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Fall 2020

## "Science Through the Galaxy Club"

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NEBRASKA HONORS PROGRAM  
CLC EXPANDED LEARNING OPPORTUNITY CLUBS  
INFORMATION SHEET

**Name of Club:** Science Through the Galaxy

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**Age/Grade Level:** Grade 6-8

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**Number of Attendees:** (ideal number) 10-15

**Goal of the Club:** (learning objectives/outcomes)

To teach students about different areas of science throughout our Galaxy (land, space, and ocean) and spark an interest in these areas through doing fun and creative activities. Also, to spark creativity and excitement through stories and skits related to our activities.

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**Resources:** (Information for club provided by)

University of Nebraska-Lincoln Honors Program  
(National Geographic, NASA)

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**Content Areas:** (check all that apply)

- Arts (Visual, Music, Theater & Performance)
- Literacy
- STEM (Science, Technology, Engineering & Math)
- Social Studies
- Wellness (Physical Education, Health, Nutrition & Character Education)

**Outputs or final products:** (Does the club have a final product/project to showcase to community?)

none

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**Introducing your Club/Activities:**

Get to know the students a little more personally through ice-breaker games, ask science-related questions to understand how much they already know through science activities

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**General Directions:**

Establish rules and guidelines for our expectations of their behavior and conduct for the experiments, make sure everyone is on the same page

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**Tips/Tricks:**

Plan for extra activities to play it safe in case we get through things fast or something goes wrong, establish expectations of behavior early on

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# LESSON PLAN WORKSHEET

(copy table as needed)

<b>Lesson 1 Activity Name:</b>	Space pt. 1: Galaxy Pinwheels & introductions
<b>Length of Activity:</b>	30 min + intros and discussion
<b>Supplies:</b>	Galaxy printout, pipe cleaner, popsicle stick or chopsticks, scissors, hold punch

## Directions:

### (first day introductions first)

Talk about galaxies and show the photographs taken by the Hubble Space Telescope.

### Pinwheel activity:

Cut out the template and cut the white lines, then punch a hole in each white dot.

Thread pipe cleaner through the front, about an inch through the back.

Fold each flap onto the pipe cleaner, and punch the pipe cleaner through the hole.

Tie a knot in the pipe cleaner to secure it, and wrap the long end around the popsicle stick.

<https://spaceplace.nasa.gov/pinwheel-galaxy/en/>

### Conclusion of the activity:

The students enjoyed the hands-on craft. It seemed like it might be too easy for this age group, but it wasn't.

### Parts of activity that worked:

The pinwheel activity was fun and was a good craft project!

### Parts of activity that did not work:

The pinwheel was a little difficult to secure to the popsicle stick and it didn't turn out as nice as the picture. We also had free time that we did not account for.

# LESSON PLAN WORKSHEET

(copy table as needed)

<b>Lesson 2 Activity Name:</b>	Space pt. 2: NASA Mission
<b>Length of Activity:</b>	45 min
<b>Supplies:</b>	Paper/pencil/worksheet
<b>Directions:</b>	

Students will get into groups and create an alien world. They will make a list of all the characteristics of their planet/asteroid/moon and write them down, then create a narrative or list of all the qualities to present to the class. They will then create a “mission” using a planned template of questions that they want to answer, how they will collect that information based on their planet, what they learned, etc.

<https://spaceplace.nasa.gov/classroom-activities/en/>

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**Conclusion of the activity:**

The students *loved* to be creative and harness that into this project by creating their own unique world! Even the boys got really into it.

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**Parts of activity that worked:**

Overall, the whole thing went well and was pretty seamless.

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**Parts of activity that did not work:**

One group got a little out of hand and went too far by talking about what would happen to human beings if they were to be on their planet.

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## LESSON PLAN WORKSHEET

(copy table as needed)

**Lesson 3 Activity Name:** Space pt. 3: Mission Skit

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**Length of Activity:** 1 hr

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**Supplies:** Tin foil

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**Directions:**

Students will finish completing their “mission” worksheet with their group, and then work together to plan a skit as if they were astronauts going to their planet to collect their data. The requirement will be around 5 minutes long and their group must encounter a problem with their equipment and find a way to work through it. They will have 30 minutes to prepare and limited props.

<https://spaceplace.nasa.gov/classroom-activities/en/>

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**Conclusion of the activity:**

Again, the students enjoyed being creative and expressing themselves. The students needed help with the “instruments” part of it and struggled to think outside of the box.

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**Parts of activity that worked:**

It was good for them to be in groups. They created such different and detailed planets that made it easy for each group to come up with a lot of good questions to explore.

