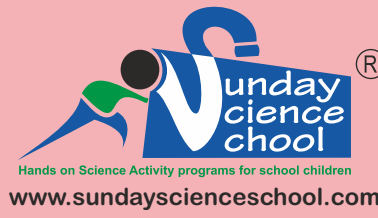


Sunday Science School



Science
Activity and
learning program

Intermediate Level

For Std 5 & 6

Course
starting from
09th July 2023



Over 50+ Experiments



All kits will be given permanently



About 20 Activity Kits



21 Sunday program



Activities +
Science exploration



Join & explore scientist within you.

Course Fee

Rs.6600/-

Avail discount of Rs. 300/-
if registered on or before
02nd July 2023

Every
Sunday
2 Hours

This is the most
comprehensive
Program to
learn Science by
“Experiential” way !!!

“ The Only
Source of
Knowledge is
Experience.”

Sir Albert Einstein

Last date of
Registration
06 July 2023



For enquiry and registration

www.courses.sundayscienceschool.com

9373035369 / 9850047933 / 8779678709

कुतुहल®
Commitment to Scientific Creativity!

सकाळ
Young
Buzz

Know more
about it..

Duration 21 sessions in
7 months span

Eligibility Std 5 or 6

Starting from July 09, 2023

Total Fee Rs. 6600.00
(Can be paid in 2 installments)

Avail discount of Rs. 300/-
if registered on or before
02nd July 2023

Methodology

- SSS annual program starts in July and ends in January. On each Sunday, students understand a new topic and perform activities based on that topic.
- All material needed for activities is given to every child permanently. Study notes on all topics are also given for future reference.
- The program schedule, giving week by week topics and activities, will be shared at the beginning of the program. There will be a few Holidays on occasion of Diwali and other festivals, which will be clearly mentioned.
- Two MCQ type tests will be conducted during the course. Each student will be given certificate of 'Course completion' after final test.

How will the course progress?

- On each Sunday, there will be a session of 2 hours at specified location. Facilitator will discuss the topic and then activities will be done by students independently. Facilitator will help students in case of difficulty.
- Ready model or material of experiments will be given to each student on 'take-home' basis.

Experiential Science Learning is the correct learning method at young age.

Endless benefits...

- 🔊 Develops scientific outlook
- 🔊 Enhances brain function & episodic memory.
- 🔊 Heightens appreciation of how science works.
- 🔊 Enhances understanding of scientific concepts.
- 🔊 Builds fine motor skills.

Sunday Science School Intermediate Level Program

This is the most comprehensive activity based Science learning program for students from 5th and 6th std. The activities are selected from general science that children should know at this age. The activities cover many important concepts suitable for this age group.

The program is of span of 21 sessions. The wide span of the program helps children to interact with us more frequently and expand their knowledge sphere.

Hands-on activity based program of Sunday Science School is highly useful and engaging option for students in this "post-Covid time". This is the program that stands out with its uniqueness of material based exciting activities for students, that no other program in India gives !!!

Salient features of SSS Intermediate Level

- ➔ SSS Intermediate level for Academic Year 2023-24 is designed differently with new topics and experiments.
- ➔ The topics chosen are carefully selected covering maximum basic concepts from different subjects of Science and also keeping in view, topics of different exams at this age.
- ➔ Activities are selected from all three subjects of Science, viz. Physics, Chemistry and Biology. Children will find these activities very interesting and exciting.
- ➔ Objective type "QUIZ" based on the topics of the course will be conducted Two times during 21 week program. Students will solve these tests to assess their understanding of the topics discussed during SSS sessions. This will be useful for SSS team (and parents) to assess students for their understanding of science.
- ➔ To summarize the program, it will have multiple benefits to the students -
 - ➔ Child will explore different science concepts through experiments.
 - ➔ Child will understand and explain science of the topics.
 - ➔ Habit of Experimentation is developed at young age

What is Sunday Science School?

Sunday Science School has developed different Academic year-based programs for students to explore Science by doing it and thereby enrich their knowledge sphere. The concept is promoted and nurtured by people, who are active for over 28 years, in development of products and content for "Hands-On Science" for children.

The programs are based on experiential learning, which fosters an environment of accelerated learning through self-discovery and participation.

