ABSTRACT BOOK

INDIAN SCIENCE & ENGINEERING FAIR (INSEF)

MICROFAIR – MUMBAI

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(The abstract text provided is exactly as submitted by the participants)

Project Code: **Bh Sc-01 (Team) (Jr)** **Online ID:138**

Title: Improving the performance of the students in group influence

Subject Category: Behavioural Science
Name: Suraj Gohil & Hrishikesh Bhise, Std: 8th
Guide: Reena Alphanso
School: Modern English School Chembur, Mumbai

ABSTRACT:

We decided to research on the effect of peer pressure on the male participants and the female participants and makes a comparison of effect of peer pressure on both the genders. Peer pressure is the phenomenal where a person is persuaded directly or by imply means to comply and be in agreement with other individual who belong to the same group it was observed that among young children, the peer a person do thing against his/her believes. it was observed that in 7 standard female participants were under more peer pressure as compare to male participants. Students were divided into two groups.

In the group 1 there were 20 boys and in group 2 there were 20 girls 5 male and 5 female students were selected were as non-participants who will not be subjects of experiments, these non-participants were instructed to intentionally provide the wrong answers. Ten non participants and 1 participants were brought into the classroom they are asked l by l to identify 2 circles of the same size. The non-participants intentionally provided similar wrong answers. The participants will be the last to be asked to give their answer first. They were next asked to identify the two square of same size in the 2 question. This time the actual participant were more affected be peer pressure to provide the wrong answer. The results would be displayed and discussed later.

Project Code: **Bh Sc-02 (Jr)** **Online ID:140**

Title: Improving the performance of students by moulding science concept in the form of story

Subject Category: Behavioural Science
Name: Janhavi Kambli , Std: 7th
Guide: Reena Alphanso
School: Modern English School Chembur, Mumbai

ABSTRACT:

It is observed that the complicated concepts in science are difficult for some students to understand and due to this weaker students and slow learner show poor performencein their academics.

My project aims at moulding the complicated concepts of science in the form of story and narrating the story to the student and then conducting a test. Test was conducted on the students of age group 11-12, 3 trails were taken. It was observed that the students showed a remarkable improvement in their academics and scored good marks after having the story compared to the performance shown in the form of test before fearing the story.

It statistical analysed that the girls showed more improvement in their academics by this method.

The statistical data was analysed and graphical representation was done. It was seen that 85% improvement was done by implementing this method.

Project Code: Chem-01 (Team) Online ID:133

Title: Saga oil coating to preserve fruits and vegetables
Subject Category: Chemistry
Name: Nambirajan Konar & Kushal Suvarna, Std: 9th
Guide: Sitalakshmi. P
School: Modern English School Chembur, Mumbai

ABSTRACT:

Saga oil coating to preserve vegetables and fruits Synopsis: Edible coating has been used for preserving the quality and safety of fresh fruits and vegetables. The objective of this research was to study the effect of saga oil as edible coating instead of paraffin oil on the self life and quality of fruits and vegetables. The magnitude of post harvest losses in fresh fruits and vegetables is estimated to be 25-80 % depending upon the commodity. Therefore need to pay attention to explore the potential of surface coating to maintain the quality of harvested fruits and vegetables. Saga seed is a tropical legume found in most parts of Asia. The seeds are used to cure boils and inflammations it is also has an antibacterial property. Oil was extracted from saga seed oil using two different solvents, namely, acetone and ethanol. Apple & potato were surface coated with saga oil and paraffin oil separately. non-coated apple and potato was kept as control sample. Three trials were carried out for each item. Further saga oil was tested for its chemical properties. The results indicated that coated apples, potatoes showed a significant delay in the change of weight loss, firmness, decay and color compared to non-coated ones. The results showed that coatings maintained the visual quality of the apple during the storage time. The results suggested using saga oil, as edible coatings instead of paraffin .

Project Code: Chem-02 (Jr) Online ID:137

Title: A Tamarind Varnish
Subject Category: Chemistry
Name: Apoorva Menon , Std: VIII
Guide: Reena Alphanso
School: Modern English School, Mumbai

ABSTRACT:

This project aims at producing Varnish which will reduce effects of termites and insects on wood, will be eco-friendly, as well as cost effective too.

It had been observed that normal varnish is not able to protect wood from termites and insects and it is not eco-friendly. So, in my project it was decided to use tamarind seed paste, aloe powder, linseed oil and acetone in the ratio 4:2:2:1.

Aloe powder, linseed oil and tamarind seed paste were mixed and boiled. This mixture was then placed in a glass bottle. This compound was thick and to make it thinner acetone was added to make the varnish ready. The varnish was applied on three pieces of wood. On the first piece which named Sample 1, one coat of varnish was applied. On the Sample 2 two coats of varnish was applied and on Sample 3, three coats of varnish was applied and the pieces were left to dry. After drying it was observed that the Sample 1 was smooth, while Sample 2 was smoother and Sample 3 was the smoothest.

Project Code: **Chem-03 (Team) (Jr)** **OnlineID:139**

Title: Artificial leather from mango shell fibre

Subject Category: Chemistry
Name: Ashwin Selvarangan & Bhavathmajan Swaminathan, Std: 8th
Guide: Sitalakshmi P
School: Modern English School Chembur, Mumbai

ABSTRACT:

We have made artificial leather from mango seed shell that could replace animal leather. The product and the process both are novel and turn a waste product into an environmentally friendly material.

Leather is everywhere—from shoes and belts, to purses, wallets, jackets, Raising the animals whose skin eventually becomes leather requires vast quantities of water and wide tracts of pastureland, which must be cleared of trees. Runoff from feedlots and dairy farms also creates a major source of water pollution The production of leather hurts animals, the environment, and the workers who manufacture it.

There is hence an intense effort to seek for eco friendly material that can be replaced that can be easily without harming the environment

We have made artificial leather from mango seed shell , The leather formulation of mango shell was investigated using, 50g, 60gand 100g of mango seed shell .To facilitate in making of the leather mango seed shell, caustic soda,washing soda,alum,hydrogen peroxide and Arabic gum was used.