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**Parts of activity that did not work:**

We didn’t have very many students in our club, which made this a little awkward.

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# LESSON PLAN WORKSHEET

(copy table as needed)

**Lesson Activity Name:** Earth pt. 1: Environment

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**Length of Activity:** 45 min

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**Supplies:** Water, liquid soap, corn oil/vegetable oil, toothbrush, and a feather

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**Directions:**

**Oil Spill:**

Make a chart with the words “absorbed,” “repelled,” and “changes” written across the top and “water,” “oil,” and “liquid soap” along the side to form a table.

Dip the feather in each substance and record the reaction in the appropriate box, with notes about any changes.

Try to scrub off the oil-dipped feather with soap & toothbrush, then note how easy/hard it was to try to return the feather to its original state.

Discuss how oil spills and other human-made accidents cause natural disasters.

Additionally, talk about how the food chain and environment will be hurt by oil spills (food chain, overpopulation).

<https://codakid.com/middle-school-science-experiments/>

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**Conclusion of the activity:**

It was fun to do an experiment that so directly relates to the real world. There was a lot of good discussion and many questions surrounding oil spills and the impact on our planet.

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**Parts of activity that worked:**

The hands-on activity was helpful in keeping the students engaged and participating in discussion. They also thought it was interesting to see how each substance affected the feather, which was a real-world problem.

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**Parts of activity that did not work:**

It’s difficult to do this in a classroom without a sink. Additionally, we could have used some more separate containers for the different substances to ensure they did not mix.

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# LESSON PLAN WORKSHEET

(copy table as needed)

**Lesson Activity** Earth pt. 2: Atmosphere

**Name:**

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**Length of Activity:** 45 min

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**Supplies:** Projector for Youtube Videos, paper, pencils

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**Directions:**

Ask students to write for a few minutes about what makes Earth the perfect planet for human and animals, then ask them to list the things that all living things need in order to survive (write on board). Talk about where these things come from and how everything is connected, leading to where the air we breathe comes from.

Watch Youtube Video explaining atmospheric

layers: <https://www.youtube.com/watch?v=BbwEF6xvIVg>

Have them answer questions about the video.

Discuss what would happen if we did not have an atmosphere, and have them discuss ideas with a small group.

Finally, conclude by having the students go over again what the atmosphere is, what they learned, and why it's significant.

<https://betterlesson.com/lesson/637315/the-atmosphere>

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**Conclusion of the activity:**

This was a very discussion-based week. It would have been better to have some sort of worksheet or real activity.

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**Parts of activity that worked:**

The video was very educational and helped inform the activity and discussion.

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**Parts of activity that did not work:**

It was hard to stay on task with a discussion lesson. It was hard to keep students engaged in the task at hand.

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## LESSON PLAN WORKSHEET

(copy table as needed)

**Lesson Activity Name:** Earth pt. 3: Conservation Initiative

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**Length of Activity:** 1 hr

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**Supplies:** Paper, colored pencils, markers

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### Directions:

Students will get together in groups to brainstorm and create a presentation on a creative project to help conserve the environment. Examples could be a machine to clean up plastic out of the ocean, a new fertilizer to put natural minerals back into the Earth, or a way to clean up landfills. The students must create an idea/new project, describe how they will execute their project specifically, draw a picture or diagram of their plans, and present it to the class. Each student must participate in the presentation and creation of the project.

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### Conclusion of the activity:

This was, again, good for student creativity. It would have been better if they could bounce ideas off each other and collaborate to get a better overall project.

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### Parts of activity that worked:

They liked to have a presentation and draw a diagram to show their classmates.

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### Parts of activity that did not work:

We had so few students that they did their own project, which was not ideal for all students. A group project would have been a lot better, especially for certain students that struggled to come up with an idea.

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## LESSON PLAN WORKSHEET

(copy table as needed)

**Lesson Activity Name:** Ocean pt. 1: Zones

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**Length of Activity:** 45 min

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**Supplies:** Pencils, pens, scissors, tape

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### Directions:

Discuss the different light zones of the ocean (sunlight, twilight, and midnight). Ask the students what the differences of these zones are, like how the waters and the marine life might vary

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between them. Explain to the students that the levels of light in each zone make it difficult or easy for fish to live.

Activity:

Section off the board into 3 layers for each of the zones. Print out the worksheet attached and cut the paper into slips. Distribute the slips to the students and have them read their slip and tape it to the zone that they think the description belongs. Here are the zones they belong in: sunlight zone: 1, 3, 5, 7, 9, 12, 13, 15; twilight zone: 4, 11, 14, 16; midnight zone: 2, 6, 8, 10, 17, 18.