Our attempt is to give children Science Activities to engage them intellectually and physically. The goal is not necessarily to create Scientist but to create civilized citizens with scientific outlook, who apply their Brain to the problems and use scientific approach to find solution.

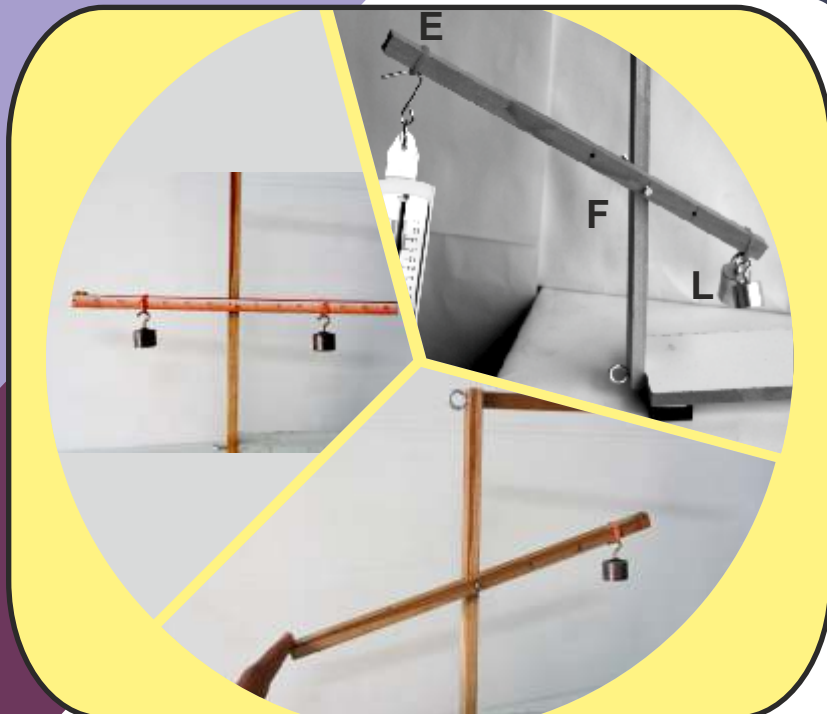
Day 1

Simple Machines

- ▶ What are Machines
- ▶ Ideal Machines
- ▶ Mechanical advantage
- ▶ Use of machines in our life
- ▶ Types of simple machines
- ▶ Class I levers in our use
- ▶ Load, Efforts and Fulcrum
- ▶ Positions of 3 decides efforts

This day is to understand very basic concepts, like what are machines? How are complex machines made using simple machines? What are different types of Simple Machine we use?

Students will perform multiple activities using Class I Lever structure made using batten frame. They will see the difference of efforts based on Fulcrum position. When Fulcrum is in the centre, the Class I level works as a Balance.



Class 3 Lever



Class 2 Lever



Class II & III Levers

Day 2

- ▶ What are Levers
- ▶ Principle of levers
- ▶ Types of lever - common levers
- ▶ Mechanical advantage of class 1
- ▶ Making a frame based Class 2 & class 3 levers
- ▶ Mechanical Advantage using Class II lever
- ▶ Increasing Force using Class III Lever

Class II and Class III Levers are a bit difficult to visualize in compared to Class I Levers. This session is to understand these types of Levers using a Wooden Frame and other material.

Class II Lever has always MA more than 1 and Class III has MA less than 1. Students can see it using the structure created by them.

Day 3

Pulleys

- ▶ What are Pulleys
- ▶ Use of Single pulley for changing direction
- ▶ 2 pulleys for Mechanical Advantage
- ▶ Block and Tackle system
- ▶ Multiple pulleys for more MA
- ▶ Lifting same mass with less efforts using multiple pulleys



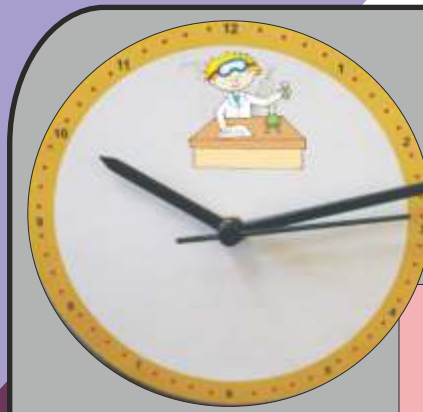
Day 4

Motions, clock etc.

