

Introduction to science learning & Smartivity- 10 minutes

Introduce yourself. Tell the children your name, your field of study, and a list of superlatives they must use when addressing you, such as _____

Who is a smart kid?

Gather answers from students and then tell them **the definition of a smart kid.**

What is Smartivity?

What is science?

Science refers to a system of acquiring knowledge. This system uses observation and experimentation to describe and explain natural phenomena.

What is technology?

Technology is the application of science, or scientific knowledge for everyday use... or what we call practical purposes.

What is engineering?

Engineering is the branch of science and technology that deals with the design, building, and use of engines, machines, and structures...

What is mathematics?

Mathematics is not just about numbers and addition and subtraction and multiplication and division... Math and science go hand in hand. Math is a subject that helps us think about and experiment with science, technology and engineering concepts, before we actually build something.

What is STEM?

STEM is a shortform of Science, Technology, Engineering and Math... all the modern advances that we as humans have made is a result of these four subjects. These four subjects not only help us discover and invent new things, but also help us look at life in a different way - help us question why and why not... show us a way to find new solutions.

What is a Scientist?

"A scientist is a person who asks questions and tries different ways to answer them."

Then I show a PowerPoint I made, [What is a Scientist?](#)

Science in Life- 10 minutes

Science has invaded every branch of modern life. It is the noise of machines, cars, mills and factories, etc. which awakens us every-day in the morning. The food we eat, the clothes we wear, the books and papers we read, the recreations we enjoy, the games we play - all have something or other to do with the application of science.

Every person feels the effects of science in every sphere of life. It is not merely the electric light or the electric fan, the radio or the cinema that displays the power of science in our daily life, but everything we do or is done to us is in some way or another connected with science.

The things that we use in our daily life are mostly due to science. Our forefathers put on clothes woven by hand. Our clothes are made in large factories where scientific methods are used. We get so much paper to write on only because the paper mills can turn out huge quantities of it. Cloth and paper we had even before science came on the scene but no one could then think of the huge quantities in which they are produced now.

Science has conquered time and distance. We can travel from one place to another with a quickness which our forefathers could not have dreamt of. In the morning, we get news of events that happened yesterday in all parts of the world. Why should we talk of yesterday? With the help of the radio, we can listen to an American speaking. It would seem that he is before us and we are part of his audience. If we want to send a message to a person in America, we can send an email and he will get it in a few hours. If we want to speak to our friends far from us, there is the telephone that will connect us.

Effect of science of human life: It is, indeed, true that science has added tremendously to the comforts and conveniences of mankind. Unless one is an ascetic, one has no reason to reject the things science offers. By conquering time and distance science has brought mankind together and so far made life richer. By inventing medicines it has made our day-to-day existence relatively free from disease, and has, indeed, added to our length of life.

Examples of use of Science in everyday life: This fan and light works from the application of electricity. Electricity is one of the wonders of modern science. The bus which has an engine works with petroleum. The train is driven by the power of coal. This is possible only because of the application of science. My doctor gives certain injections and the patient soon well enough to come here. Medical science is another achievement of modern science, the marvel of medicine.

From the above, it is clear that science is playing an important part in our everyday life.

Scientists Stay Safe

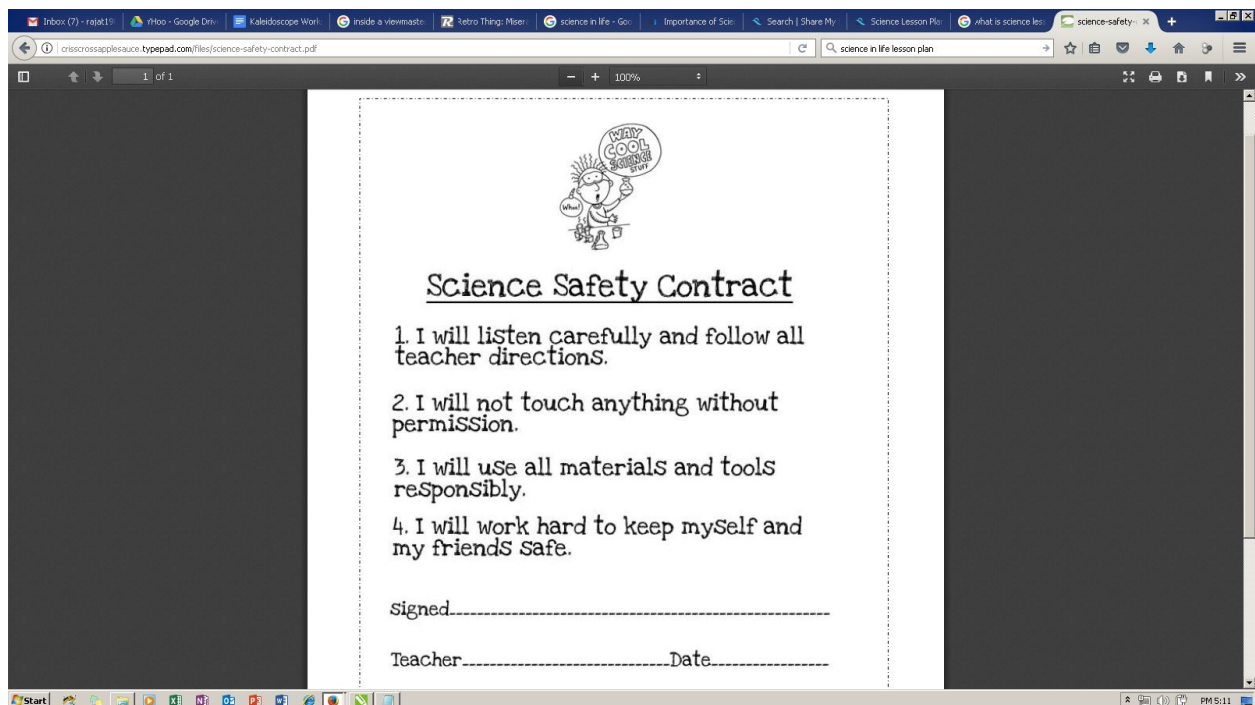
Today we take some time to go over all of the safety expectations in the [Science Safety Contract](#). I start by asking the kids "Why is it important for scientists to stay safe? What kinds of things do scientists do to stay safe?"

