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Honors Program

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Science, Sustainability, and Saving the World Club

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NEBRASKA HONORS PROGRAM
CLC EXPANDED LEARNING OPPORTUNITY CLUBS
INFORMATION SHEET

Name of Club: Science, Sustainability, and Saving the World

Age/Grade Level: 3rd – 5th

Number of Attendees: 5 – 20

Goal of the Club: (learning objectives/outcomes)

Educate kids on sustainable practices and inform them of the earth's changing climate.

Resources: (Information for club provided by)

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?)

It does not. Each week is has its own schedule. We build on knowledge but have no final product.

Introducing your Club/Activities:

General Directions:

Tips/Tricks:

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity This or That? What's best for the environment

Name:

Length of Activity: 25 min

Supplies: PowerPoint

Directions:

We created a PowerPoint with many activities' hypotheticals saying "which is better for the environment" Examples of these were things like composting versus throwing away your food, taking long showers or short ones, riding your bike versus driving a car. During this we would let students share their opinions and took a small amount of time to explain why each choice could be better or worse for the environment.

Conclusion of the activity:

This was a very good activity for our first club because it gave us a feel for the knowledge that the students already had. This way we didn't plan activities that were way out too simple or too complicated. They were also given a synopsis of what our club would look like and it got students involved.

Parts of activity that worked:

The parts that worked were the discussions that we would have after each question. This allowed students to get involved and share their opinions. This gave us a very good basis for where to go with our club and what topics sparked interest.

Parts of activity that did not work:

Some of the hypothetical scenarios could have been too easy for some students. We had a group of both older and younger students and so in order tailor it to everyone some of the situations were axiomatic. So sometimes the discussion wasn't very in depth.

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity Sustainability for the Future

Name:

Length of Activity: 30 min

Supplies: Candy, Paper

Directions:

How this game worked was that each person represented their own city/colony. They were in charge of making sure that their colony was able to survive for generations to come. Each colony survived off of fishing where they competed for fish against 3 other colonies. So we placed 15 pieces of candy (fish), in the middle of their table and allowed them all to 'go fishing.' They would write down on a card how much fish they wanted to take that year and everyone flipped their cards over to reveal the amount they had claimed. They would then claim that many and move to the next year. Each year, for each fish left, that fish would reproduce and lead to two more fish being placed in the lake. Some students would claim too many the fish would run out in the center and some groups would work as a team to allow their fish to continue for many years and were able to get far more fish.

Conclusion of the activity:

The conclusion of the activity was that if we use all of the resources that we have right away then there will not be resources in the future. So, we wanted the students to understand that right now we are consuming resources at a rate that is not sustainable and that we need to either slow down or find other resources that we can use.

Parts of activity that worked:

The part of the activity that worked is the understanding aspect. Students were able to realize what the purpose of this activity was quite well. When we concluded we would ask them what they thought was the purpose. They were very aware of what the goal was so it was easy for us to get the point across.

Parts of activity that did not work:

The difficulty in this activity was getting everyone to actually carry out the activity many kids wanted to claim all the fish they could and weren't interested in trying to get the game to last. They also struggled to follow along as there were quite a few rules associated with this one. I would recommend playing this with the older range of students rather than younger students.

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity On The Move – Types of Transportation

Name:

Length of Activity: 30 min

Supplies: White board, paper, markers

Directions:

Firstly, we have everyone in the group brainstorm types of transportation. We try to get as creative as possible so it isn't just cars, trains, buses, etc. We go until we get extremely unique ones like riding a horse or skateboarding, or a tractor. Once we have compiled a large list of types of transportation we ask "which of these do you think are best for the environment?" We go through many of them like walking or biking and how these aren't polluting our planet while other types of transportation are. We talk about ways that we could make some of these types more environmentally friendly and how things like carpooling could be beneficial for all of us. We then task each student with creating their own type of transportation. We have them draw it and tell us what type of fuel it uses, how it works, where you could use it, and just any fun facts about it. Then students present their new inventions and talk about with the class.