The procedure that was followed involved making the leather boiling mango shell in Sodium hydroxide solution for 2 hours , cool ,pound the fibre and strain it . Place the fine mesh in a basin and add water according to desired thickness of mesh add Arabic gum and alum solution. Hold a mold and move the mesh , drain it and wipe with felt cloth. And allow it to dry.

The mango shell leather then is tanned with vegetable dye .

All the samples were tested for physical and chemical properties and compared with a commercial leather.

Mango shell leather can be moulded like commercial leather. The pH value was 4

Fire test showed that the mango shell leather burnt and turned into ash after 2 minutes. While commercial leather became black .Biodegradability test showed the mango shell leather degraded up to 50%

Mango shell leather absorbs water.

The tests for physical and chemical properties indicated that mango shell can be used as an alternative to existing leather.

Project Code: **Chem-04** **Online ID:143**

Title: BIODEGRADABLE FILM BASED ON THE WASTE VEGETABLE PEEL

Subject Category: Chemistry
Name: Dhanyeshwari Manoj.Kumar, Std: 9th
Guide: Sitalakshmi Parameshwaran
School: Modern English School Chembur, Mumbai

ABSTRACT:

Biodegradable Film Based On The Waste Vegetable Peel.

Blended films derived from nanocrystals from Musa Paradisiaca social concerns for sustainable green products are encouraging the efficient exploitation of cellulose, the most abundant renewable biopolymer on earth. Cellulosic fibers traditionally have been used to make paper. Banana peel is rich in cellulose. So the potential use of such materials as reinforcing component may result in increasing of its commercial value. So an attempt is made to use waste banana peel as reinforcing component which can increase the commercial value.

Cellulose nanofibers were isolated from banana peels using chemical treatment. Nano composite films were prepared with banana peel extract and starch. In order to prepare starch banana peel nano composite films 16%wt starch was prepared by dissolved in 80% ethanol aqueous solution which contained glycerol 20%w/w. Three different starch based films were prepared with neat (0%)1% 2%(w/w,db)CN using a solution casting method.The water was allowed to evaporate at room temperature for 3days before the film was removed from its petridish and then stored in an environmentally controlled room at 50% RH and 23 degreeC for atleast 2days before testing.

It was found that as content increase from 0 to 50% wt result in increasing tensile strength and young's modulus of starch nanocomposite films. The highest strength obtains at 4wt% banana peel. The biodegradability test was done. The film was degradable.

Project Code: **Chem-05 (Team)** **Online ID:148**

Title: Liquid Shoe Polish with natural ingredients

Subject Category: Chemistry
Name: Shradha Kadam & Divya Panchal, Std: IX
Guide: Mrs. Sitalakshmi. P
School: Modern English School Chembur, Mumbai

ABSTRACT:

Liquid Shoe Polish with natural ingredients

Generally, shoe polish which are available in markets are made of harmful chemical. Shoe polish consist of waxy colloidal emulsion, a substance composed of a number of partially immiscible liquids and solids mixed together It is usually made from ingredients including some oral of naptha, lanolin, wax (often carnauba

wax),gum

Arabic ethylene glycol and if required a colorant such as carbon black or an azo dye(such as aniline yellow).It typically has a specific gravity of 0.8 negligibly soluble in water and is made of between 65 and 75% volatile substance-usually naptha .The high amount of volatile substances means that the shoe polish will dry out an harden after application while retaining its shine.

Shoe polish contains chemical substance which can be absorbed through the skin or inhaled .So we decided to make the shoe polish with banana peel which contain more potassium.

The shoe polish which we are making is not harmful for skin. The ingredients which we used to make shoe polish is banana peel, soap flakes, charcoal, liquid bee wax, castor oil, gum Arabic powder is varying ratio.

We conducted a number of experiments. We applied the shoe polish on the leather Purse and the leather belt. Liquid shoe polish made with the ratio of 5:4:2:1 was better than the ordinary shoe polish giving a shine of 85%

Project Code: **Chem-06 (Team)** **Online ID:149**

Title: Analysis of antibacterial activity of balloon vine Soap on selected pathogens

Subject Category: Chemistry
Name: ASHWINI Ashok Kathekar & Kajal Bhagwan Bhagwan Kedare,
Std: IX
Guide: Mrs. Sitalakshmi.P
School: Modern English School Chembur, Mumbai

ABSTRACT:

Herbal soap for skin care with antibacterial and antifungal activities are prepared from a variety of plant parts such as leaves, stem, root, bark or fruit .

In this study, Ballon vine plant extract,banana skin ash lye were used to make herbal soap. Analysis of antibacterial activity of ballon vine Soap on Staphylococcus aureus, Escherichia coli, and Pseudomonas aeruginosa was carried out using different concentrations of Soap (0.05g/ml, 0.01g/ml, 0.15g/ml, and 0.20g/ml). The ditch plate method was used to obtain the zone of inhibition at different concentrations of ballon vine Soap on the test organisms. The highest zone of inhibition obtained was against 0.20g/ml concentration with the zone of inhibition 16mm on Staphylococcus aureus, Escherichia coli, and Pseudomonas aeruginosa.

This result shows that Soap exhibited antibacterial activities against Staphylococcus aureus, Escherichia coli, and Pseudomonas aeruginosa. And 0.15g/ml concentration was found to be the most sensitive on the Staphylococcus aureus, Escherichia coli, and Pseudomonas aeruginosa.

