Night Sky Watcher

When looking up at the night sky, you may observe a number of natural and human-made objects. For example, you might observe:

- Stars: bright spheres of plasma
- Planets: large spherical bodies that orbit a star
- Meteors: space rocks, also called shooting stars, that burn up in a planet's atmosphere
- The International Space Station: a human-made station that is orbiting the Earth
- Satellites: a human-made object orbiting a planet or moon to collect data
- Constellations: a named group of stars
- Galaxies: a huge system of stars, gas, and other matter held together by gravity

Because Earth is spinning, and we are attached to Earth, the objects in the sky appear to rotate around us. This is why the location of many stars and planets change depending on what time of night you are observing.

The season in which you are making observations matters as well. Earth completes one turn on its axis every 23 hours and 56 minutes, instead of every 24 hours. So in addition to the nightly movement of stars, the 4 minute rotation difference means that the sky appears to shift slightly each night, revealing different constellations at different times of the year.

Materials needed:

- Pencil and paper
- Sky mapping tool
- Flashlight

Step-by-step instructions:

1. Head outside on a clear night.
2. Make observations about what you see in your night sky.
3. Take notes about several objects' brightness, color, size, and location.
4. Use a sky mapping tool to identify the objects you can see. You may need a flashlight to view your sky map!

Additional explorations:

- Make star observations once a month. How, if at all, does the sky above you change over time?

Discussion questions:

- What did you observe in your night sky?
- How could you tell the difference between a star and other space objects like planets, meteors, or space stations?
- How did light from buildings and street lamps change your observations?

Night Sky Watcher (continued)

Additional resources:

Need a sky mapping tool? Here are several great options:

- Stellarium Web uses your location to show a virtual map of your night sky: https://stellarium-web.org/
- Print and make your own star wheel here: https://skyandtelescope.org/astronomy-resources/make-a-star-wheel/
- Print a monthly sky map here: http://skymaps.com/downloads.html
- Find a phone app here: https://astrobackyard.com/astronomy-apps-for-stargazing/
- Learn more about naked-eye observations here: https://www.youtube.com/watch?v=L-Wtlev6suc