

Investigating NASA Space Missions

Grade: 6-8

Subject Integrated: Science, Social Studies

Rationale:

In this lesson, students will learn about different NASA space missions: what, who, when, where, why, how, results, now.

Objectives:

Students will be able to design a model or construct a presentation that explores one of NASA's space missions in its historical context.

Materials:

- Any materials student would like to use to construct their model
- Computers for research
- PowerPoint for presentations

Learning Activities:

a) Instructional Materials and Resources

- <http://www.nasa.gov/missions> lists all of the NASA missions to date.
- Example of video made about Mars Mission 2018:
<https://www.youtube.com/watch?v=7owARlpsws> (teacher to show as example).
- Students are to choose one mission, one student/group per mission.
- Students may work with a partner.

b) Procedure

- Teacher asks the class if they have heard of any NASA missions/what they did.
- Teacher will write each of the missions the students have heard of on the board.
- Teacher should have previous knowledge on NASA and NASA's missions (research websites listed below prior to teaching lesson). It's okay for the teacher to admit that he/she isn't sure about a particular mission--the classroom is a learning community, the teacher being an active learner along with everyone else.
- Students are given time to turn to a neighbour and talk about NASA and the missions.
- Teacher will re-ask the questions about NASA and the missions.
- Students will be given an opportunity to research on chromebooks or computers to see what they can discover.

- After 15 minutes of researching, students are to choose to work in partners or choose to work alone and begin claiming different NASA missions.
- To reduce competitiveness and increase a breadth of learning, students should not choose the same mission, unless they are working together.
- Students are responsible for the Who, What, Where, Why (including historical context), When, How, Results, and Today to be answered.
- Students can choose to do a write up, slideshow, create a model, or find another teacher sanctioned method of demonstrating what they learned about the mission.

c) Instructional Groups

- Lesson will be taught to the class as a whole with small group instruction as needed.

d) Discussion

- What is NASA?
- What does NASA stand for?
- What are some of NASA's missions of the past?
- What are some of NASA's current missions?
- Did any NASA missions have a historic context of why it happened?

e) Assessment

- Formative assessment will be used when students are collecting information about their mission.
- Teacher will guide students to plausible answers if they are having trouble.
- Teacher will take notes on students with trouble with the skills for further assistance.
- The teacher will assess the students' based on their completion of the assignment and participation in the discussion.
- Optional: Rubrics can be made to score the writing portion of the activity - summative assessment.

Closure:

a) Ending the Lesson

- Students will present their PowerPoints, models, or other demonstrations of learning.
- Students are to include what, who, when, where, results, today about their NASA missions.

b) Evaluating and Reflection of the Lesson

- Evaluation of lesson will be done by thorough formative assessment and summative assessment.
- Teacher will observe to make sure each student understands the concept introduced in the lesson.
- Teacher will make sure all requirements and guidelines are met by giving specific instructions to students who struggle with the skills.
- Teacher will self critique on what worked well and what did not work well in the lesson.
- Optional: Rubrics can be used for evaluation of oral presentation, writing piece.

Standards:

- NGSS: MS-ESS1-3. (supportive fit) Analyze and interpret data to determine scale properties of objects in the solar system. (fine print: *Clarification Statement: Emphasis is on the analysis of data from Earth-based instruments, space-based telescopes, and spacecraft to determine similarities and differences among solar system objects*)
- NGSS: D2.His.1.6-8.9. (strong fit) Analyze connections among events and developments in broader historical contexts.

Teacher References:

- Dr. Melissa Mercer-Tachick (melissa@museconsulting.info)
- Dr. Nicolle Zellner (nzellner@albion.edu)
- <http://www.nasa.gov/missions>: This lists all NASA missions in alphabetical order.
- <http://www.jpl.nasa.gov/missions/?type=current>: This lists current missions NASA is working on.
- <http://www.space.com/14532-10-greatest-nasa-science-missions-countdown.html>: This is space.com's list of top ten NASA missions.
- <http://mentalfloss.com/article/60532/15-ongoing-space-missions-you-should-know-about>: This lists 15 popular space missions currently happening (as of 2016).
- <http://www.popsci.com/real-cost-nasa-missions>: This explains the costs of NASA missions.
- <http://www.thedailybeast.com/articles/2016/07/06/nasa-s-next-missions-will-blow-our-minds.html>: This is an article about future NASA missions.
- <http://www.cnn.com/2014/11/12/tech/innovation/other-space-missions-nasa/>: This is CNN's list of the 11 most interesting NASA missions.
- <http://www.techinsider.io/nasa-ongoing-space-exploration-missions-2016-7>: This is an article about current and future NASA missions.