

Lesson Plan - *“Exoplanets: Worlds Beyond Our Solar System”*

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Notes:

Goal: To teach children about what exoplanets are, how they form, and what the different types are.

Length: 50 minutes

Grade Level: 6th - 8th grade

Materials: Presentation slides and paper/notecards/pencils/colors

This lesson was based on the “I Do, We Do, You Do” system that the Splash program uses.

This lesson works best with a more introverted class, though inquisitive students will typically enjoy prodding for more information on the planets.

Lesson:

INTRODUCTIONS:

Should this be a one time lesson with unfamiliar students be sure to start by setting ground rules for your program, school, and class. Mention that the students are there to learn and if they have fun, it's even better.

Next, introduce yourself and share a little information about yourself, then ask each student how they would like to be addressed (first name or a nickname).
(5 min)

REFRESHERS:

Go over vocabulary the students should know as you deem necessary (e.g. Sun, stars, moon, planets, solar system, etc.). Doing this will jog the memory of what they have learned before. Afterwards, ask students to define certain terms and correct any misinformation.
(5 min)

PRESENTATION AND DISCUSSION:

Next, start the lesson by expanding on their knowledge of planets to exoplanets. That is, talk about what exoplanets are, how they form, and what kinds there are. You may want to include a video on star formation and protoplanetary disks to ease students into thinking about these objects. For “what kinds” rocky and gas planets should suffice for this, and a simplified explanation of the ‘snow line’ may prove useful. Compare exoplanets with the planets that the students already know.

Address any outstanding questions or confusions the students may have before continuing.
(10-15 min)

ACTIVITIES:

Next, create an exoplanet together with the students. Leave the students to make the major decisions, while keeping them on track with realistic qualities. Use this to review what they have just learned and add more as necessary. With each decision, address why it is possible or not to the best of your knowledge. Should the class be entertained with this, feel free to create an unrealistic planet for the sake of the children.

Next, give each student paper or a notecard and ask a few questions based on your lecture. This should include trivia and at least one higher-order thought question. Next ask the students to create and name a planet on their own. Have them draw it out (coloring optional depending on available materials) and write at least five features their planet would have. This activity will allow the students to use the information

they have learned to make an informed guess at what kind of planets could exist, while allowing them to use their creative side. Go around the class and help students with their decisions.
(20-25 min)

CONCLUSIONS:

Should the class be sufficiently small, design a solar system based on the class' choices while making their planets. Answer any last minute questions. Congratulate the students for their work and thank them for participating in the class.
(5 min)

Tips:

In naming the class' planet, I asked 6 random students to give me letters of the alphabet, and we re-arranged the letters to something they liked the sound of.

The pictures produced by the class are can be used as decorations in your classroom or hallway.

Note that while the activities' main goals are to help the students retain the information they have seen and learned, a secondary goal is to inspire students to imagine worlds our own and think about the possibilities that exist out in the Universe. In life, a love starts with an interest, and middle school is one of the best times to spark an interest in Astronomy or science in general. In learning about the worlds around them, perhaps the students can realize a little bit about their own as well.

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