SCIENCE

1ST GRADE

These are some fun projects and great ideas for lessons. It can be used for and advanced kindergartener or a first grader. The purpose is to make science fun and hands-on. Let your imagination be your guide, if you want to add or take away, go ahead, it’s your classroom!

**Sun and Moon**

Observe and describe the changes and appearance of the sun and moon during daylight

1. Give your student a sheet of paper. Ask one of them to draw a picture of the daytime sky and the other to draw a picture of the nighttime sky.
2. After pictures are drawn, have them share. Ask questions such as: What does the sun look like? What does the moon look like? Why did you put that in the daytime sky/nighttime sky? Is there anything that we could add to the different skies?
3. Ask: Can you see the sun during the day? How about at night? Can you see the moon at night? How about during the day?
4. Tell them that sometimes the moon can be seen in the day and why.
5. Provide a moon journal page for noting the phases of the moon and how it looks every night.
6. Go out every day and see if the moon is visible. If it is, have your student draw a picture of what it looks like.
7. Make a collage of your moon drawings.

Sunrise Sunset:

1. Ask if they have ever noticed that sometimes the sun goes down really early in the day.
2. Talk about how in the winter the sun in not up very much, but in the summer the sun stays up longer.
3. Ask, where did the sun rise this morning? Where will it set tonight?
4. Have your student chart the sunrise and the sunset times for two weeks. Do this twice in the year during different seasons.
5. Make graphs and notice the difference in daylight hours.

Shadows Change:

1. Talk about how the sun moves across the sky. This changes shadows.
2. Explain the activity for today and have students make predictions about what will happen to their shadows as you return outside throughout the day.
3. Get a large piece of butcher paper with an X in the middle. The paper needs to be large enough for them to trace shadows. Use a marker or crayon.
4. Go outside in the morning. Place the paper on the ground and have your child stand on the X on the butcher paper. Trace his shadow.
5. Continue this activity by returning to the same location at two other times in the day. Each time you go outside, make sure everyone has a different color marker or crayon.
6. Talk about the predictions you made this morning. Were they right? What might you change now that you have done the experiment?

**Hands On**

* Teach your student about directions.
* Teach about the phases of the moon.
* Go to the Library and get some books on the moon, have them tell you what they have learned.
* Build a model of the solar system and see if they can identify the sun and where the moon should be.

**Men of Science:**

Read a book on astronauts who they were and their experiences on the moon.

**Seasons:**

Seasons are a important to farming, planting a garden, planning vacations, choosing a home, etc. Get some books at the library that are about the four seasons. Take some pictures out of a magazine or newspaper and have your student tell you what season they belong to. Talk about what is different about the seasons and why they occur when they do…for instance why don’t we have snow in the summer, why is it so cold in the winter, etc. use your imagination. The only assessment at the end of this section is that the student knows the seasons and each one’s different characteristic and has a grasp of what happens in each season and why we have seasons.

**Project:**

Keep a record of weather patterns/conditions over the next few weeks or months. Make a calendar that is your weather calendar.

**Leaves all around:**

If you live in a climate that has a Fall season, get various kinds of leaves different sizes and colors and shapes and name as many as possible. We should explain why the leaves change colors. If you don’t and can take a trip to a family member’s home up north or visit a town that has leaves that are changing colors.

**Seeds:**

Materials you will need: fruits and vegetables, Paper cups, an old sock, magnifying glass, a non-standard measuring unit (e.g., plastic worms) a worksheet with columns to classify the seeds, a book about seeds such as :How and Why Seeds Travel or Seeds Get Around, a Dandelion’s Life, The Tiny Seed.

Gather a variety of fruits and vegetables for students to see and touch. Ask the question, “What would happen if we cut open these fruits/vegetables and looked inside? What would we find?” Let him give his predictions. Follow up by asking questions such as, “Why do you think that? How do you know?” Cut open the fruits/vegetables and allow Micah to freely explore the contents. Use cups, plates, or plastic bags for collecting the findings (seeds).

Instructional Procedures

1. Go on a seed walk. You will need at least one sock to wear over his shoe. Or he can use socks on his hands. Take a walk around the yard or park, or neighborhood, being sure to pass through grassy areas and under/next to trees and bushes.
2. Upon returning to the house, examine the seeds gathered. You can make a graph, if you want.
3. Discuss how seeds travel.
4. Talk about the different ways the seeds might have been carried through the environment.
5. Using a magnifying glass, to observe and compare the seeds.

