



SHRINE VAILANKANNI SENIOR SECONDARY SCHOOL



(Affiliated to CBSE - New Delhi)

9, DHANDAPANI STREET, T. NAGAR, CHENNAI-17
PH: 044-24344479 / 24344501 www.vailankanni.org

Project Area With Examples

Science Fusion - Bridging Minds Across Disciplines

It is a multidisciplinary approach that combines various scientific disciplines to solve complex problems and advance knowledge, aiming to drive progress and tackle challenges beyond traditional boundaries



Examples:

1. Topic- Electric Motor

Abstract- Electric motors operate using principles of electromagnetism, which shows that force is applied when an electric current is present in a magnetic field.

2. Topic- Make your robot

Abstract- Study of the state of the art of using educational robotics.

Outcome - Robotics will be able to deepen their understanding of Math and Science concepts such as motion, force, energy, measurement, geometry, and more.

3. Tyndall effect:

Abstract: When a beam of light is directed at a glass of milk, the light is scattered. This is a great example of the Tyndall effect. When a torch is switched on in a foggy environment, the path of the light becomes visible. In this scenario, the water droplets in the fog are responsible for the light scattering.

4. Homemade Bioplastics

Abstract: Bioplastics are made wholly or partly from renewable biomass sources such as sugarcane and corn or from microbes such as yeast.

Criteria: Eco-friendly, Economical, Feasibility, User-friendly, Reusability



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Bio-Tech Wonder - Innovating Life Through Science.

Biotech Wonders merges biological information with computer technology to advance research in other areas, including Nanotechnology, and Regenerative medicine. Today there are numerous commercial biotechnology firm that manufacture Genetically engineering substances for a variety of mostly medical, agricultural, and ecological uses.



Examples:

1. Uses of Microbes in Human Welfare - As Biocontrol Agents

Abstract: Biological Agents are an integral part of organic farming. In organic farming, farmers believe in mutualism. The chemicals used for eradicating pests and parasites might not be always successful and also harm useful agents too, this approach of pest management needs vivid knowledge about the life cycle and feeding habits of different life farms.

2. Uses of Microbes in Human Welfare - As Sewage treatments

Abstract: The objective is to produce an Environmentally safe fluid waste stream and solid waste suitable for disposal or reuse. The growing environmental pollution need for decontaminating wastewater results in the study of the characterization of wastewater, especially domestic sewage.

3. Analysis of Neurological Disabilities - Epilepsy

Abstract: Epilepsy is a chronic disease of the brain characterized by an enduring, predisposition to generate seizures, unprovoked by any immediate central nervous system insult by the neurobiological cognitive, psychological, and social consequences of seizure recursion.

4. Name of the Topic: Neurological Disabilities - Learning Disabilities

Abstract: It is a neurodevelopmental disorder characterized by a deficit in phonological awareness and processing. It is likely causes are genetic as well as environmental, the disorder must be remediated before age seven or eight using intensive, explicit readiness interventions.



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Data Dynamo - Unleashing the Power of Information.

Leverages advanced technologies like AI and machine learning to drive innovation and progress but requires ethical considerations for data privacy, security, and bias.



Examples:

1. Image Classification:

Abstract: Train a machine learning model to classify images like animals, vehicles, or food using a dataset like ImageNet.

2. Speech Recognition:

Abstract: Build a basic speech recognition system using libraries like Speech Recognition or Google's Speech-to-Text API.

3. Object Detection:

Abstract: Use computer vision to detect objects in images or videos using libraries like OpenCV or TensorFlow.

4. Chatbot:

Abstract: Create a simple chatbot using natural language processing (NLP) to respond to basic user queries.

5. Predictive Model:

Abstract: Build a predictive model using regression or classification algorithms to forecast simple phenomena like weather or stock prices.

6. Game AI:

Abstract: Create a simple game like Tic-Tac-Toe or Snake using AI algorithms like minimax or reinforcement learning.



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Quantum quest - journeying into the mystery of Physics!

Welcome to the fascinating world of physics, where particles and waves coexist in the mysterious dance of energy and matter. Young minds, realm, and explore the mind-bending concepts of physics.

Catalyst

The Science Convergence

Examples:

1. Wireless power transmission: Tesla coil

Abstract: Tesla coil and proceeded to experiment with different uses including wireless electricity, spark gaps, energy transmission, and other high voltage experiments.

2. Snow Squeezer- “instant water-producing machine”

Abstract: The simple machines inside our project are the inclined plane, the pulley and the wheel and axle. The purpose of our project is to squeeze snow.