The response of the test organisms, Staphylococcus aureus, Escherichia coli and Pseudomonas aeruginosa, has provided clues that Ballon Vine soap has antibacterial activity. This therefore justifies the use of BV soap for other antibacterial purposes

Project Code: **Chem-07 (Team) (Jr)** **Online ID:155**

Title: Best use of Waste Batteries

Subject Category: Chemistry
Name: Kunal Sharma & Jaidev Gupta, Std: VIII
Guide: Sitalakshmi Parmeshwaran
School: Modern English School, Mumbai

ABSTRACT:

The growing disposal of spent batteries has created a serious environmental problem.This kind of battery consists of various materials that decompose and deteriote with difficulty,and thus finally leach out and contribute to land fills.zinc -carbon batteries can be recycled since one of the materials, As a result the disposals of zinc carbonate batteries will be reduced

Our project aims t using the Cathode waste material as filler in making conductive paint.Paint coating is regarded as one of the most economical and widely used methods of protecting metals. The coating layer acts as a barrier that isolates the metal from the corrosive environment that causes deterioration of materials the coating layers enhances the lifetime of the metal. We collected the waste batteries and classified the components.The cathode waste material was taken out rinsed and dried It was pounded to fine size and sieved. A series of paint with different cathode waste material were prepared. Plain paper was cut into strips (2x6 inches)and were covered with conductive paint.Experiment was also conducted with mild steel plates.Electrical conductivity was measured. It proved that addition of CWM improved the conductivity with maximum obtained with 25% wt of CWM.By being conductive,the paint can be used as an antistatic agent to reduce the build up of static charges. Corrosion testing was conducted to gain further understanding of the effect of corrosion protection ability of conductive paint.The mild steel coated with plain coated with conductive paint was exposed to 3.5 wt % NaCl solution The result showed that 10% addition of CWM can provide significant corrosion protection.

Project Code: Chem-08 (Team) (Jr) Online ID:163

Title: Eco-friendly Shoe Polish
Subject Category: Chemistry
Name: Janavi Thyagraj & Ankita Suresh, Std: VIII
Guide: Reena Alphonso
School: Modern English School, Mumbai

ABSTRACT:

Shoe polish usually is a mixture of natural and synthetic materials. Cosmetic shoe polish comprises of various dangerous ingredients. These chemicals can be easily absorbed through the skin causing potential harm to the skin and other organs of the body .

To prepare an eco-friendly shoe polish which can minimize the health hazards. The ingredients used are tamarind seed powder, bee wax, coal powder, soap flakes, icing sugar and the gelatinous extracts of a seaweed called carrageenan (chondrus cripus).

Project Code: Energy-01 (Team) Online ID:144

Title: Portable Chulha
Subject Category: Energy
Name: Nanavel Kumar Yadav & Rhea Sasi, Std: 9th
Guide: Kulwant Kaur Saini
School: Modern English School , Mumbai

ABSTRACT:

The industrial products and production in todays world is increasing day by day with the increasing population the demand for fuel is also increasing.It is high time to bring about changes in the existing technologiese in all the levels. We thought of inside structure of a conventional chulah which has one inlet for putting the fuel and a place to keep the utensil . First we thought of changing the proportion of the size of inner cylinder we changed the proportion between the diameter of the cylinder with its height as 1:4,1:6 and 1:8. we found that 1:6 proportion was more suitable for the flames to reach the bottom of the utensils.

To construct a Chulha a waste tin of oil was taken a semicircular hole was made at the lower vertical side of the tin one L shape cylinder was inserted in the center of the tin wood scraping were filled under pressure till the edges. lid was close and the central clylinder was pulled out. initially coal was used to start the combustion.The process of combustion was observed.

In the second model of chula 'L' shape was given using soil,P.O.P was used as a binding agent in the ratio 1:3. Three different levels were provided from the inside using iron rods. The first level is for combustion of the coal, the middle level for keeping a small stand of utensil and the upper level as a stand for pan.

We found that this modified structure is very useful for saving fuel as 2-3 substance are coocked at a time burning the same quantity of fuel. This also saves time.This chula is also portable and made of waste materials or easily available materials like soil.

Project Code: **Energy-02 (Team) (Jr)** **Online ID:159**

Title: best out of soil
Subject Category: Energy
Name: Sana Khan & Aishwarya Vishwanathan, Std:
Guide: Neena Suryavanshi
School: Modern English School, mumbai

ABSTRACT:

Fossil fuels are fuels formed by natural process such as anaerobic decomposition of buried dead organisms .Fossils fuels contain high percentage of carbon. The production and the use of fossil fuels raise environmental issues. Burning of these fuels is a major cause of air pollution. Their use is also linked to global warming. It is therefore necessary that we use these fuels only when absolutely necessary. Therefore we tried to modify the conventional sources of fuels so as to reduce its use the Chula but with different proportion of cowdung , husk and coal mixed with soil. We did qualitive and quantitive study of combustion reduces the amount of smoke and the biomass burnt.

To make comparative study first we used a conventional Chula and conventional fuels like coal and cowdung. Experiment showed that coal burns more efficiently.

In cowdung cakes mixed with soil 40% mixture gave the best result as it took least time to boil half litre water. The smoke produced was also comparatively less. The different combinations of husk with soil were also studied in which 30% combination gave the best result, even 20% combination was found to be better. In case of combination ,40% combination was found to be efficient.

Comparing these result with that of standard fuel , we can conclude that , we can reduce the quantity of biomass of fuel like coal and cowdung in this case which are valuable biomass fuels.

The advantage of this is the efficiency of the conventional is increased, a standard conventional chulha can also be used for burning. Therefore, through this project we tried to develop and eco-friendly fuel which lead us towards energy management.

Project Code: **Energy-03 (Team)** **Online ID:160**

Title: ENERGY AND SOCIETY

Subject Category: Energy
Name: ANKIT MAGOO & DERRICK THOMAS, Std: IX
Guide: KATHRINE JOSHY
School: HOLY FAMILY HIGH SCHOOL, MUMBAI

ABSTRACT:

Our project is an attempt to help our people enjoy the deep rooted culture of our country not only without hampering nature but on the contrary by contributing to the up gradation of the environment

Our working project is completely based on producing electricity using muscular force as well as producing pesticides from marigold flowers that also are used in large quantities during various festivals like ganeshotsav and navratri.

We can generate as well as save a lot of electricity through this project ,as there are huge lines to visit the mandals exhibiting the gods and goddess during the festival celebrated in our country.the pesticides are useful for the poor farmers in india as it is natural and inexpensive

People have a tendency to hold the railings and move ahead in huge lines. So we have connected small wheels and a belt around it. So when the people move ahead holding the belt the wheels rotate which are connected to a dynamo. So whenever the wheels rotate electricity is produced with the help of dynamo.

When people move inside the pandal, the entrance which has a rotating door, which in turn is connected to a dynamo, is rotated by the devotee. Here also electricity is produced.