**Sprouting your own seeds:**

What you need: **Paper towels, dried beans (like mung, lima or pinto beans.), A large glass jar preferably without markings, Water**

### What you do:

1. Soak the beans in water for overnight before starting (or for at least three hours).
2. Line the jar with paper towels.
3. Place the bean or seeds between the glass and the paper towels so that you can see them easily.
4. Pour a small amount of water into the bottom of the jar.
5. Place your jar in a sunny window.
6. Add more water every day.

**Temperature in the Sun and Shade:**

When a temperature is reported on the news it is an official reading taken at a weather observing station. At these stations, thermometers are shielded from sunshine inside specially constructed shelters that allow air in but not direct sunlight. This is necessary if you want to measure the temperature of air. If a thermometer sits out in the sun the thermometer itself, the glass, and the liquid inside will absorb sunlight and heat up. You wouldn’t be measuring the temperature of the air anymore but rather the temperature of a heated thermometer. On a sunny day that could be about 30 degrees higher than the actual air temperature. So the next time you hear a temperature of 80 degrees and your backyard thermometer reads 110 you’ll know the reason for the difference

What jobs does the sun do?

Temperature Measurements  
Discuss: On a hot sunny day, we often go into the shade to get cool. Is the air really cooler in the shade? How could we find out?

1. Go outside and take measurements of the air temperature around the house in five different locations. Hang the thermometer in a sunny spot for five minutes. Record the temperature. Hang the thermometer in a shady spot for five minutes. Record the temperature. Try four other shady or sunny locations.
2. Compare the temperature in different locations. Why is there a difference in temperature? Is the air really warmer in the sun? Why does it feel like it is warmer in the sun? Is the sun’s energy hitting your skin?
3. Complete a bar graph showing the temperatures you have recorded.

* Is a paper cup of water cooler when it is not left in sunlight? Place a thermometer in each paper cup filled with water. Put one cup in direct sunlight and the other in the shade. Record the temperatures, at the beginning and each hour for three hours. Tell students to feel the water in each cup. What happened? Is water hotter in the sun than in the shade?

**Materials:** Two thermometers, Two cups filled with water

* **Sun Pictures**

Observe that energy from heat and light can cause changes.

* 1. Cut out several shapes (squares, triangles, free form, etc.) from lightweight cardboard.
  2. Secure the shapes to an 8 x 10 piece of construction paper with double faced tape. (The shapes will be removed later. The tape should keep the shapes from slipping during the experiment.)
  3. Tape the construction paper to a window where the sun will shine on it.
  4. After a week, take down the construction paper and remove the shapes. What happened? What caused the change?

**Where Does Food Come From?**

Keep in mind that a lot of people never see food before those products get to the stores and that children may have no idea where food actually comes from. Students will also benefit from knowing that many people are involved in the farming industry. The farming industry is important to us daily. Farmers and workers who farm the land and produce farm equipment and those involved in the processing, storage, transportation, and distribution of food. It might also be helpful to point out that many forms of transportation, refrigeration, processing, and packaging enable food to be transported, stored, and consumed thousands of miles from where it is originally produced.   
  
Discuss how food gets to our tables, talk about some examples of the kinds of people, activities, weather conditions, and machines that might be involved in and affect each phase of the farm-to-table process. This will help to elicit student ideas/misconceptions about how food is grown and how it gets to their homes.

* Is weather important to farmers? Why or why not?
* Besides farmers, what other kinds of workers help to bring food to our homes?
* Where does food usually go after it leaves a farm?
* How does food usually get to factories or supermarkets?

If you can, visit a farm, a farmer’s market, find a local trucking company and see what the trucks carry and how the trucks are loaded. Many grocery stores will do a tour for small groups, perhaps you could organize a field trip to a local store and see how the food comes in from the trucks and is placed on the shelves. It is always interesting to see what kind of foods are carried in different store locations.   
  
**Peanuts into Peanut Butter**   
Go through your pantry and ask your student how they think about some common foods made their way into your home and discuss what kind of processing they went through to get there.   
  
Students should make the connection, when possible, back to the crops. For example, have them consider the peanut butter and jelly sandwich. Have them consider and discuss the possible process that peanuts undergo to become peanut butter (or that berries take to become jelly). This kind of fun and practical pondering will help to reinforce what they have already learned and allow them to make the crop connection with everyday foods that are real to them.

It is a very simple process to make nut butters. If you have a food processor or a heavy-duty blender it is worth the time. If you are unsure, there are many videos to walk you through the process. Also, making jam is super easy, again, find a video and have fun! What a great lesson when your child is eating a PB&J that they made from start to finish!

**Men of Science:**

Read a book on George Washington Carver and talk about who he was, what he did and why he made such an impact on our lives.

