

Students will work together to plan a trip to Mars and then build a sustainable colony with limited resources on real Martian terrain.

Learning Objectives

- Understand how to survive on Mars and what dangers one would face.
- Understand how to create a sustainable colony on Mars
- Learn to work collaboratively with 5-6 students to complete a variety of tasks
- Use critical thinking to decide how to allocate limited resources to build a colony capable of responding to potential challenges and setbacks.

Guiding Ideas

NASA (and other private organizations) are already planning missions to send humans to Mars in the next 10-20 years. That means students of TODAY will likely be the first to visit Mars and ultimately begin setting up a permanent colony on the red planet. This activity will simulate what it would be like to be one of those astronauts.

Student Activities

RESEARCH:

You may want to split your team into 3 groups to research 3 main questions:

- 1) How to survive on Mars/what potential dangers do we face, climate on Mars
- 2) How to build a basic shelter/base on Mars
- 3) How to build a sustainable colony on Mars

PLANNING:

Using notes from your research, discuss AS A TEAM, what items/supplies you would need to bring to Mars for each of the 3 questions (there will likely be some overlap). Then make a final list of 27 items (ONE CHEST) to bring with you to Mars. Load them into the chest in the Cargo Hold of the rocket.

They will be in creative mode for this part.

BUILDING:

Students will land on Mars and begin working AS A TEAM with limited resources (one chest) to construct an initial base camp on Mars and then expand it to a sustainable colony.

They will be on survival mode for this part.

Performance Expectations

Use a slideshow program (PPT, Google Slides, Sway...) to create a presentation about your research questions. You will share your presentation with the class.

Use the camera and portfolio in Minecraft, or screenshots/screen recording to showcase your completed colony. Add written explanation of what your team built and what each structure will be used for.

Write an argumentative essay about whether or not you would want to be a colonist on Mars and explain why.

Teacher Notes:

Mars Resources:

The Mars terrain in Minecraft is mostly red sand and clay underneath. Those can be crafted into glass and bricks for building supplies. There are a few other resources underground that can be mined: stone, coal, iron/gold, redstone, but they are pretty limited.

Start Farming Fast:

Students will be consuming a lot of food as they work hard to build their new colony and explore. If they don't start farming quickly, they may deplete their food stores before they reach a sustainable supply. A plot of land around 8x8 growing wheat can support 1 person...

Roles:

If a team is struggling to complete tasks and work collaboratively, it may be useful to suggest they determine what specific roles are needed. Example: farmers, builders, miners, explorers...

Important Supplies:

Certain items will be very useful on Mars. Here are a few you may want to suggest to your students:

Food: Lots of food. Students will be in survival mode on Mars and there is a periodic hunger effect forcing them to eat often. It's a good idea to bring *at least* 32 beef per person.

Dirt: Often overlooked on earth, it will be crucial for growing crops on Mars! (there is some underground, but you will need a lot to establish a sustainable food supply)

Seeds/Bonemeal: Wheat is probably best option but students could experiment with other choices or even bring a variety. Bonemeal will help the crops grow faster and establish a sustainable food supply quicker.

Cobblestone: While it may seem weird to load up stone on a spaceship, cobblestone is an important part of many crafting recipes. Again, there is some stone on Mars, but not much.

Wood: Another resource that is plentiful on Earth, but nonexistent on Mars. Bringing raw wood logs will be most efficient as each log equals 4 wood planks. Also critical for many crafting recipes.

Wool: If you want to make beds, you'll need wool.

Potion supplies: If students plan on brewing potions (medicine) they will need to bring blaze rods, nether wart, and other ingredients: melon+gold for healing, ghast tear for regeneration, glowstone for stronger effects...

Tools: Instead of filling inventory spaces with a single tool, suggest students bring the materials needed to craft tools on Mars. Suggest students bring blocks of resources such as diamond, iron, gold, coal... A single block equals 9 individual pieces.

Water: There may be some frozen underground, but bringing 2 buckets can create a sustainable water source by dumping them in the 2 diagonal corners of a 2x2 hole.