In this way every person visiting the mandal contributes to the generation of electricity.

After the festival we visited various ganpati mandals and collected the waste marigold flowers. We put appropriate quantity of flowers in water 500 ml each.

After soaking it for two days we put all of them one by one in a mixer for mixing.

After you get the marigold mixture, soak it for 1 day and strain it with the help of a strainer.

After obtaining the mixture add little spoons of olive oil (20:1) to the marigold solution and the pesticide is ready.

This was tested on plants having insects and found to be useful.

Project Code: **Energy-04 (Team) (Jr)** **Online ID:161**

Title: IMPACT OF AUTOMOBILE POLLUTION AND ITS SOLUTION

Subject Category: Energy
Name: MANSI SAWANT & Neha Talegaonkar, Std:
Guide: Shaikh Nasreen
School: Marthoma School Maharashtra, Mumbai

ABSTRACT:

In ancient time there was no transport so man has to travel from one place to another. This made a major problem for ancient man. So man started using animals like horse, camels , bullocks for travelling to be more convenient. Then for faster transport man invented wheels.

He used the wheels for various vehicles. Then for his advancement and convenience man invented automobiles. Karl Benz invented his first automobile in the year 1885 in Mannheim. Teacher selected five of us for this project and we five sat together and discussed how to prepare the project. Then the first question that came in our mind was that whether automobile pollution is harmful curse or blessing. Then we conducted survey we made ten questions and went to our colony to ask those questions but we came to known only few people know about it. We thought of making of this project to create awareness among the people about impact of automobile pollution. As we all know that automobile pollution is increasing day by day. It is difficult to survive in the world. Now-a-day's people are using private vehicles that is they are increasing automobile pollution.

Project Code: **Energy-05 (Team)** **Online**

ID:162

Title: Utility of confined energy and its implications using exhaustive survey.

Subject Category: Energy
Name: Sunita Poonaram Gehlot. & Sanjita Sanjay Kokate., Std: 9th.
Guide: Sandhya Sudheei.
School: Mar Thoma school Maharashtra., MUMBAI

ABSTRACT:

Our topic for this project is Utilty of confined energy and its implications through exhaustive survey.Our main objective was to study the wastage of energy,find out solutions to the problems and make the people aware of it through survey.

The study method used was doing interview of the pepole staying in our surrounding areas and in our school.We collected the information on wastage of energy and utility of energy and studied them.Then data analysis was performed.

After carrying out the survey we observed that the people were not aware of wasting the energy,its causes and effects.

We got the results that 35% of pepole save energy and assume that saving energy will improve our future.65% of pepole were not aware of wasting the energy. They feel that using private vehicles,using most advanced technology which are major cause for the wasting the energy.

From our survey we also concluded that there are many effects for the wastage of energy which are affecting the lifestyle of the people. One of the major problem is no progress in villages.

A key to prevent wastage of energy can be every individuals efforts towards it.Little drops make a mighty ocean.So,it is concluded that each of us must take care that they do something like rainwater harvesting,use of solar energy and hydroelectric energy,etc on the individusl level.Even the government end various other organizations companies,NGO's etc can give thier helping hands towards development of small villages,sectors,towms etc and making that place free of problems related to energy.

Project Code: **Energy-06 (Team)** **Online ID:164**

Title: E-TRAIN

Subject Category: Energy
Name: SHAIKH SABRIN SHOUKATHALI & SURAJ RAJENDRA HALDANKAR, Std: IXTH
Guide: MRS. MANJIT KAUR SAINI
School: CHEMBUR KARNATAK HIGH SCHOOL, MUMBAI

ABSTRACT:

In our project we have fixed fans on the roof of the train. When we used blowers to rotate the blades of the fan which work has a turbines. The terminal of the turbines are connected to the volt meter and ammeter which measure the potential difference and the corresponding current thus produced also a bulb is inserted so as to enable to see the visibly the current as it glows. We measure the current produced and potential difference, then using the formula potential into current (VxI) gives us the work done. We have taken 10 - 12 reading by varying the intensity of wind using different blowers. Thus a graph of V versus I was plotted. It was observed that the increased in the wind velocity produced more current.

As per our project the current produced is used to recharge large batteries which can be used to operate simple devices. It can be provided to small villages in our country to satisfy their need of electricity. It has an advantage that a we have huge network of railways which is constantly functioning thus we can get continuous supply of electricity. It solves the problem of scarcity of electrical energy and reduces our dependence on the non-renewal of energy. If implemented actually it is a boon to our nation.

Project Code: **Energy-07 (Team)** **Online ID:165**

Title: To find the impact of deposition of suspended particles on photosynthesis and to suggest differecnt methods to increase rate of photosynthesis process

Subject Category: Energy
Name: Pratiksha Shilvant & Shrikant Mali, Std: 9th
Guide: Mrs. Londhe Shubhangi Rajendra
School: Chembur Welfare Marathi Shala, Mumbai

ABSTRACT:

Summary

Environment is the place where human being stays in their habitat. In the environment there are different levels of predators. Among them green plants are known as 'producer'. Because green plants produces their own food on their own. Other all living organisms are depend on green plants the help of chloroplast solar energy carbon-di oxide and water they produces glucose and as a byproduct they produces oxygen and water. These process is known as photosynthesis is.

Only green plants can utilize the solar energy which we get from scan. Green plants converts light energy into chemical energy. Other wise most of the energy which we get from scan the form of rays does not used in any devices. Thinking of these fact if we want to get rid of energy – crisis we need to harness and conserve energy through converting solar energy into chemical energy. Then only we can transmit these energy in diff.

In environment which is the basic need. In this modern period most important problem which came across to human being is population explosion. There are three basic needs related to human being among that food is the most important need of human being. To fulfill these need we need to increase the rate of photosynthesis through which we can increase total crop yield. There is no other alternative

The average rate of energy capture by photosynthesis globally is immense approximately 130 terawatts which is about six time larger than the power consumption of human civilization. As well as energy, photosynthesis is also the source of carbon in all the organic compounds within organisms bodies. In all photosynthetic organisms convert around 100-150 thousand million metric tons of carbon into biomass per year.