Conclusion of the activity:

The conclusion of the activity is that we want students to have fun and explore their creativity while also thinking about the environment. With this in mind we want students to be more cognizant of driving places they could walk or just realizing the impact that they can have by making small everyday choices.

Parts of activity that worked:

This activity always works quite well. Students enjoy coming up with silly types of transportation and they always want to find one more and they have a lot of fun with it. They also really enjoy creating their own type of transportation. They always want to have the fastest spaceship and have the most bizarre ways to make them function. But from this they get the point that gas is a fossil fuel and also pollutes our air so they do a good job avoiding it.

Parts of activity that did not work:

Sometimes getting students to present is difficult. Many students are bashful or fearful of public speaking so sometimes having them work in groups is a better option. This makes them more comfortable and sometimes they all have different ideas that can come together.

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity Bird Feeders

Name:

Length of Activity: 30 min

Supplies: Plastic Spoons, Peanut Butter, Pinecones, String, Birdseeds, Paper Plates, Plastic bags

Directions:

This was a very hands-on activity that gets students to build something of their own. What you do is you take a pinecone and tie a string around it and have a decent amount of extra string so that you can hang it from a tree once you have made it. You then take peanut butter and spread it all around the pinecone making sure that you can barely see the pinecone anymore. Once it is completely covered, you put birdseeds on a plate and roll the pinecone around in it until you cannot see any peanut butter. Normally you will want to put them into plastic bags so that students can take them home and if you don't then they can be very messy. When students take them home, they can tie them to a tree and it will hang as a birdfeeder so birds will come eat from it.

Conclusion of the activity:

The environment that we live in is also the environment for many other species. We can always do things for other species around us and this is a very easy way to give food to birds that might not have some, especially during the winter. This also just sparks creativity with students and makes them think of other animals that might need things in our very community.

Parts of activity that worked:

Kids really enjoy this activity as a whole. They enjoy making something and getting to bring it home. Students want to make as many as they can and is always a hit. So if you feel like you are in a slump this one always seems to be a pick-me-up for everyone.

Parts of activity that did not work:

The issues with this activity is that it can be very messy. With peanut butter and young kids and birdseed everywhere, you are bound to have a mess at the end of it. Also before you do this activity you need to get permission to do this and make sure that there are no peanut allergies. They also have a lot of fun with them and want to run around with this pinecone on a string and swing it around. So it is a lot to take care of even with two people so sometimes monitoring each student as they go is a good idea.

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity Name:	Water Usage
Length of Activity:	45 min
Supplies:	Laptop/projector, Legos or coloring utensils

Directions:

Firstly, as a group we take the Water Footprint test (found at <https://www.watercalculator.org>) and answer all of the questions as if our entire group was a family. The questions on the water calculator ask about how long you shower, brush your teeth, water your grass and a multitude of other things you might not even think about. It is easiest if you can project it onto a screen and discuss it as a group and hear everyone's input and opinions. The calculator gives you a total number of gallons that you use as a group and normally this makes for a good discussion about how you can save water. Everyone can share what they learned and discuss simple ways that you could prevent the wasting of water and live a more sustainable lifestyle. Next, we normally use Legos, but you could also just use paper and markers, but we have everyone "build" their own machine that could help us with water conservation in some way. This could be a high powered well for people in countries that does have access to water, or it could be a machine that cleans our oceans, or something that purifies water instantaneously. Then kids can present their ideas and what inspired them to choose it.

Conclusion of the activity:

The conclusion of the activity is to learn about how much water we use and how out of hand it can get. Normally the number gallons surprises the students and will surprise you as well. A lot of students also don't understand that water is not plentiful for everyone. Many students think that we all have unlimited access to water because of how accessible it is in the United States/for people who have money. So, it is especially important to nail down the idea that this is something we need to be caring about and we won't always have water. Students creating their own ideas also sparks creativity and allows for some fun in the activity. Students really enjoy the hands on aspect of this and love sharing their new inventions.

