

SPACE TOURISM

GRADE LEVEL

5th – 8th

TIMELINE

60 minutes

NGSS STANDARDS

MS-ESS3-4

INTRODUCTION

OBJECTIVES

Students will:

- Identify the advantages and disadvantages of private space tourism.
- Apply Space Law to space tourism.
- Develop an argument on the potential outcomes of space tourism.

MATERIALS

- White paper or construction paper (30 sheets)
- Coloring Utensils (markers, colored pencils, etc.) (30 sets)
- NASA Vision of the Future poster for reference (1)
- Internet capable device (30)
- Sticky notes (60)
- Anchor Chart Paper or Marker Board (1 sheet)
- Headphones (30)

TEACHER PREPARATION

- Print one copy of the Advantages/Disadvantage's Notetaking Sheet for each student.
- Ensure students have access to the links provided in the resource section, either through an online classroom or through creating QR codes.
- Make an anchor chart poster or draw on the markerboard a T chart of advantages and disadvantages.

LESSON INSTRUCTIONS

ENGAGE (5 MINUTES)

- Project NASA's Vision of the Future Poster '[The Grand Tour](#)' (Goods, Delagado, 2020). Have students write down characteristics about the poster that they notice and ask them what they think that this poster is advertising.
 - Possible answers: advertising space travel, visiting outer planets, unrealistic trips through space.

- Explain: This poster comes from NASA’s Jet Propulsion Laboratory series called “Vision of the Future”. It shows characteristics of space travel both real and imagined with the goal of keeping people imagining what could be possible. Space tourism is commercial space travel, which means that people pay for it. It is a growing industry.
- Ask for a show of hands of people who recognize various names of space tourist companies as you list some off. (Space X, Blue Origin, Space Perspective, etc.)

EXPLORE (25 MINUTES)

- Students will now explore various artifacts about Space Tourism. Use the links from the Resource section and either create QR code or post them on an online classroom.
- After interacting with an artifact, students will record about the advantages and disadvantages on a piece of paper or notebook that each source reveals space tourism. Additionally, they will create a symbol or drawing that represents each source.
 - For example: If I discovered in one artifact that space tourism is still not achievable for very many people due to cost, I could draw a symbol for money.
- Students will not have enough time to go to every artifact. Their goal is to review at least 3 to 4 artifacts in the given time.

EXPLAIN (5 MINUTES)

- Tell students that there is an imaginary line going from one side of the room to the other. Make one side completely agrees with space tourism and one side completely disagrees with space tourism and all in the middle is a continuum of agreement and disagreement.
- Have students think about how much they agree or disagree with space tourism and stand somewhere on the imaginary line depending on what they think. Have a few students from each section share why they chose to stand there.
- Ask a variety of probing questions as students share such as:
 - What other information did you think about including in your justification?
 - How sure are you that your claim is valid?
- As students share, collect their reasons for advantages and disadvantages and record them on the T chart. Try and especially point out when students refer to information they gathered from an artifact.
- Have students write a claim statement using the sentence stem below that addresses whether they agree or disagree with space tourism. They need to include at least one reason from the advantage or disadvantage column to support their claim.
 - I think that space tourism will be _____ because _____.

ELABORATE (~ 15 MINUTES)

- Show students ‘The Grand Tour’ Vision of the Future Poster as well as ‘Mars’ Vision of the Future Poster. Remind students that these posters use abstract qualities to convey a message about traveling to these places.
- Students need to use the information they have gathered along with their symbols to develop a poster that displays what the future of Space Tourism will look like on the Moon.

EVALUATE (5 MINUTES)

Have students review each other's posters using a gallery walk method. Students can leave sticky notes by the posters with the strengths and areas of improvement of their posters.

REFERENCES

- ABC News. (2021, December 9). What does space tourism mean for the climate? [Video]. YouTube. <https://www.youtube.com/watch?v=qlXuRk72Vlw>
- Goods, D., Delgado, D., (2020, December 24). Visions of the future. NASA Jet Propulsion Laboratory. <https://www.jpl.nasa.gov/galleries/visions-of-the-future>
- Grand View Research. (n.d.). Space tourism market size, share and trends report by type (orbital, suborbital), by end use (government, commercial, by region, and segment forecasts 2023-2030. <https://www.grandviewresearch.com/industry-analysis/space-tourism-market-report>
- Kamin, D. (2022, May 7). The future of space tourism Is now. Well, not quite. The New York Times. <https://www.nytimes.com/2022/05/07/travel/space-travel-tourism.html>
- Future plc. (2021, July 26). Blue Origin makes record-breaking commercial spaceflight with Bezos aboard. Newsela. <https://newsela.com/read/blue-origin-rocket-launch/id/2001022485/>
- Newsela. (2018, May 17). Wanted: An orbiting garbage collector to clean up space. Newsela. <https://newsela.com/read/elem-cleaning-up-space-junk/id/43608/>
- Primal Space. (2020, February 24). What will space tourism be like? [Video]. YouTube. <https://www.youtube.com/watch?v=eH-xm9G9QBk>
- Space Perspective. (n.d.) The world's only carbon-neutral spaceship. Space Perspective. <https://spaceperspective.com/spaceship>
- Space tourism is taking off: how will it develop over the coming decades? (2022) IBERDROLA. Retrieved August 26, 2022, from <https://www.iberdrola.com/innovation/space-tourism>
- United Nations Office for Outer Space Affairs. (n.d.) Space Law. <https://www.unoosa.org/oosa/en/ourwork/spacelaw/index.html>
- United Nations Office for Outer Space Affairs. (n.d.) Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html>