Balanced environment minted conditions are necessary to follow the photosynthesis process in ideal way. But because of industrial revolution cots of hazardous chemicals are thrown out side every day. Which contain carbon monoxide, sulphur dioxide, nitrogen-oxide, nitrates, nitrites etc. work as a pollutant All these pollutant have bad effect on photosynthesis process these shows impact of deposition of suspended particles on photosynthesis. Which reduces the rate of photosynthesis Because of these suspended particles stomata remains close which reduces the transparency of leaf.

Industrial revocation, civilization, pollution, deforestation, chemical revolution, use of automobile vehicles are responsible for different bad impacts on environment. The Suspended particles which are formed in all above process showing decrease rate of photosynthesis.

In this project we have tried to study the impact of
Dioxide on photosynthesis process, same species plants. In which one plant we allow to follow

photosynthesis process where so2 is present in atmosphere whether in other plant we allow to follow photosynthesis process in nursery. Alter that we did starch best for both the plants to check out how much carbohydrates has been produced in photosynthesis. Through these observation we have concluded that sulphur di-oxide worked as a suspended particles in photosynthesis process which decreases the rate of photosynthesis. So that overall production of glucose is lesser in amount.

To overcome on this problem in this project we have suggested different methods to increase rate of photosynthesis.

Now a days the biggest problem that human beings are facing i.e. Energy crisis. To overcome on these problem if we can use the amazing and an accountable energy which we are getting from resources like sun and we have to reduce the suspended particles so that we can increase the rate of photosynthesis we have to the methods where we can increase photosynthesis process. Then only human like will be more happier and secure. For that we need to harness and conserve solar energy and make it available for green plants. By doing this we will have fulfillment of our responsibilities. We have tried all these aspects related to explore, harness to explore, harness and conserve energy in this project.

Project Code: **Energy-08 (Team)** **Online ID:166**

Title: energyand society
Subject Category: Energy
Name: MAHESH GUPTA & AAYUSH HALDE, Std: IX
Guide: KATHRINE JOSHY
School: HOLY FAMILY HIGH SCHOOL, MUMBAI

ABSTRACT:

Our project is an attempt to help our people enjoy the deep rooted culture of our country not only without hampering nature but on the contrary by contributing to the up gradation of the environment

Project Code: **Energy-09 (Team) (Jr)** **Online ID:168**

Title: Impacts of oil spill during ship breaking process on water and algae

Subject Category: Energy
Name: Aman Gala & Juhi Kapadia, Std:
Guide: Hiral Kapani
School: Udayachal High School, Mumbai

ABSTRACT:

Mumbai Port has been the principal gateway to India and has played a pivotal rule in the development of national economy, trade and commerce and prosperity of Mumbai city in particular. Mumbai Port is administered by statutory autonomous corporation known as Mumbai Port Trust (MBPT). There are a number of activities happening at MBPT in Dockyard road. Every year 60-65 ships are either being dismantled or awaiting dismantling process. It takes 5-6 months to dismantle a typical cargo ship.

Ocean going vessel is a mini version of a city and during scrapping, it discharges every kind of pollutants a metropolis can generate oil, heavy metals, asbestos, etc. All these pollutants affect the physico-chemical properties of water, thereby impacting biodiversity. Thus study of impacts of oil spill during scrapping on water and algae was important.

In order to study the impacts of oil spill during ship scrapping process on water and algae, two Locations were identified for sample collection.

Location A – Actual site

Ship scrapping area, dockyard road.

location b – control site

mangrove area, vikhroli.

Water samples were collected from both the sites during high tide in monsoon. The samples were collected to study the oil content in water and its impact on physico-chemical parameters analysed is given below :

1. Odour.
2. Colour.
3. Temperature.
4. pH.
5. Dissolved oxygen.
6. Chemical Oxygen Demand (COD).
7. Biochemical Oxygen Demand (BOD).
8. Oil and Grease.
9. Chlorides.

Salinity.

Air tight bottles called as BOD bottls and twoo chemicals viz. 2ml of Manganese Sulphate solution and alkaline Potassium Iodide solution were collected from Gadark laboratory.

To study the impact of oil spill on algae special chemical lugol solution was made which preserves the algae in natural state and stains it. The samples were kept standing for settling and later decanted. This concentrated sample was observed under ‘phase contrast microscope’ . The

result obtained from Gadark laboratory shows that pH, COD, BOD, Oil and Grease, Chlorides, Salinity is high compared to mangrove area's water than ship scrapping area's water.

Also, dissolved oxygen at ship scrapping area's water was low compared to mangrove area's water. Algae analysis result shows the presence of Cyclotella, Gyrosigma, Chlorogonium algae which are found in polluted waters. They are the indicators of water pollution. Mangrove water shows the presence of Nitzchia and Microcystis which are found where there is light penetration.

On the basis of the analysis of the result, we conclude that there is high oil content in water which affects the physic-chemical parameters of water and algae species. Thus,affecting the energy resources and the biodiversity of marine organisms.

Various materials and methods were used to separate oil from water such as –

1. Corn hair.
2. Coconut husk.
3. Hair.
4. Straw.
5. Sawdust.
6. Mushroom.
7. Polyproyelene mats.

A machine was made to separate oil from water. The oil can be reused and the water can be released in the sea.

Project Code: **Energy-10 (Team) (Jr)** **Online ID:170**

Title: A study on wastage of electricity in day to day life and to create awareness of conservation

Subject Category: Energy
Name: DAKSHA KATE & NIYATHI PREMARAJAN, Std: VIII
Guide: Suma Sankar Nair
School: ADARSHA VIDYALAYA , MUMBAI

ABSTRACT:

Energy is the basic necessity of life. Electricity is the most convenient source of energy. We have reached to such a state that without electricity it is difficult to survive.Wastage of electricity will severely effect the next generation.It is found that many cases due to laziness , appliances are switched off only by remote keeping the switcher on.Our attempt is to find the wastage of power due to this practise and to create awareness about the wastage of energy which is precious.

To study on the wastage of electricity a survey was conducted . As per the survey it is found that

1)100% have common appliances like T.V, fan and lighting.
2)36% of the houses have A.C.
3)93% of the houses have set top boxes and some of these devices were off by using remote.