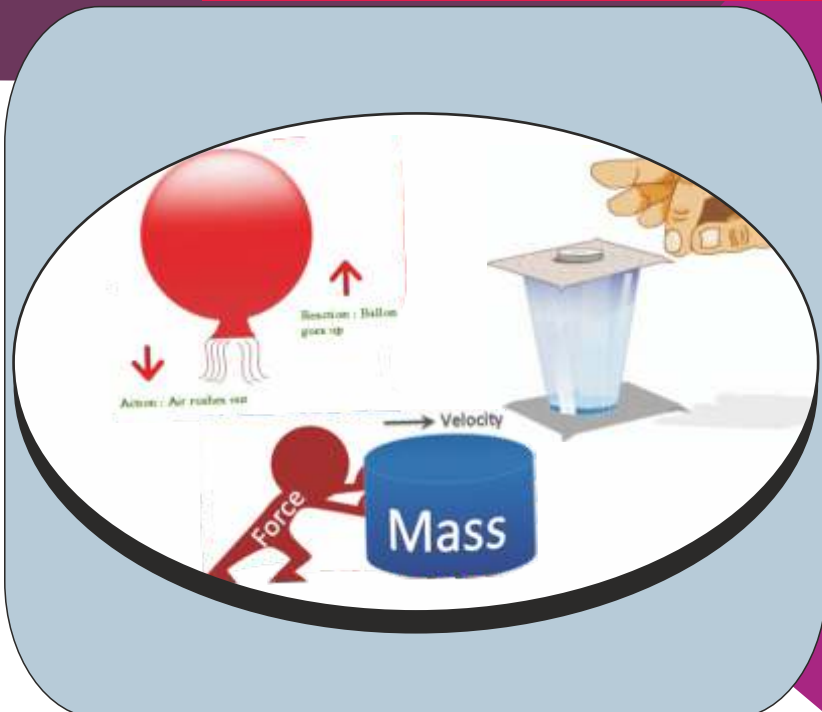
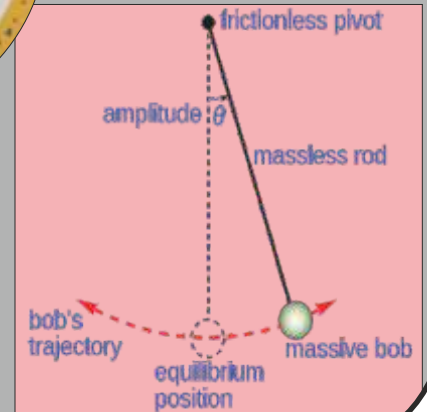
- ▶ Motion and its types
- ▶ Periodic Motion
- ▶ Pendulum and oscillations
- ▶ Circular Motion & clocks
- ▶ Making a table Clock
- ▶ Period of pendulum
- ▶ Pendulum formula
- ▶ Second's pendulum

This day is to understand types of motion, periodic motion, motion of pendulum etc. This is the basis to understand Newtonian Physics.

Students will make a mechanical clock and using this clock, they will measure period of pendulum by changing its length. Students will be introduced to Pendulum formula and they will know that period does not depend on mass.



$$T = 2\pi \sqrt{\frac{L}{g}}$$



Force & Energy

Day 5

- ▶ Force on rigid / non rigid body
- ▶ Effect of force,
- ▶ Newton's laws of motion
- ▶ Potential and Kinetic Energy
- ▶ Conversion of energy
- ▶ Activities on Energy, Force
- ▶ Momentum and its conservation

This day is to understand Newtonian Physics. The basic concept of Mass, Velocity, Displacement will be tried out by doing simple experiments.

Students will do activities to know effects of force, Newton's laws of linear motion, collision and conservation of momentum etc.