Parts of activity that worked:

Kids get very involved in the water usage test because everyone gets to share anecdotes about their home lives and how much they drink from the faucet or how often they brush their teeth. They are really surprised by the amount that they use and have lots of small or sometimes crazy ways to save water.

Parts of activity that did not work:

Sometimes the ideas that students come up with are a little far-fetched, but I am still not sure that is an issue. Normally it is very engaging, and students do a good job staying involved. It makes for a very good activity as a whole.

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity All about Turtles

Name:

Length of Activity: 45 min

Supplies: Print outs of facts about various turtle species, poster paper

Directions:

Before you must print out basic fact sheets about different types of turtles. You can do this with any animal but our class had a strong liking for turtles so that was our personal choice. We got printouts from <https://kids.nationalgeographic.com/animals> and it gives short synopsis' of animals like how long they live, where they are found, what they eat, how big they are, and little fun facts. On the board we would write down a series of questions that we wanted students to answer about their specific species and then create a poster that reveals these questions and has drawings and maps and anything else they want to describe their animal. Then once students have answered all of the questions we would have each group come and present their findings and talk about their animal to the rest of the group.

Conclusion of the activity:

The conclusion of this activity is really to get them thinking about how easy it is for us to just think of ourselves in the world and how we forget about everything else in the environment. They get really excited if it is an animal that they are interested in and then we can talk about how turtles can be endangered or how they are losing their homes. This is just to reveal to them that our actions have impacts on everyone else on the planet.

Parts of activity that worked:

Kids really enjoy learning about these animals and also have a good time trying to find the answers to the questions. It feels like a game to them so they are highly motivated to get it done. They do a good job working together and planning out their presentation.

Parts of activity that did not work:

Sometimes students are not too fond of presenting their presentation which is completely fine. They might not be super excited about it or get bashful and so there are often small roadbumps there.

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity Oil Spill – Cleaning Water

Name:

Length of Activity: 45 min

Supplies: Bucket/tub for water, water, paper towels, cocoa powder, vegetable oil, tissues, cotton balls, sponges, filter paper

Directions:

Students are broken up into teams of about 3 or 4 and each group is given a bucket with clean water. We tell the students that this is a lake in their country that they rely on for most of their drinking water. Unfortunately, there has just been an oil spill. We mixed vegetable oil with cocoa powder so that it stains it a brownish color and can easily be seen. We mix the oil in with the water and then give their country all of the supplies to clean it (paper towels, tissues, cotton balls, etc). They are then given 5 minutes to plan with their group how they are going to clean the water and then they have 15 minutes to execute it. It is inevitably a dirty process and water will be spilled quite a bit so lots of paper towels are necessary. Essentially it will be impossible for them to reach completely clean water as you can't separate oil and water naturally with the given materials.

Conclusion of the activity:

The conclusion of the activity is each group shares what they did in attempts to clean the water. Everyone can go around and see how well they did. We then discuss what worked and what didn't and why it was so difficult to separate. We then talk about real oil spills and how difficult it is to clean water in the real world.

Parts of activity that worked:

Kids really enjoy this activity and the hands-on aspect of it. They like trying to find new ways to clean it and enjoy working with all of the materials. Overall, it is a super engaging activity and very fun for the group.

Parts of activity that did not work:

The problem with this activity is that it is very messy. We spend a lot of time cleaning it up afterwards and there are just a lot of things that we have to get out and ready so leave some time to clean afterwards so you don't leave things in poor shape.

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity Plant Life Cycle

Name:

Length of Activity: 45 min

Supplies: Projector, Markers, Colored Pencils, Paper

Directions:

Firstly, we watched a Bill Nye: The Science Guy video on the plant life cycle. This went well right after we did a scavenger hunt outside so we had talked about lots of different plants the week before. We stop the video at certain times to discuss what is going on and ask retention questions and also to regather the group if people are not paying attention or getting side-tracked. We then allow for coloring time where each student chooses any plant they want and we help them draw a picture of it through its entire life cycle.

