct an explanation based on evidence for how the availability of natural resources and human impacts influence Earth systems.

Lesson Activities:

1. Introduction to the ISS and Its Role (15 minutes)

- Begin with an overview of the International Space Station (ISS):
 - Describe the ISS as a unique microgravity laboratory and observatory orbiting 250 miles above Earth.
 - Explain that it circles Earth 16 times a day, allowing astronauts to witness our planet's full diversity, from landscapes to cultures and weather patterns.
 - Discuss the diversity of astronauts who live and work on the ISS, emphasizing the multinational and multicultural crew that collaborates on scientific research.
- Show a short segment from *Celebrating Diversity from Space* that highlights astronaut experiences and diverse perspectives gained from viewing Earth from the ISS.

2. Movie Viewing and Discussion (15 minutes)

- Continue with a segment of the movie to introduce students to the perspectives astronauts gain from space and highlight Earth's geographical and cultural diversity.
- Prompt students to think about the following:
 - *What can the vantage point of space teach us about our planet?*
 - *How do the astronauts' backgrounds shape what they see and value in Earth's landscapes?*

3. Group Image Analysis and Diverse Perspectives (30 minutes)

- Divide students into small groups, assigning each a theme or region to explore, such as urban and rural landscapes, cultural heritage sites, or natural wonders.
- Each group selects an image from NASA's ISS photography, available through [The Gateway to Astronaut Photography of Earth](#), corresponding to their theme. Using their photo and the movie as inspiration, students interpret what diversity looks like from space, noting both natural and human-made features.

4. Comparative Reflection: Diversity of Earth and Astronauts (30 minutes)

- Have students compare their chosen photo with the diverse group of astronauts shown in the movie. Guide them with questions like:
 - *How does each astronaut's perspective contribute to our understanding of Earth's diversity?*

- *What role do diverse viewpoints play in understanding Earth's complex systems?*
- Students share their reflections through a creative response, such as a poem, drawing, or short essay, highlighting their thoughts on diversity. (See Appendix for ideas to display these)

5. Expansion Activity: Environmental and Cultural Change from Space (Optional 2nd Day)

- Use additional segments of the movie to discuss how environmental changes on Earth are visible from space, connecting this to geoscience and cultural heritage.
- Analyze images of different regions to identify visible environmental changes and discuss how these affect human communities, with an emphasis on respecting cultural and ecological diversity.

Assessment

- Group analysis of an ISS photo, integrating diversity themes from the movie.
- Creative reflection on the diversity of Earth and the astronaut experience.

Appendix: Displaying Student Reflections

1. Artistic Showcase

- **Earth-Inspired Gallery:** Display students' poems, drawings, and essays in a "space gallery" in the classroom or hallway. Each piece can be mounted on black or dark blue paper to mimic the vastness of space. Include labels with the student's name, title of their work, and a brief explanation.
- **Digital Slideshow:** Compile student reflections into a slideshow with background images of Earth from space. This can be projected during a school event or shared online.

2. Interactive Map of Diversity

- **Global Reflection Map:** Use a large world map. Pin students' creative responses to specific locations depicted in their chosen ISS photos. For example, a student inspired by the Amazon Rainforest could attach their poem to South America.
- **Virtual Map Display:** Create an interactive map using Google Earth or other mapping tools. Embed student reflections as clickable markers tied to ISS photography of different regions.

3. Multimedia Presentation

- **Celebrating Earth Video:** Combine reflections into a video presentation, alternating between student work, the *Celebrating Diversity from Space* movie, and astronaut photos. Add student-narrated audio descriptions for a personalized touch.
- **Podcast or Audio Feature:** Record students reading their reflections aloud and pair these recordings with background music or sounds inspired by Earth (e.g., ocean waves, rainforests).

4. Collaborative Class Project

- **Diversity Quilt:** Create a "reflection quilt" where each student contributes a square featuring their poem, essay excerpt, or art. Assemble the squares into a physical or digital quilt to symbolize the interconnectedness of Earth's diversity.
- **Cupola Wall Display:** Recreate the ISS Cupola on a bulletin board or classroom wall. Each "window" can feature a student's reflection paired with the ISS photo that inspired it.

5. Schoolwide or Community Display

- Public Exhibit: Collaborate with the school library or a local community center to set up an exhibit showcasing the reflections and ISS photography.
- Astronomy Club Event: Tie the reflection display into an event hosted by your school's astronomy club, such as a stargazing night or science fair.

6. Social Media or Online Sharing

- Class Blog or Website: Post students' reflections and artwork on a class blog, along with links to the *Celebrating Diversity from Space* movie and NASA photography.
- School Social Media: Share highlights on the school's social media pages, tagging relevant organizations like NASA to showcase the students' work.

Sample Rubric for Creative Responses

Criteria	Excellent (4)	Proficient (3)	Developing (2)	Beginning (1)
Creativity & Originality	Response demonstrates exceptional creativity and originality, showing a deep connection to the theme of diversity.	Response shows creativity and originality, with a clear connection to the theme of diversity.	Response shows some creativity but may lack originality or a strong connection to the theme.	Response is generic, with limited creativity or connection to the theme.
Connection to ISS Photography	Strong, thoughtful integration of the chosen ISS image; details are clearly referenced in the response.	ISS image is integrated with some thoughtful references to specific details.	ISS image is mentioned but lacks meaningful integration into the response.	Little or no connection to the chosen ISS image is evident.
Reflection & Depth	Deep, insightful reflection on the diversity of Earth and astronauts, supported by meaningful examples.	Reflection is thoughtful and relevant, with some examples supporting the theme of diversity.	Reflection is surface-level or lacks clear examples related to the theme.	Limited or no reflection on the diversity theme is evident.
Presentation & Effort	Response is polished and well-presented, showing significant effort in creativity and execution.	Response is neat and well-done, showing adequate effort in creativity and execution.	Response shows some effort but may lack polish or completeness.	Response appears rushed or incomplete, with minimal effort evident.
Engagement with Movie Themes	Effectively incorporates and builds upon themes from <i>Celebrating Diversity from Space</i> with strong ties to the movie.	Incorporates themes from the movie, with some relevant connections.	Limited incorporation of themes from the movie; connections are unclear or weak.	Little or no attempt to incorporate themes from the movie is evident.

Scoring:

- 20–18 points: Outstanding work that fully meets or exceeds expectations.
- 17–14 points: Solid work that meets most expectations with minor areas for improvement.
- 13–10 points: Developing work that shows effort but lacks depth or completeness.
- 9–5 points: Minimal effort or understanding; significant improvement needed.