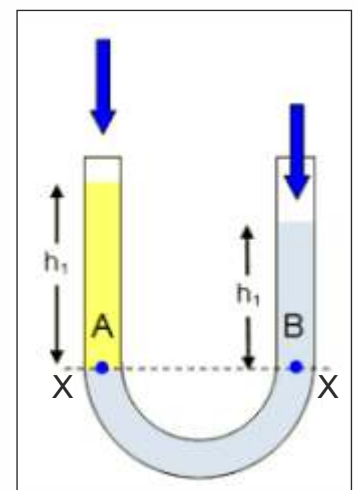
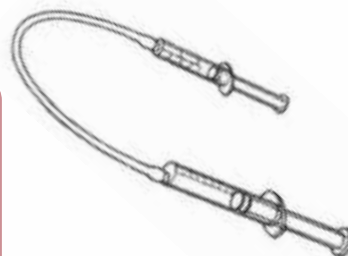
Day 6

Liquid Pressure

- ▶ What is force and pressure?
- ▶ Pressure by solids
- ▶ Pressure by liquids
- ▶ Atmospheric pressure
- ▶ Pascal's law of liquid pressure
- ▶ U tube based activity to know atmospheric pressure and density
- ▶ Syringe activity to study Pascal's law
- ▶ Hydraulic Brake model

Pressure exerted by solids and pressure exerted by liquids are two different things. This session will give clarity to students about these two concepts.

Students will study Pascal's law of liquid pressure using 2 syringes of different capacities. They will also see an application of Pascal's law by making Hydraulic Brake.

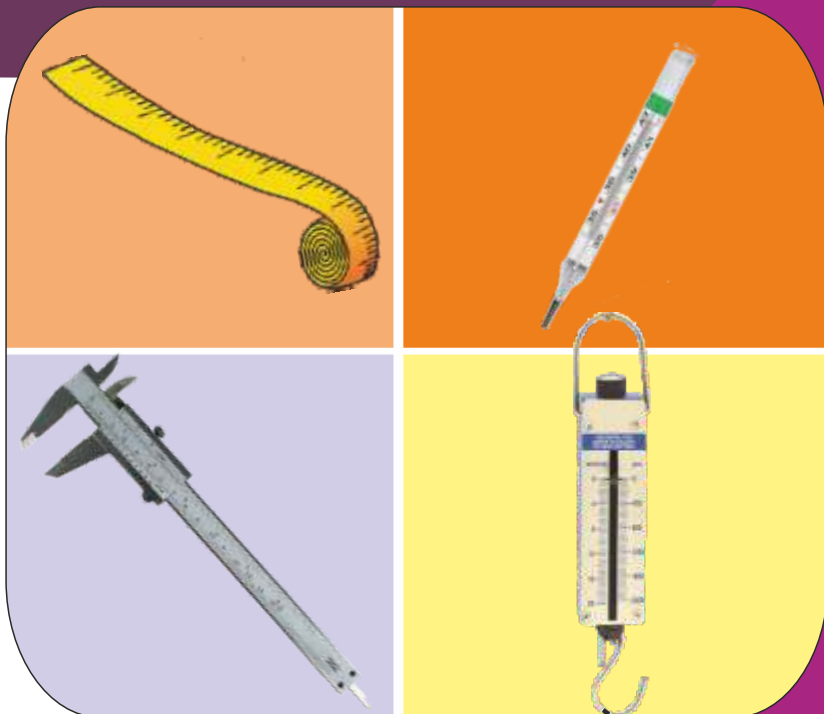
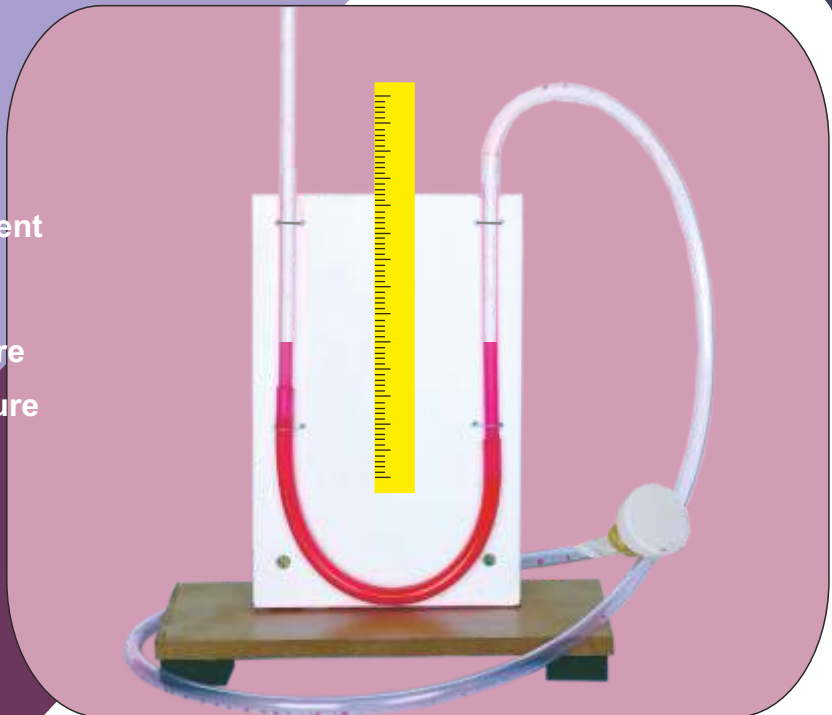