To find how much electricity is wasted by keeping the device in the stand by mode we developed a methodology.

Three main devices of one sample house were chosen to measure the stand by power.Domestic digital power reading meter provided by M.S.E.B. was used for measurement. T meter was calibrated for date,time,power in KW and unit in KWHr.

The intial reading of power when all appliances along with their switches were off is noted. The reading with selected devices inthe syand by mode, i.e. their switches were on and the devices were off is also noted .The selected devices were kept in the working mode and again the power reading is noted.

On analysis of the data collected ,the stand by power of each device is calculated. From the preliminary survey of 30 samples an average of time duration in which the selected devices were kept in stand by mode is found out.Total stand by power per day, per month is calculated. This gives the average stand by power wasted by one house in one month.It is found that the T.V. with set top box alone gives a power wastage of 3.69 *1000000 KWHr .To generate this energy ,huge amount of natural resources are required.

In Gandhiji's words "Nature is for man's need but not for his greed".This methodology can be used to calculate the power wastage due to different reasons like faulty wiring ,faulty devices and switches with indicator lamp etc.

Project Code: **Energy-11 (Team) (Jr)** **Online ID:172**

Title: Production of BIodiesel from Coconut Oil.
Subject Category: Energy
Name: Sakshi Reddy & Ashita Reddy, Std:
Guide: Mrs Asmita Jadhav
School: Udayachal High School, Mumbai

ABSTRACT:

The rising cost of fuels and the impact of petroleum based fuels is the reason why it has become necessary to produce and use biodiesel . The research on fuels is at a high profile in the world for quite sometime now.Among the alternative fuels used as substitutes for fossil fuels,bio diesel is an import one as it can be produced from vegetable oil,used cooking oils and animal fats by simple chemical processes.Biodiesel is one of the alternative fuels designed to extend the usefulness of petroleum and cleanliness of diesel engine.Biodiesel can be used satisfactory in an engine as it has properties comparable to petroleum diesel.The natural vegetation if India consists of a large variety of plants and trees which provideDifferent types of edible and non edible oil.So production of biodiesel from coconut oil which can be obtained from the costal regions of India will be possible.The method requires to carryout transesterification method and NaOH are mixed coconut oil . The solution is shaken vigorously and allowed to settle to obtain glycerin and biodiesel . This crude biodiesel is the washed with water to remove the glycerin and allowed to settle so that the water gets separated . This so obtained biodiesel can be used in diesel engine with less or no modifications in the engine efficiently , or can be used in an Oil heating pump where the biodiesel is generated to produce heat for cooking and other purposes . Uses of biodiesel will be very beneficial for the environment as it helps reduce the risk of global warming by reducing net carbon emissions to the atmosphere as it has the capacity to lower green house gas emission compared to those of fossil fuels .

Project Code: **Energy-12 (Team) (Jr)** **Online ID:176**

Title: MAGNETISATION OF SEEDS FOR BETTER PLANT GROWTH

Subject Category: Energy
Name: MAHIMA CHAVAN & SIDDHI TAKEKAR, Std:
Guide: Ms.REMYA PARAMESWARAN
School: UDAYACHAL HIGH SCHOOL, MUMBAI

ABSTRACT:

India is an agricultural country.About 70 % of our population depends on agriculture. The development of agriculture has too much to do with the economic welfare of our country. Agriculture is the backbone of the Indian economy. Seeds are the resting system of organs of a future plant. The quality of the plant will depend up on the quality of the seeds. Magnetic therapy is becoming very common now a days. It helps people reduce their back- ache, solve indigestion problems and dealing with depression etc. We thought of exploring the effect of magnetic field on the quality of the seeds, their sprouts and the saplings developed by sowing these seeds.

We placed 60 seeds of moong bean on the South pole of a disc magnet for 6 days. The strength of the magnet selected for the experiment was around 2000 Gauss. The water was also magnetised at the same time by placing opposite poles of magnets (strength of 2000 Gauss) at either sides of a beaker containing water.The water was left for 24 hours in this position. The pH of this water was 7.4 i.e 0.4 units more than the pH of the normal water which is 7.

The magnetised seeds were divided in to two equal parts and sowed in two pots after sprouting them. The sprouts of normal seeds were also sowed.

Sample A Normal seed watered with normal water
Sample B Magnetised seeds watered with normal water
Sample C Magnetised seeds watered with magnetised water

The parameters like seed germination percentage, root length, shoot length and leaf length of the plants in the three samples were compared.

The dry weight and the fresh weight of sprouts of 10 grams normal seeds and magnetised seeds were found out. Both the weights in the magnetised seeds were found to be more than its counter part. At the same time , the protein and the sucrose content in the sprouts were found out from a food lab.

After conducting the tests, we found that the protein level in the sprouts of the magnetised seeds was 0.5 % more than the protein level in the sprouts of normal seeds. The sucrose level in the sprouts of normal seed were 0.36 % more than the sprouts of normal seeds.

Our main objective was that the magnetic field has a positive impact on the seed germination percentage and the overall plant growth.

Project Code: Energy-13 (Team) (Jr)

Online ID:177

Title: Electrograss-pollution free substitute for energy.
Subject Category: Energy
Name: Manuni Dhruv & Vedant Shlok, Std: VII
Guide: Alekha Tanawade
School: Udayachal high school., Mumbai

ABSTRACT:

Man has been searching for new methods to generate electricity from the last few years so as to replace the conventional and non-renewable resources.Natural resources such as coal,water,minerals etc.are found in limited quantities on earth.Due to the overuse of such resources they are getting depleted rapidly.

Recently, man has come up with a new idea of generating electricity from plants.Plants are found in plenty everywhere.Thus, they can serve as an excellent source of electricity this concept of generating electricity from plants such as rice and grass can be used in various ways and can be a graet help in today's world.

Under the theme'Energy and environment we studied and executed generation of electricity from grass.

in today's world, there is a rise in use of natural resource in the urban areas coupled with adverse climate scenarios.In this process,the natural resources are getting depleted and we have a danger of loosing them But as for grass it can easily be found anywhere-anyways.Grass energy is sustainable.