Discuss their placement of the papers and which slips were placed where and why.

Finally, summarize the different zones and why the deep-sea, about 7 miles below the surface is important. List the students different ideas on the board. It is important for ingredients for medical use, minerals, and strange creatures.

<https://www.nationalgeographic.org/activity/resources-in-the-deep-sea/>

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**Conclusion of the activity:**

This activity went well overall. The conversations about the topic were good in that the students to learn more and share what they already knew about it. We ended up drawing the levels on the board for a better “group visual.”

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**Parts of activity that worked:**

They each had their own prior knowledge and fun facts to share with the group about the light zones. The questions were fun because we did them in a quiz bowl-like manner and the students wanted to be first to answer.

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**Parts of activity that did not work:**

Again, with the discussion based lesson, it was easy to get off track.

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## LESSON PLAN WORKSHEET

(copy table as needed)

**Lesson Activity** Ocean pt. 2: Coral Reefs

**Name:**

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**Length of Activity:** 1 hr

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**Supplies:** Tape, string, 100 fish cut outs

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**Directions:**

Introduce coral reefs to the students and show clip of coral reefs from Our Planet on Netflix. Watch attached video from National Geographic to introduce how fish are surveyed in a coral reef. Afterward, discuss the video and ask students questions like what kind of organisms are they surveying and how and why.

Next, students will conduct their own surveying of fish. To do so, first introduce the activity and how divers conduct their surveying. They do so by having “lanes” that they swim down and record the numbers and kinds of fish they observe.

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To create the simulation, section off a large portion (about 10'x10') of the classroom floor using string and tape. Scatter a hundred fish cut-outs throughout the space. Then, split the students up into 5 groups. Section off the 10'x10' into five 2'x10' lanes. Then have students designate a data recorder and have them survey their "lanes" counting how many fish are in their lane. Then have the students analyze the data they collected and have them estimate how many fish total there are in the 10'x10' section based on how many fish they counted in their lane. Have a group discussion on their estimates and the importance of sampling in fish surveying.

<https://www.nationalgeographic.org/activity/coral-reef-fish-survey-simulation/>

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**Conclusion of the activity:**

The students enjoyed the visual activity. Many said they did not know that this is how fish were counted and thought it was very interesting.

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**Parts of activity that worked:**

The students were engaged in the activity because of the hands-on nature. The NatGeo video was very informative.

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**Parts of activity that did not work:**

It was hard to space out the classroom for the activity and the space that this took. It was also terrible to cut out 100 fish. We recommend buying them or something.

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## LESSON PLAN WORKSHEET

(copy table as needed)

**Lesson Activity** Ocean pt. 3: Create your own deep-sea creature

**Name:**

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**Length of Activity:** 45 minutes

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**Supplies:** Paper, pencils, colored pencils, markers

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**Directions:**

Many parts of the ocean have yet to be explored. In this lesson, student will create their own deep-sea creature. Included must be their name, position in the food chain, physical characteristics, unique traits, and anything else that helps them function in their day to day life. Students may also draw a picture of what their creature will look like. At the end, they will present their creature to the rest of the students.

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**Conclusion of the activity:**

The students were able to come up with some very unique ideas for sea creatures. Some students had their head in the clouds whereas some were more realistic.

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**Parts of activity that worked:**

This was a very inclusive activity where each student had the opportunity to showcase their unique imaginations. Even those that did not like to draw enjoyed thinking “out of this world.”

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**Parts of activity that did not work:**

The students were rowdy and made comments about each others’ work.

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## LESSON PLAN WORKSHEET

(copy table as needed)

**Lesson Activity Name:** Weather/Natural Disaster Day

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**Length of Activity:** 1 hr

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**Supplies:** Projector for pictures/video

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**Directions:**

Ask students what they know about weather (measurements, tools, effects) to get a discussion going.

Show photo gallery from National Geographic and show the video. Then, talk with students about the conditions needed for each weather events & what factors affect weather.

Complete Weather Investigation Worksheet.

Discuss the connections between weather and climate.

Recap the lesson and discuss what we’ve learned—then recap the club and discuss what we’ve learned throughout, as well as favorite/least favorite activities or topics.

<https://www.nationalgeographic.org/activity/extreme-weather-on-earth/>

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**Conclusion of the activity:**

The discussion was dry. The students didn’t seem to enjoy talking about the weather. The photos did not take long to show. To celebrate our last day, we played some Pictionary with the students.

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**Parts of activity that worked:**

It was nice to have a worksheet to keep the students on task and focused.

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**Parts of activity that did not work:**

This activity did not last as long as we planned. The discussions were hard to keep going.

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