Carnegie Council Lesson Plan for Ethical Issues in Space (60 minutes)

Overview

This session explores the ethical use of space by considering how space is currently being used for both civilian and military purposes and why ethical governance is needed. It allows students to see humanity's dependence on space for our everyday lives, as well as the challenges—and need—for greater international cooperation to ensure that space promotes human welfare rather than undermines it. Students will apply the four guiding principles of Carnegie Council—international cooperation, democracy, fidelity, and the humanitarian imperative—when thinking through the risks and benefits that space usage presents.

Core Objectives

1. Identify our dependence on space-related technologies and the way these can support or undermine human flourishing.
2. Describe the different uses of space: whether for science, industry, security, or other values, and understand some of the conflicts between these uses.
3. Explore the challenges and benefits of international cooperation for space.

Carnegie Council principles that the lesson addresses:

- **The commitment to international cooperation** is a moral proposition because it goes to the essence of ethics—recognizing what is common for all, while managing the intrinsic and inevitable differences between and among people.
- **The defense of democracy in the U.S. and globally** requires confronting autocrats who discriminate based on ethnicity, gender, and religion, and who deny basic freedoms to their citizens.
- **Fidelity** means honesty, integrity, and a good-faith effort at serving the truth. Rhetoric certainly matters, and in an age of disinformation, leaders must fight against lies, willful deception, and deliberate misrepresentation of facts.
- **The humanitarian imperative** is the duty to save lives and alleviate suffering through humane and equal treatment. As violence and cruelty abound in conflict zones around the world, mounting effective humanitarian responses remains the essential moral imperative of our time.

1. Opening Ethical Provocation (10 minutes)

- **Prompt:** Imagine that a country successfully establishes a lunar base in the next few years. Would establishing a human-occupied base on the Moon grant the country a claim to the entire Moon? Part of it? Should there be any restrictions on what the country does on the Moon, whether through industry or militarization?
- Quick write and brief discussion.

2. Why Does Space Matter? Identify how space is currently used peacefully to benefit humanity (10 minutes)

Ann K. Thresher and Mai'a K. Davis Cross' "The Cosmic Precipice: Why Weaponizing Space Hurts Us All" provides important background about the different benefits provided by satellites and space objects, as well as their importance for humanity.

i. Provide a brief overview of satellites, including explanations of low, medium, and high Earth orbits
ii. List the uses of satellites in space, such as GPS, communications, scientific satellites (for both terrestrial and deep space exploration), etc.
iii. Describe how human space flight missions (ISS, NASA, Russia, China) contribute to peaceful relations and scientific research
iv. Outline the importance of sharing data for climate-related research that helps states develop infrastructure, prepare for disasters, and monitor space debris

Using Thresher and Cross' article, introduce students to distinctions about the weaponization versus the militarization of space, and what the current status is of the militarization of space.

i. Briefly introduce the 1967 Outer Space Treaty which

    1. Analogizes space to Antarctica (for sovereignty and research-related purposes)
    2. Bans nuclear weapons in space
    3. Forbids establishing military bases on the Moon or celestial bodies

Two ethical ideas for thinking through the value of space for individuals are:

i. Capabilities: "Amartya Sen and Martha Nussbaum have argued that human well-being is connected to the capabilities we possess—that a person is better off if they are able to drive, for example, or vote, and, conversely, worse off if they lack these freedoms."
ii. External Agency: Capabilities are dependent upon the use of objects or infrastructures, which then enable humans to do more

3. Activity (30 minutes)

In this activity, students will take on the role of negotiators for a new treaty that addresses several issues relating to the use of space. There are three major issues to be resolved by this treaty:

- **Space Debris/Satellite Risks:** With the growing number of satellites being launched into space, what should be done to address obsolete satellites and the risks they pose? Who is responsible for cleaning up space debris? Should states ever be able to deactivate or attack another state's satellites?
- **Satellite Identification and Licensing:** How should the growing number of satellites be addressed given the possible limitations on space and equity among states for the number of satellites that can be commissioned?
- **Lunar Usage:** With several countries attempting to establish lunar bases, what activities should be permitted or prohibited on the Moon?

Break the class up into four different groups. Each group will be assigned an identity from which they will negotiate their group's positions:

- **Space Superpower:** State S has the most satellites in space, owned by its government (for both research and military purposes), but also by private contractors that it allows to send satellites into orbit. It is in the process of finalizing a mission to the Moon in 2030 in order to establish a permanent lunar base.

- **Space Newcomer:** Like State S, State N has begun sending satellites into space for military and research purposes, but has not yet allowed any of its companies to send satellites into space. Although it is also planning to establish a lunar base, the earliest date it would be possible is 2035.

- **Future Space:** State F has a space program in the very early stages, and it has not yet launched any satellites into orbit. It has no plans for human exploration of space.

- **Coalition of Space-Based Research:** The Coalition of Space-Based Research is an organization that advocates on behalf of the scientists and researchers that rely on space for research purposes. They are concerned about the growing number of satellites in space and increased militarization of space, all of which has the potential to interfere in space- and ground-based research.

In Part 1 of this activity, students from each group will initially brainstorm their group's position by answering the following questions (5 minutes)

- Who should benefit from lunar and celestial resources?
- What capabilities and external agencies are affected by this problem?
- Should the benefits of space be primarily for government-sponsored research or should private corporations also be allowed to benefit?
- Who should make the rules for space? Those that use it the most or all countries?
- Given the limited "space" in space, how should satellite space be allocated?
- Should there be more governance over what types of objects are sent into space?
- Should targeting a satellite for destruction or disabling a satellite ever be permitted (cascade risks)?
- Are spy satellites legitimate military targets and could they be targeted?

In Part 2, each group will try to formulate a solution or policy for the three problem areas that reflects their own interests, but is also likely to win the approval of the other groups (10 minutes).

In Part 3, the groups will take turn presenting their solutions to the other groups for one problem area. After each group has presented their solution to a particular problem, the groups will openly discuss the proposals and try to settle on the policy that at least three of the four groups can agree on. (10 minutes)

In Part 4, students will reflect on the challenges of finding an agreement and whether any policy could be agreed upon by all parties. (5 minutes)

4. Conclusion (10 minutes)

- Revisit lunar example from the beginning
- Consider the lunar example in relation to human flourishing and the risks poses by the militarization of the Moon

Additional Resources

- "Ethics and the New Space Boom," Carnegie Council, Brian Weeden & Amelia Mae Wolfe, May 12, 2023 (Podcast)
- *A Policy Framework for International Cooperation in Space Biotechnology*, Northeastern University & Carnegie Council, Mai'a K. Davis Cross, Ann C. Thresher, et al., September 8, 2025 (Report)
- "Why Space Matters and How to Govern It," *Ethics Empowered: Leadership in Practice*, Carnegie Council, February 23, 2026 (Event Recording & Transcript)