Project Code: Engg-01 (Jr)

Online ID:154

Title: Light Following Robot
Subject Category: Engineering
Name: Varun Menon
Guide: Reena Alphanso
School: Modern English School, Mumbai

ABSTRACT:

Light fllowing robot is a robot that can sense and follow light.This robot can be used in fire fighters to find the location of the fire or it can be used to track solar panels(etc).The robot is made from 3 pcbs- 1 motor driver and 2 Light sensors.One of the light sensors are on the right side of the robot and other one is on the left side. So when we put light on the right side of the robot, the robot moves to the right side and if light is on the left side the robot will move on the left side. If light falls on both the sides then the robot will move in front direction. We can also adjust the sensitivity of the light sensors according to the light present in that area. for eg:- at night time we can make its sensitivity high as there is no sunlight. Now the robot will move even if it senses little light. At day time we can make the sensitvity lower so that wherever it will sense more light it will move to that direction. So it wont get affected by small sunlights and other dim lights.

Project Code: **Engg-02 (Team)** **Online ID:97**

Title: Thermal Protection System
Subject Category: Engineering
Name: Naman Agrawal & Naman Agrawal, Std: 9 C
Guide: <not specified>
School: Dhirubhai Ambani International School, Mumbai

ABSTRACT:

Our experiment entailed designing a Thermal Protection System (TPS) for a spacecraft, which would reduce heat transfer to the spacecraft upon re-entry into the earth's atmosphere. This TPS design could theoretically be used on spacecrafts for this purpose. To investigate, we created four different, unique designs made out of aluminium foil and metal mesh. We attached these designs to a "TPS Base" which was a wooden dowel attached to a metal screw with hot melt glue. The experiment was designed to check which TPS would keep the heat away from the base for the longest time. This could be measured by measuring the time until "failure" or the amount of time it took for the heat to pass through the TPS and melt the glue, thereby breaking the base in half. After testing, we found that Design #3 (see display) took the longest to reach its failure time, probably due to a long conductance path. However, it was concluded that the implementation of Design #3 for spacecraft would be impractical as it was very heavy and used a lot of material. For that reason, it was decided that Design #2 fulfilled our requirements better than #3. As a result, we have concluded that a pointed and streamlined TPS works the best.

Project Code: Engg-03 (Team) Online ID:141

Title: Useful device for old/disable people
Subject Category: Engineering
Name: Deepesh Jain & Deepesh Jain
Guide: Sitalaxmi Parmeshwaran
School: Modern English School Chembur, Mumbai

ABSTRACT:

Our project- Useful device for aged and disabled person aims at opening the door with remote. The old and disable people have problems in walking and hence, are not able to open the door quickly. So we are making the project from which we can help these people in opening the door.

At first device was made using printed circuit boards (P.C.B) of motor driver, IR detector. Motors, batteries, some wires and a remote after this circuit connection was made in the model. Various trials were conducted on the model. Distance between the door and the person was varied. These trials were conducted at old – age homes.

After the trails final improvements were done and it was checked once again. This improvements concluded that aged and immobilized people can open the door at the distance of 4 to 5 meters and they don't have any problem in opening the door.

Project Code: Env-01 (Team) Online ID:135

Title: design a seat predominantely made of waste papers
Subject Category: Environment
Name: saikrishna Chimala & Dineshkumar Nadar, Std: 9th
Guide: Sitalakshmi. Parameswaran
School: Modern English School, Mumbai

ABSTRACT:

Synopsis Design a seat predominately made of waste paper With50%of the average landfill mass comprised of paper, and with the growing need to decrease landfill input for obvious reasons, the ability to turn this paper into usable strong blocks is of great advantage. The present study is comprised of waste paper blended into the slurry additive such as cement is blended with paper form stabilizing and strengthening purpose. T he discarded papers were soaked in water until it became fully saturated and softened, the paper was blended to form fibrous pulp, the water was removed from the slurry and it was pressed into a mould. Using chip boards (plywood) a box was constructed of range 5*5*5 cm. In one side of the box a square cube is cut. A small cube was cut and placed on the opposite side. Two different boxes were made. The blocks thus prepared had white cement added to it .It is light weight and cost effective. The present blocks made completely of paper product and small amount of cement /additives it is a marked improvement over the commercial blocks. The slurry product can be used as a motor in conjunction with building blocks that have been made from the slurry, and it can be used as a plaster when mixed with conventional cement and sand motar

Project Code: Env-02 Online ID:147

Title: To Study The Effects Of Yellow Oleander Chalks On Cockroaches
Subject Category: Environment
Name: Sanjana Devarajan , Std: 9th
Guide: Sitalakshmi Parmeswaran
School: Modern English School , Mumbai

ABSTRACT:

Cockroaches are one of the most commonly noted household pests. They feed on human and pet food, and can leave an offensive odour. They can also passively transport microbes on their body surfaces including those that are potentially dangerous to humans. Cockroaches have been shown to be linked with allergic reactions in humans as also with asthma. Although there are number of chemical pesticides for destroying cockroaches, it is the need of the hour to find a suitable alternative bio-pesticide. Yellow oleander is a poisonous shrub. The most poisonous part in this shrub is the milky sap which flows throughout the shrub. Our project aims to make use of the extract of this shrub as a possible alternative to control cockroaches. Initial experiments were conducted with aqueous and solvent extracts, And the effect on the cockroaches were recorded. Chalks were prepared using the extract with varying concentrations. A number of experiments were conducted with three trials to see the affect of the chalk on the cockroaches. A control sample of Neem was maintained with three trails. The results show that the yellow oleander chalk with 5% was the most effective with 95% mortality rate of the cockroaches in 15 minutes. The control sample's mortality rate was 20%. The data was analyzed. And the results let to the conclusion that the yellow oleander chalk was a suitable, eco-friendly and cost effective alternative for chemical pesticides.