Conclusion of the activity:

The activity is really just to get students to think about the world around them and how intricate every process is. That plants are living organisms just like us and that environmental factors influence their lives just as much as they can with ours.

Parts of activity that worked:

Kids tend to like Bill Nye videos and so it is normally fairly successful on that regard. They normally listen well, and the activity goes smoothly. They enjoy learning about the plant cycle as well. It isn't something that they have really gone in depth on so they enjoyed getting to learn the new parts. They also enjoyed getting to pick what plant they thought was coolest.

Parts of activity that did not work:

This is really an unproblematic lesson. There just aren't many places to mess up with it. I think that coming up with questions to ask from the video is a really good idea just so that way you can be prepared. Also having a good understanding of the plant cycle is helpful. Students tend to answer questions that are either so easy or so hard you really don't know exactly how to answer it.

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity Food Chains and Birds

Name:

Length of Activity: 45 min

Supplies: Print outs of bird research articles, Powerpoint,

Directions:

In this activity we first discussed food chains and how they work. This included talking about primary producers, primary consumers, secondary consumers, decomposers, etc. This gave them an intro to a food web and how interconnected lots of different species are. In this example we chose to have predatory birds at the top of the food chain as we were going to do research on birds. This allowed us to talk about herbivories, omnivores, carnivores, and autotrophs as well. We also discussed predators versus prey and what type of animals fit into which category. We then handed out packets that were articles about various kinds of birds (from <https://kids.nationalgeographic.com/animals>) and handed them out to students to answer a set of questions like where they live, how big they are, what they eat, etc. They then presented to the group.

Conclusion of the activity:

The purpose of this activity was to just show another piece of the environment. This allowed students to do a small bit of research on an animal and also just learn more about food chains as a whole. It allowed us to once again discuss the importance of each and every piece of the world around us. If we lost one species it could continue to have impacts on many other species and without plants the entire food web would fall apart.

Parts of activity that worked:

Students tend to know a lot about this topic or had at least heard about many of these things before. So, they are typically really excited to talk about it and share what they know. They get involved with this and it doesn't tend to be a lot of lecture and the lecture portion is fairly easy.

Parts of activity that did not work:

Really this activity goes quite well. Students have to do a good job working together and find the answers in the research packets that we hand out. So, students that don't want to read or something tend to need help. They also have to be willing to present and if you have shy students then sometimes this creates an issue as well.

LESSON PLAN WORKSHEET

(copy table as needed)

Lesson Activity Climate Change – Varying Environments

Name:

Length of Activity: 45 min

Supplies: Projector

Directions:

Firstly, we made a presentation that talked about the basics of climate change. This was one of the last clubs that we did, because we had been building up to really talking about the importance of saving the environment. We talked about the very basics of what climate change is, and the changes that we are seeing on our planet. We then watched a very basic video that outlined climate change and global warming. Next, we played online games that outlined the different environments around the world. We did one called build a biome where you tried to match the correct animals, trees, plants, and wildlife of a specific environment that is given to you. The activity we did was that students got into groups and created their own country. They then got to make the decisions for their country on how to combat climate change. They then presented their own ideas to the rest of the club.

Conclusion of the activity:

The purpose of this activity was to educate the students on why we really wanted to do this club. We wanted students to take away that there are serious issues that our planet is facing and that we need to take steps to change it. This is something that needs to be taught to students at a scientific level and from a young age.

Parts of activity that worked:

Kids enjoyed talking about different environments around the world and why we have such different climates everywhere. They do a good job participating in online games especially when the group isn't too large. They also do a great job trying to come up with ways to combat climate change. They seem to really understand it and come up with great ideas.

Parts of activity that did not work:

This lesson plan is one of the less involved and activity-based plans. It requires students to do a good amount of sitting and listening even when we did online activities. So with difficult or easily agitated students you might have to entertain them more. If you have easier students then it goes very smoothly.