Day 7

U tube Manometer

- ▶ Making of a U tube manometer
- ▶ Measuring liquid pressure at different depth of water column using the instrument
- ▶ Understanding Hydrostatic pressure
- ▶ Relation between depth and pressure

U tube Manometer is an instrument used for hundreds of years to measure hydrostatic pressure at different depths of liquid column. Students will make the instrument and see its use. They will also understand that liquid pressure at a particular depth is same in all directions.



Measurement

Day 8

- ▶ What are fundamental units?
- ▶ Need of standard units
- ▶ Different standards used in world
- ▶ Conversion of units
- ▶ Measuring distance, volume, mass using different tools
- ▶ Temperature measurement
- ▶ Scales used in Temperature
- ▶ Conversion between scales
- ▶ Area and other derived units
- ▶ Least count
- ▶ Use of Vernier Caliper

Day 9

Separation Tech

- ▶ Different mixtures
- ▶ Simple separation techniques
- ▶ Magnetic separation of solids
- ▶ Evaporation
- ▶ Filtration
- ▶ Decantation
- ▶ Making of a small centrifuge
- ▶ Centrifugation using hand-held motorized centrifuge

Students will attempt different separation techniques to understand how mixtures are separated. When two solids are mixed or when a solid is mixed in a liquid or when two liquids are mixed, what are the techniques used will be studied by students.

Students will also make a motorized small centrifuge using the kit and see its application.



Hand-held Centrifuge

Day 10

Water filtration

- ▶ What is filtration of water?
- ▶ What is water purification?
- ▶ Working of Water Treatment plants
- ▶ Use of Alum in the process
- ▶ Simple filter for water filtration
- ▶ Filtration using graded crushed marble
- ▶ Use of Activated Carbon

This session is to know about filtration. Water is filtered before it is treated. Students will see effect of different methods in getting cleaner water. They will filter water through crushed marble of different grain size.

Use of Activated Carbon will also be studied by students.



Test No 1

Day 11

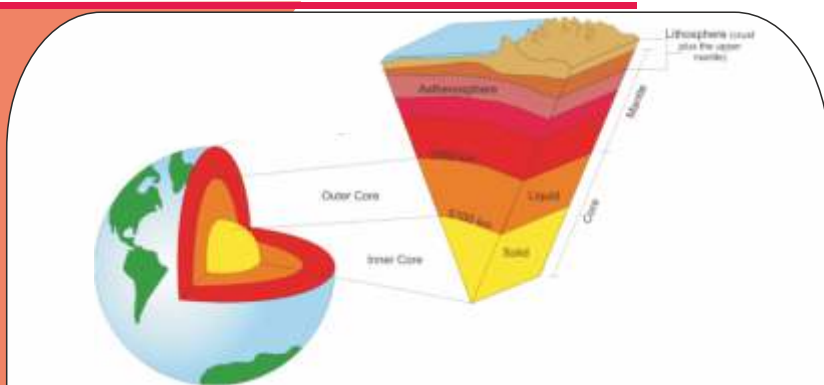
First Objective type Test based on all topics discussed till this session in this Level of SSS



Day 12

Interior of the Earth

- ▶ Making of a model showing interior structure of our planet.
- ▶ Understanding crust, mantle and core of the Earth.
- ▶ Study of plates and discontinuities in Earth's outer structure.