3. Nanotechnology- “The smaller the stronger”. (invisible knife)

Abstract: Carbon nanostructure is the strongest carbon arranged in sheets (graphite), and carbon arranged in hollow spheres (fullerenes). Using these tiny nanostructures helps scientists create a new range of materials that are lighter and stronger than ever before.

4. Homemade viscometer:” viscosity testing”

Abstract: Viscosity is a property of a liquid and is defined as the resistance of a liquid to flow. The purpose of this experiment was to determine if the temperature of a liquid affects the viscosity of the liquid. A homemade viscometer was made to measure the flow of five different liquids including water, canola oil, honey, dishwash liquid, etc.



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Chem Craft – Creating Wonders Through Chemistry.

It involves manipulating chemical substances to create new materials, compounds, and technologies, crucial in industries like pharmaceuticals, agriculture, energy, and materials engineering, driven by analytical techniques and computational modelling.



Examples:

1. Colour transformation reactions:(Displacement reactions)

Abstract: When we place a piece of copper in nitric acid the copper ions and nitrate ions coordinate to color the solution green and then brownish green. If dilute the solution, water displaces nitrate ions around the copper, and the solution changes to blue.

2. Recycling paper

Abstract: Paper wastes are mixed with water to create a slurry. By adding some specific materials and chemicals to the slurry, different paper products such as cardboard, office paper, etc. Can be obtained. The slurry is then rolled into thin sheets using large rollers.

3. Neutralisation reactions:

Abstract: This method is used in wastewater treatment to reduce the damage created by the effluents and to control the pH of the soil.

Learning outcome: It can be defined as a chemical reaction in which an acid and base quantitatively react together to form salt and water as products.

4. Extraction of plastic from milk:

Abstract: In this experiment, we use a component of milk called Casein to make plastic. This plastic can be used to make ornaments and decorative articles.

Learning outcomes: When milk is heated and combined with an acid such as vinegar, the Casein molecules unfold and reorganize into a long chain. Each Casein molecule is a monomer and the chain of Casein monomers is a polymer.



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Eco Tech Marvels – Engineering Sustainable Solutions.

Marvels are innovative technologies promoting environmental sustainability, reducing carbon footprints, enhancing resource efficiency, and contributing to economic growth and social development



Examples:

1. Waste management:

Abstract: It includes the activities and actions required to manage waste from its inception to its final disposal. This includes the collection, transport treatment, and disposal of waste together with monitoring and regulations of the waste management process.

2. Eco-friendly smart City:

Abstract: The concept of an eco-friendly smart City relies on the use of renewable energy sources. It also aims to promote sustainable lifestyles and create an environment that is conducive to living and working. The goal of an Eco-friendly Smart City is to reduce the environmental impact of urban areas while creating a vibrant and economically viable community.

3. Solar Dehydrator:

Abstract: Build a solar dehydrator to preserve fruits and vegetables. Test its effectiveness and compare it to electric dehydrators in terms of energy consumption and drying time.

4. Portable Solar Charger:

Abstract: Design a portable solar charger for electronic devices. Measure its efficiency and compare it to traditional chargers in terms of energy output and charging time.

5. Piezoelectric Energy Harvesting:

Abstract: Develop a model that generates electricity from piezoelectric materials embedded in flooring. Test its potential to power small devices from foot traffic.



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Space Odyssey – Exploring the Final Frontier

We are obsessed with space making it one of the most popular themes for our unit studies. Anytime we can put a space twist on a project, we are instantly enthusiastic! From stars to black holes, exploring the solar system to imagining we are astronauts, the possibilities are endless! Learners, come up with your favorite Space Activities



Examples:

1. Pinhole camera

Abstract: A pinhole camera is a simple type of camera that uses a tiny hole to capture pictures. Instead of a lens like you see on regular cameras, a pinhole camera has a small opening, or "pinhole," through which light enters. A basic pinhole camera is an effective way to witness an eclipse without damaging your eyes in the process.

2. DIY spectroscope

Abstract: A spectroscope or a spectrograph is a scientific instrument used to study light's properties. It breaks light down into different wavelengths, called a spectrum. It works similar to how a prism splits white light into a rainbow.

3. Sun dial

Abstract: The accuracy of sundials and the discrepancy that lies between "real time" and "clock time." They track the position of the sun during a relatively short period of time. this helps to know How the sun moves across the sky. The difference between "clock time" and "real-time."

4. Solar eclipse

Abstract: A solar eclipse is a unique and exciting event that involves the Earth, moon, and Sun. During a solar eclipse, the moon covers the Sun entirely or partially. As a result, the moon temporarily blocks the sunlight coming toward Earth.