We watch the PowerPoint [What is a Scientist?](#) again. I ask the kids to look for things that these scientists are doing to stay safe. (The chemist is wearing gloves and goggles; The geologist is wearing a hard hat; etc.)

Then I ask the kids about specific slides, for example-- "Do you think the volcanologist plays around with the hot lava? Do you think the chemist tastes the chemicals? Why not?"

We take a few minutes to discuss all the horrible catastrophes that could befall these scientists if they are not safe (the kids are very imaginative that way!) Then I tell the kids that, although we will not be near any volcanoes or tornados, it is still very important that **we** stay safe while doing science!

I hand out the [Science Safety contracts](#). We go over each expectation--one by one. We talk about why that expectation is important and what could happen if we didn't follow them. When we are done, we sign them and glue them in our notebooks!



CONCEPTS EXPLAINED - 10 Minutes

Guide students to the scientific concept they will be learning through the activity which is

Video: <https://www.youtube.com/watch?v=xsbEqjhlwK0>

Today's lesson is all about Flying Machines.

Helicopters stay in the air using spinning blades that are used to generate "lift." With enough of it, a craft can overcome the force of gravity, which pulls the object down toward Earth. Aircraft such as helicopters with spinning blades are called rotary wing, unlike traditional airplanes, which are fixed wing.

Nature uses a helicopter design and wind to help maple seeds fly through the air. This helps the seeds move further away from the tree that produced them. (Can you think why this would be helpful?)

<https://www.youtube.com/watch?v=v-743APzx8>

<https://www.youtube.com/watch?v=r4urT74yq6c>

In this activity, you will build a flying machine.

Reading Instruction Manual and identifying parts - 5 minutes

Constructing the FLYING MACHINE - 90 minutes

PLAYTIME - 15 minutes

CRANE - 5 minutes

<https://www.youtube.com/watch?v=bLfov3RhNhw>

A crane is a machine that is used to lift/lower/shift objects from one place to another. A crane has 4 main sections. First section, Base, has wheels or tracks attached to it.

Second section, Mast, is supporting tower of the crane. Mast gives the crane its height.

Third section, Boom, is arm of the crane.

Last section, Hook, is used to pick up materials. In your crane Grabber holds the objects, lifts up using Boom Lines, and moves it to some other place using Mast's Rotation.

ACTIVITY - 1

From “Learn and Explore section” in Instruction Manual.

ACTIVITY - 2

From “Learn and Explore section” in Instruction Manual.

ACTIVITY - 3

From “Learn and Explore section” in Instruction Manual.

Key Concepts

Lift occurs when an object pushes against the air (or other gas/fluid), typically causing the object to rise upward or slow its descent.

Drag occurs when air (or other gas/fluid) pushes back against a moving object and slows it down.

RACK AND PINION - 5 minutes

Gears are toothed wheels that are used to transfer power from one part of a machine to another. For gears to work perfectly, their teeth must match with one another; too loose or too tight, and the teeth get stuck. In your flying machine, one of the gears is circular whereas the other one is straight. This straight gear is called RACK and the circular gear is called PINION. When the straight gear pushes forward, the circular gear rotates.

Use this link for the quiz questions:

<https://quizizz.com/admin/quiz/5af0afab0c283d002045e359/grade-6-aerodynamics-and-flight-unit-test-review>