Project Code: Env-03 (Team) (Jr) Online ID:152

Title: The ceiling that made of thermocol food packages
Subject Category: Environment
Name: Tanvi Sood & Megh Vyas
Guide: Reena Alphanso
School: Modern English School, Mumbai

ABSTRACT:

On warm, summer days,the air in urban areas can be 5 degrees centigrade hotter than its surrounding areas.We are entering the hottest-which is also the longest -phase of the year.During this period,the heat outside is oppressive and the heat and stuffing us inside the house in tolerable limits. Hence we thought of making the ceiling board that was made of waste thermocol food packages garbage box how to make the ceiling board by using used foam food boxes and compare the qualities of ceiling board that is made of foam food box garbage with ceiling board in the market in the aspects:weighting,bending,strength,water proofing,heat insulator,and heat transmission period.Pieces 0.2 to 0.5 cm in size of used food boxes were mixed with cement,and water in the ratio 2:1:1:1,3:1:1:1,4:1:1:1,5:1:1:1 filled it in the template and dried in the sun.

The best ceiling board that made of foam food box garbage was made of ratio 4:1:1:1.the ceiling board that made of used foam(polystyrene).Food boxes was the best in test of water proofing, heat insulator,and heat transmission.period when compared to three kinds of trading ceiling board.

Project Code: **Env-04 (Team) (Jr)** **Online ID:153**

Title: Bricks made from organic waste

Subject Category: Environment
Name: Komal Mane & Bhakti Dhumal, Std: VII
Guide: Reena Alphanso
School: Modern English School, Mumbai

ABSTRACT:

The environmental problems in the brick industry have been exacerbated by cheap access to resources such as soil, water, coal, biomass and labour. This results in irreversible environmental damage in terms of depletion of top soil, water and coal.

High cost of energy for brick making and in other sectors, including households, motivated at exploring the use of waste and residues as alternative . Cow-dung imparts useful properties to the raw bricks when mixed with brick clays. Dry dung is as good as saw dust.

To reduce our consumption of these non-renewable resources, we made effective use of cow dung to make bricks along with brick clay .

For the study clay was collected. Dry dung collected from nearby gosala was sieved to eliminate stalks and other coarse impurities like gravel. Raw brick samples with dung contents ranging from 5 - 50% by volume were moulded. Contents of each sample were thoroughly mixed and enough water was added to give a workable plasticity. Each sample was moulded in a single compartment wooden mould. moulds dimensions was (23 x 11 x 7 cm). All samples were-shade dried, and fired in a furnace .Sample made were packed and sent for testing strength, water absorption and density.

Cow-dung, when added to brick clays modifies properties of those clays and results in better brick qualities compared to other organic waste additives. 20 -3 5% cow-dung in clays is the best ratio .It results in higher strength & density, lower water absorption and losses.

Project Code: **Env-05 (Jr)** **Online ID:171**

Title: Influence of mulch on soil physical propertey

Subject Category: Environment
Name: Jeel Salia, Std: 8TH
Guide: Lalitha Shankar
School: SVDD ENGLISH MEDIUM SCHOOL, Mumbai

ABSTRACT:

Mulching is one of the most important techniques to grow healthy plants and maintain beautiful landscape. Mulch is any material applied to the soil surface for protection or improvement of area covered by soil thereby recycling waste matter.

Our daily routine begins with a hot cup of tea or freshly ground filter coffee flipping through pages of crisp newspaper. But very soon these become waste products. In order to recycle and reuse them by adding them as mulch to the soil, the project "Influence of Mulch on Soil Physical Properties" was started.

Initially experiments were carried out using potted flowering plants.

Tulsi and Hibiscus are used widely for worship. Jui is adorned for its rich fragrance. Periwinkle or Sadaphuli grows widely on roads. Wheat is the staple food of most Indians. Moong seeds are a rich source of proteins. Hardly any dish is cooked without chilli which is known for its hot & pungent flavor. In many parts of the world chilli is grown as an ornamental plant.
Newspaper mulch cakes were made by soaking old newspaper in hot water to remove chemicals/ ink. It was then pressed to make cakes.

Five sets of potted plants of all the 4 types i.e. Tulsi, Hibiscus, Jui and Perwinkle were taken.

Organic mulches of used tea, coffee powder, old newspaper cakes were added to 3 sets of pots. A mixture of all these were added to 4th set of pots to each type of plant. One set of plants of all 4 types was kept as control. Measured quantity of water was added daily. The pH, temperature was recorded daily. The growth of plant was observed for about 25 days.

Tulsi grew best in soil with tea mulch showing an increase of 17 cm in height and with 105 new leaves. Old newspaper cakes as mulch proved to have maximum water conservation benefit. (26 ml after 20 days)

Hibiscus grew best in soil with newspaper cakes as mulch showing an increase of 10 cm in height and 24 new leaves. This also had maximum water retention capacity compared to other mulches. (50 ml after 20 days)

In Jui plant best growth was seen with tea leaves mulch, there was an increase in plant height by 13 cm and 55 new leaves grew .Also water conservation was maximum in tea and newspaper mulch (75 ml after 20 days)

Project Code: **Env-06 (Team) (Jr)** **Online ID:178**

Title: NOVEL WAY TO RECYCLE CIGARETTE BUTTS

Subject Category: Environment
Name: Kasturi pawar & Aditya Gagadharan, Std: vii
Guide: Mrs Sitalakshmi. P
School: Modern English School, Mumbai

ABSTRACT:

Cigarettes produced worldwide annually lead to many thousands of kilograms of toxic waste. Cigarette butts accumulate in the environment due to the poor biodegradability of the cellulose acetate filters .It can take up to 18 months or more to break down under normal litter conditions . Toxic chemicals trapped in the CB filters can be leached and so cause serious damage to the environment. Cigarette filters are composed of a cellulose acetate fibres. It can take years, for the fibres to decay .

Our study aims at recycling the cigarettes butts filters.The cigarettes butts were collected and it as disinfected by heating . the filters were separated . and grinded.

suitable sprit was added to the solvent/ground cigarette butt filter mixture.

A semi-solid material was achieved. The mixture was pressed in a

screw jack press with uniform pressure and heat for 3 minutes. Three trials were conducted . All the three samples were good .

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All the samples were tested for physical and chemical properties and compared with a control EPS. Water absorbency showed 0% weight gain.

The tests for physical and chemical properties indicated that the acetone was a good solvent . . The liquefied collection may be used as an adhesive or an additive to any exterior coating application of finished goods.