Interior of the EARTH

A Do-It-Yourself Activity Lits

Day 13

Our Planet Earth

- ▶ How was Earth formed?
- ▶ Land mass and its drifting
- ▶ Chronological sequence of events
- ▶ Making a drifting continents models
- ▶ Making a simple Geological clock

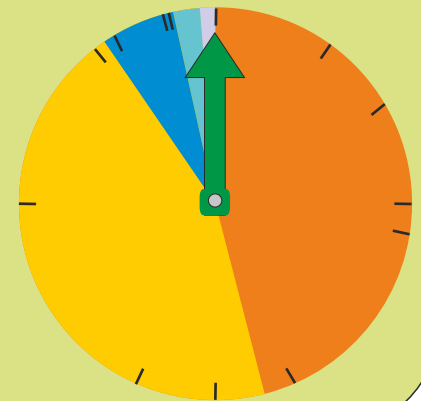
Three sessions are reserved for understanding of our planet Earth. On first day, the activities involve making of Geological Clock. This is to understand time-line of events that occurred on our planet from its formation. This makes students aware of many prehistoric events.

Earth is made up of huge plates. These plates are drifting apart. In one activity, students will make a simple demonstration of this concept.



Drifting Continents

Geological Clock



Day 14

Earthquake Detector

- ▶ Lightning and its cause
- ▶ Earthquakes - why and how?
- ▶ How are earthquakes detected?
- ▶ Making a Vibration Detector using Electronic circuit

The Electronics PCB used in this project works using a Pizzo sensor. It senses vibrations and circuits produces buzzer sound when vibrations are sensed.

If Building structure vibrates due to Earthquake, the sensor is activated and Earthquake can be detected. Students will know how Science and Technology is used for the benefit of mankind.



Day 15

Eclipses, Moon's phases

- ▶ What are Solar and Lunar eclipses?
- ▶ How do they occur?
- ▶ Why there are no eclipses every month?
- ▶ Umbra and penumbra of eclipse
- ▶ Moon's orbit, Phases of the Moon
- ▶ Making a motorized model
- ▶ Observing the Sun through filter

This motorized model shows students many facts of Sun - Earth - Moon relationship. Orbital plane of Moon's orbit has angle of about 5 degrees to the orbital plane of Earth's orbit (Ecliptic).

Students can know, why eclipses do not occur every month. We can also see how phases of the Moon are visible from the Earth.



Day 16

Match-it-Right

- ▶ It's an "Electrical Board Game"
- ▶ Students will design it and make it a working game to study Biology.
- ▶ This will involve study of electrical circuit and components, like LED, buzzer etc.
- ▶ Students will be assigned a task to make one set of question answers as a ready "match it" game on any Biological topic.

A great way to study many concepts from Biology in a "Match-the-Pair" format. Children will enjoy changing the pairs and playing it over again and again.



Study of Ball and socket joint and Hinge joint of Hand



Colouring of Internal systems



Human Internal Systems

Day 17

- ▶ Knowing more about Human Body and its internal systems.
- ▶ Digestive system in humans.
- ▶ A "colour and wash" re-usable 3-D human anatomy sheet to study internal structure of human beings.
- ▶ The Ball and Socket joint is the most versatile joint that lets us move our limbs freely in 360°. A small model showing its working will be done by students.

Discussion on different Human systems and their coordinated work will help children appreciate how so many systems work together to keep us going...

Day 18

Acids and Bases

- ▶ What are acids and bases?
- ▶ How to test acids and bases?
- ▶ Use of Litmus paper to test them.
- ▶ pH scale and its use in finding strength of acids and bases.
- ▶ How do acids and bases react with each other?
- ▶ What are indicators? Use of natural indicators.



