

STEM Takes Flight Professional Development Workshop

Post workshop practices

Topic: Modification of an 'Upward Bound' Astronomy Academy

Presenter(s): Janna F. Sutherland

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Lesson Timeframe: (Does this activity take place during one class period or over a series of class periods?) The timeframe of the lesson is over a series of class periods.

STEM Takes Flight Workshop Resources Used: (List any NASA websites, missions, or other resources that you gained from the workshop that you may have used in your lesson. Describe any strategies from the

Paper Sat activity that you used in your lesson— communication protocols, team management strategies, or other strategies.) NASA Live feed on YouTube (ISS live feed)

NASA Goddard YouTube Channel (Moon phases and 4K Tour)

Science NASA website (Electromagnetic Spectrum booklet)

Science At NASA YouTube Channel (EM Spectrum videos)

Materials: SciNews YouTube Channel (Antares launch - Orbital ATK video)

Wallops Flight Facility / NASA (overview booklet from STEM workshop)

Orbital ATK Antares and Cygnus Fact Sheets

Please explain why these workshop materials were used in this lesson:

These materials were used to enhance the astronomy materials for the academy and to provide information on current events.

Teacher level: (If this activity were to be presented by another faculty member, what knowledge would the faculty member need to know?)

The faculty member could be high school level or college level.

Student level: (What prior knowledge do students need to have in order to be successful with this activity?)

Due to the diverse nature of my astronomy group, I assumed that the students had little prior knowledge of astronomical concepts and minimal experience with identifying constellations and planets.

Learning styles/intelligences supported: I used 7 styles of learning:

① visual (videos & graphics), ② Aural (sounding out flash card information and listening to videos (Moon landing), ③ Verbal (quizzing partners verbally), ④ physical active tour of campus to locate directions constellations, ⑤ solitary (worksheets)

Overview of the lesson:

⑥ social (creating posters on astronomy topics), ⑦ logical (computing wavelengths of light).

This series of lessons incorporated NASA materials related to rockets, ISS, and the

Lesson Objectives: Moon.

To enhance the experience of the students by incorporating current videos (rocket launch), historical footage (moon landing), and extra hand-out

Lesson Content (Warm-up activities/review; Instructions; Follow-up activities): materials (fact sheets).

Each day we focused on a different aspect of astronomy. I used NASA websites and hand-outs to provide accurate information on satellites, rockets, and space missions.

Assessment (How will you know the lesson was successful?):

The students were responsive to the additional materials. They used their new knowledge to create posters of their most interesting astronomy topics.

Approximately how many students do you anticipate this activity impacted?

Eleven students (7 9th graders, 2 10th graders, 2 12th graders)

Additional comments:

I used NASA websites, Orbital ATK fact sheets, Wallops Flight Facility booklets, and Antares rocket launch footage to enhance my "Upward Bound" summer astronomy academy.

It was a natural fit to incorporate the space related materials provided by NASA and the Virginia Space Consortium into my astronomy class. I plan to continue to utilize these types of materials in my future college and university level physics and astronomy classes.

Thank you!

STEM Takes Flight Professional Development Workshop – Jonna Sutherland

Project: "Upward Bound" Astronomy Academy, Virginia Highlands Community College, 6/26/18