**What Plants Need to Grow**

Your child will learn how to grow plants and about the kinds of things that promote growth (warmth, sunlight, water, soil). Their activities involve learning about how seeds and plants grow and participating in a simple, in-class gardening project.   
  
The basic experiences of students at this early level include seeing plants grow from seeds they have planted, eating the edible portions of the mature plants, and noticing what plants and other things animals eat. Comparisons can be made to see what happens if some plants don't get water or sunlight.

**Experiment**

Set up the in-class plant experiment by following the steps below. If possible, allow students to help you. Explain that you are planting the seeds in warm soil and you'll all watch them grow.

1. Place the six, clear plastic cups on a table.
2. Fill the cups about two-thirds full with soil.
3. Place a seed in three of the cups and label them place a different seed in the other three cups and label them. Remember to place soil on top of the seeds.

(The purpose of using two types of seeds is to offer students a bit of variety when they finally grow into plants. They will be able to observe the growth and structural differences of each of the plants. **NOTE:** For younger students, you may wish to grow only one type of seed in three cups.)   
  
Observe the things that plants need to grow (water, warmth, sunlight, soil). Explain that all the seeds have enough warmth in the soil and in the air of the room. Now, you will divide the seed cups to see the importance of water and sunlight:

* Group 1 will be given water and sunlight
* Group 2 will be given only water
* Group 3 will be given only sunlight

Then water the Group 1 plants and place them in a sunny window; water the Group 2 plants and put them in a dark spot; and do not water the Group 3 plants and place them in a sunny window.   
  
What does your child thing will happen? Which group of plants do you think will grow first—the ones getting both sunlight and water, only water, or only sunlight? Why?

Keep notes of daily observations for the three plant groups. For the next 14 days, have students continue to lightly water the plants in groups 1 and 2 every few days and record student observations daily about each group in the spaces provided. Allow students to use magnifying glasses to look for sprouting. Use a ruler to measure your plants. After 14 days, there should be a definite difference in the growth of the plants in each group. Ask students how the results compare with their predictions. If none of the seeds sprout and grow, ask students why they think this happened. Could the problem be too much water, not enough sunlight? So many things are necessary for good healthy plants to grow.

**The Lifecycle of a Butterfly:**

The site, enchantedlearning.com has some great work sheets on butterflies in all stages.

* EGG - After mating, the adult female selects a host plant on which to lay her eggs.
* CATERPILLAR - After the eggs hatch, the caterpillar eating machines begin to eat and grow.
* CHRYSALIS - Once the caterpillar finishes growing, it finds a protected spot to molt into a chrysalis.
* BUTTERFLY - After about 10-14 days for most species (unless its a butterfly that has over-wintered), a brand new butterfly will emerge.

Butterflies need water. Simply place some very shallow basins throughout the garden. You can place them strategically on stumps, overturned pots, or even hang them from trees by way of flower pot holders. They do not need to contain very much water. Even wet sponges placed throughout the garden are good for butterflies to land on. Butterflies will land around mudholes, too.

It is fairly easy to create a butterfly garden. It just takes some space (doesn't have to be too large) and some planning, time, and effort.

* First choose your spot make sure it is where butterflies can get to it.
* Choose the plants you would like to include, there are many choices.
* Make sure it is not near ants or anything that will eat the butterfly eggs.
* Carefully take care of your plants.
* Wait for the butterflies!

### Host and Nectar Plants

#### Trees Shrubs: Flowers:

* willow Viburnum ageratum
* poplar Lilac sweet alyssum
* elm cotoneaster bachelor’s button
* birch spirea bee balm
* hackberry mallow hollyhock
* hawthorn cinquefoil clover
* fruit trees butterfly bush milkweed
* almond sweet mock orange thistle
* fir sweet pea
* Southern magnolia parsley/dill/fennel

**Solid, Liquid and Gas:**

Water has three states: solid, liquid and gas. All are water, yet all are different in their states of matter. What is the difference between solid and liquid? Show your child some things from your kitchen like soda, ketchup, water, bread, ice, etc. and note the difference in them. You can also incorporate pictures of a steam engine, a factory steam valve, rivers, oceans, etc., to show this concept. Talk about the different states of matter. Why does water freeze? What mode of cooking can turn a cup of water to steam?

Take some ice cubes from the freezer, leave them out, ask your child what they think will happen to the ice cubes if left out on the counter. Talk about the solid state of matter, the ice cube and then when the ice melts talk about the liquid state of matter. Ask your child what will happen if you put the water in a pan and heat it. When you see the steam, talk about the gas state of matter.