

VOYAGE TO MARS ALIGNMENT WITH COMMON CORE & 21ST CENTURY



Common Core: English Language Arts	Mission Activity
RI.6/7/8.1: Quote accurately from a text when explaining what the text says...	While working in Mars Control, students conduct research by reading informational text and answering questions.
RI.6/7/8.4: Determine the meaning of general academic and domain-specific words and phrases in a text...	Students work with their teammates to understand and use vocabulary specific to their team and mission.
SL.6/7/8.1: Engage effectively in a range of collaborative discussions...building on others' ideas and expressing their own.	Students engage in communication and problem solving in order to successfully accomplish mission objectives.
SL.6/7/8.3: Delineate a speaker's arguments and specific claims, distinguishing claims that are and are not supported...	During the mid-brief, students analyze information presented by Flight Director in order to determine what to do next.
SL.6/7/8.6: Adapt speech to a variety of contexts and tasks...	Students communicate with teammates across simulators using provided protocol. Students engage in communication with teammates, Flight Director and Commander.
Common Core: Mathematics	Mission Activity
6.NS.6: Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes...with negative number coordinates. 7.NS.1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers... 8.NS.2: Use rational approximations of irrational numbers to compare the size of irrational numbers...	Students in Mars Control analyze data from the students in the Mars Transport Vehicle. Depending on grade level and team responsibilities, students determine rational or irrational number and location on a number line.
6.EE.7: Solve real world and mathematical problems by writing and solving equations of the form $x+p=q$ and $px=q$... 7.EE.4: Use variables to represent quantities in real-world or mathematical problems, and construct simple equations and inequalities to solve problems by reasoning.	During the mid-brief students work together to determine the impact of a Mars event on their mission using the equation $d=r*t$. Depending on grade level, students record data using scientific notation.
6.SP.5: Summarize numerical data sets in relation to context. 8.SP.1: Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities	Students analyze data they receive from the Mars Transport Vehicle in order to determine if results are acceptable or not. Students work with numerical data to determine if results are within acceptable range.
21st Century Learning Skills	Mission Activity
Make Judgments and Decisions, Solve Problems	Students make judgments and solve problems.
Communicate Clearly and Collaborate with Others	Students communicate in and across the simulators to work with their teammates.
Access, Use, Manage and Evaluate Information	Students research & analyze data to accomplish mission objectives.
Apply Technology Effectively	Students use computers to obtain information and communicate.
Be Flexible, Work Independently, Interact Effectively With Others	During emergencies, students respond to new information and procedures.
Manage Projects and Be Responsible to Others	Students must complete tasks during the mission timeframe.

VOYAGE TO MARS ALIGNMENT WITH NEXT GENERATION SCIENCE



Next Generation Science: Science & Engineering Practices	Mission Activity
4. Analyzing and interpreting data	While working in Mars Control, students are responsible for recording, analyzing, and interpreting the data that they are given by their teammates in the Mars Transport Vehicle.
5. Using mathematics and computational thinking	Students record, calculate and analyze data.
6. Constructing explanations (for science) and designing solutions (for engineering)	Students in Mars Control must use the information and data they are given by their teammates in the Mars Transport Vehicle to construct an argument based on the information they are presented with.
7. Engaging in argument from evidence	They must construct an argument from evidence during the mid-mission briefing, when the group as a whole is presented with a list of criteria and must decide what to do next.
8. Obtaining, evaluating, and communicating information.	While students are in the Mars Transport Vehicle, they obtain information and data and must communicate this information to Mars Control.
Next Generation Science: Disciplinary Core Ideas	Mission Activity
MS.ESS1.3: Analyze and interpret data to determine scale properties of objects in the solar system. MS.ESS3.2: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	Students use their knowledge about Mars to transport a new crew of astronauts to Mars and safely return the current crew. Students must launch one or more probes to Mars' moons. They must conduct research during the mission and work to keep the crew safe.
Next Generation Science: Crosscutting Concepts	Mission Activity
2. Cause and effect	Students handle a variety of emergencies caused by anomalies. Students must solve the emergency or abort the mission.
3. Scale, proportion and quantity	Students use beakers, graduated cylinders, a Geiger counter, balances, etc. to perform experiments and monitor environments on the Mars Transport Vehicle.
6. Structure and function	Students build probes to launch to Mars' moons.
Nature of Science	Mission Activity
1. Scientific Investigations Use a Variety of Models 2. Scientific Knowledge is Based on Empirical Evidence	Students use variety of lab equipment and techniques to complete hands-on activities and observations.
5. Science as a Way of Knowing	Students make measurements, record observations and analyze data to contribute to their role in the mission.
7. Science as a Human Endeavor	Students take on the role of flight controllers and astronauts during their mission.