Day 19

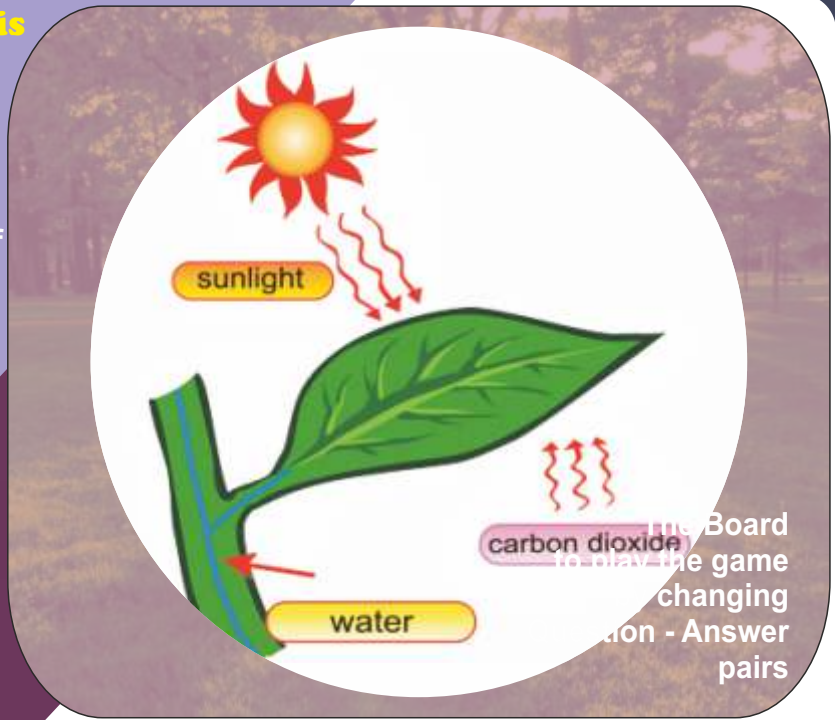
Study of Photosynthesis

Know how green leaves make food for plants.

- ▶ Process of Photosynthesis in plants.
- ▶ Activity to understand that product of photosynthesis is starch.
- ▶ Experiment on studying need of Sunlight for this process.
- ▶ Experiment to study Carbon Dioxide is necessary for Photosynthesis.

Photosynthesis is the process, in which Sunlight helps convert Carbon Dioxide in to sugar in green leaves with help of green pigment, Chlorophyll.

Students should understand this extremely vital process, which happens in green leaves. The experiments show necessary conditions for this process to happen in plant leaves.



the Board
to play the game
changing
tion - Answer
pairs



Understand science of different gadgets and make a Vacuum Cleaner



Science at Home

Day 20

- ▶ Know how different science principles are used in domestic appliances.
- ▶ Make a Vacuum cleaner
- ▶ Know Working of Pressure Cooker, heater and other appliances...

This session is to make students aware that we use science at home through variety of appliances. They will know how each advanced appliance is based on science principles.

Day 21

Test No 2

Second and Final Objective type Test based on all topics discussed till this session in this Level of SSS



Our Vision

Our vision is to inculcate habit of experimentation in young minds at formative age and to imbibe scientific thinking in them. This is possible through 'hands-on' science activities from young age. They develop scientific attitude and enhance qualities like Curiosity, Observation skills, Analytical approach, Problem solving techniques, Creativity and Patience.

Science is mostly taught in didactic way in our country, which results in children either fearing the subject or adapting to rote learning to secure marks. Our vision is to make children aware that science should be understood through active learning, experimentation and observation. Students should know and understand that science is a way of life and not just a subject.

KUTUHAL Group

"KUTUHAL" group is working actively for promotion of science and math activities through indigenously designed DIY kits since 1994. It has always strived to add to the joy of learning.

The group, through its pioneering company, "KUTUHAL Science Activities Pvt Ltd" designs and manufactures science activity kits for students since 1994.

Sunday Science School...

Sunday Science School, a company to facilitate "hands-on" science activities for students and teachers was formed in 2010.

Sunday Science School has designed "hands-on" science programs ranging from 1 hour science activities to academic year-long programs.

SSS has also launched syllabus mapped activities for standard 3 to 10. All such "hands-on" programs are designed with activity kits and experimentation material given to students on take-away basis.

Sunday Science School

- ☞ **Sunday Science School - Intermediate Level** is a 'hands-on' Activity program of about 21 sessions of 2 hours each.
- ☞ **Students studying in 5th or 6th std** can enroll for this program.
- ☞ **Different topics in science** are discussed and students perform activities based on these topics.
- ☞ **All models and experimentation material** are given on 'take-home' basis. This Creates a small Lab at home.



Head office

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