



# KUMARI ARIVIAL PERAVAI

YOUNG SCIENTISTS PROGRAM 2014-2015

**NATIONAL SCIENCE DAY CELEBRATION ON SCIENTIFIC  
DEVELOPMENT IN INDIA**

At

**SIGMA COLLEGE OF ARCHITECTURE**

On

**28<sup>th</sup> OF FEBRUARY 2015**

## Reports by,

Gby Atee

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**Gby Atee,  
Green team.**



Our first meet on 26/10/14 at LMS Boys Higher Secondary School was a meet of regulation. Then was the two day Scientific Awareness Camp on 8/11/14-9/11/14 at CSI Institute of Technology, Thoivalai which gave us a good start on Sustainable Environment, and the next meet at MACET on 22/11/14 which was the Management Concept in Thirukkural, which

created a link between the present generation and the past and the fourth meet at Govt. Medical College, Asaripallam on 29/11/2014. It trained us to become doctors and the next camp was a Study on Sustainable Environment on 6<sup>th</sup> and 7<sup>th</sup> of December. Next was a two days camp which was held at various places like Thirukurumkudi Nambikovil then PSN College and then finally at Vivasaya Seva Sangam, Puliyankudi. The next was the Coastal Environmental Study Camp and it was one of the best. We then planned for the team meet on 04/01/2015 at Hindu Vidhyalaya School, Marthandam through we realized the true caliber of our members. The next meet at Government Library, Pienkulam on 17 January was the Arivial Tamil Muzhakam, and this meet highlight the importance of Mother tongue Tamil. After the Technical Presentation on Science & Technological Innovations held at Maria College of Engineering and Technology, Attoor on 14th of February was the **National Science Day Celebration on Scientific Development in India, on 28<sup>th</sup> of February at SIGMA College of Architecture, Moododu.**

**“To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science” - Albert Einstein**

I with so much of zealousness to attend the National Science Day program prepared myself for the meet and I was sure that this would be a greatly advantageous one. Inquisitiveness is an aspect that each one must have within them. A program which gives us the student community an opportunity to learn, analyze and present is sure to develop our inquisitiveness in all fields in our forthcoming future. After a sumptuous breakfast we all moved to the seminar hall and the meet commenced. Dani Rovas of Maroon team compeered the session. Firstly, she welcomed all the dignitaries on to the dais and when the dais was full, we all chanted an invocation to goddess Tamil. The dignitaries on the dais were welcomed. They include; Dr. James Wilson, Dr. Allan James, Mr. Muthu, Mr. Joseph Fernando, Mr. Fasaludin and Mr. Velaian.

She briefly quoted the importance of National Science Day and introduced the program. National Science Day is celebrated with an aspiration to honor Sir C. V. Raman for his invention of the Raman Effect on 28<sup>th</sup> February 1928. Sir C. V. Raman stated that change in the wavelength of light that occurs when a light beam is deflected by molecules using the Raman Effect for which he was awarded Nobel Prize in 1930. The basic objective of observation of National Science Day is to spread the message of importance of science and its application among the people. National Science Day is being celebrated every year to widely spread a message about the significance of scientific applications in the daily life of the people. Every National Science Day has a theme and the theme of the year 2015 is **“Science for Nation Building”**. Science has now touched every sphere of India.

Then she welcomed the lifeline and the organizer of KAP, Mr. Velaian to give away the introductory address. He began with news, which made us all keener to attend the program. He stated that KAP is the only organization in Kanyakumari, which celebrates National Science Day in a prolific way amid young children with scientific temper. We all are blessed by the almighty to have this kind of an exceptional opportunity. He welcomed all the dignitaries and mentioned their effort and active participation in making KAP a successful one. He also insisted us to put our full and full effort on our works and only seek the assistance of people who are associated with KAP. He added that only in Indian education system the teacher talks for a longer time. In the education system of other countries students talk longer time than teachers which is a way to improve and develop the talent of the students. Nowhere in India, we get this kind of an opportunity to present on the developments of the nation but KAP has given us this kind of an opportunity and so we must make use of it to the extent.

Then Dr. James Wilson was welcomed to share his views with us. Firstly, he appreciated KAP for its effort and stated the invention of Sir C. V. Raman’s “Raman Effect”. He added that the invention of Sir C. V. Raman has lead to the invention of many things especially in medical field. The yellow lamps converted into fluorescent lamps and then CFL and finally LED. There is quite a lot of energy saving from the past invention and the ones, which we use now. In short, this

development consumes less energy and is more efficient. He noted that in the future there might be inventions that use solar energy to make a remote function. Weather plays a major role in energy conservation. In places like Finland the sun is up only for 3 hours, thus using solar energy is not a good idea. Instead, they must change their dependence on other factors. Choosing this many topics on scientific development in India and presenting them is not a simple thing. It involves great effort. We are guided in a very good manner and so it is our work to search for things and become successful.

Then Mr. Joseph Fernando, the Principal gave a good appealing talk. He asserted that we have a good science but we have crossed our limits without thinking about the future impact of it. "Too much of anything is good for nothing", is the best proverb that suits the present generation I felt. When there is any development in science and technology, we must keep in mind the environment, land, atmosphere, water and the future generation. If our thoughts were extended towards all direction in this way then we would have had a control and limit and the future would be sustainable. Coco-cola Company is increasing the water crisis in India. Granite hillocks are broken down and this has reduced the groundwater table considerably. Due to this, the farmers lack water for agriculture and thus they move in search of other jobs. Finally, they end up becoming poor and sink in poverty. Science and technology must be in a way that solves problem and not create problem. Creating awareness today will make the young minds think and come up with solution, which would transform them to scientists.

Mr. Muthu, Deputy Manager IPRC, Valiamala gave a talk keeping in mind the quote, **"Awareness is like the sun. When it shines on things it transforms them."** He gave an excellent talk, which made us all responsive about our environment and science. He asserted that we must be in pursuit of science, if we call our self, scientists. To become a scientist it is very important to identify our talents and KAP is creating scientists for the future of India. Awareness is, being aware of what is around us. On the same day at Trivandrum, a Climate Change and Climate Control International conference is being held but we being close to Trivandrum are not aware of it. We must put our effort in knowing what is going on around us. We are given a lot of opportunity to learn science, but most are not aware of it and even though some know, they are not using it in the way it must be used. The Planetarium at Trivandrum and Museum at Mahendragiri are rare sites that offer us a chance to know more about space science and its development over time. We must have a glance at these places and make use of it to its highest scope.

The question that provoked in C. V. Raman's mind, **"Why the Ocean is Blue?"** made him invent the Raman Effect. His quest for it made him receive the Nobel Prize, which is why we remember him until today. We spent most of our time on entertainment. Instead we must spent our time on learning more than what we have to. As we say, nothing is impossible we must prove it by making things possible. Using the Hubble telescope, the scientists have found that one particular star is not in its previous position. We must attend science fair and improve our knowledge. Knowledge has no saturation. We must develop our interest in science and use our creativity. He quoted that **"Don't walk in the beaten trail but create a new trail and make others walk on it."** Indians are not shying because of the reason that we do not have a proper environment. "Technology and Science can either create or destroy". He halted with this and made us all feel great and it was a

good start. Dani gave the vote of thanks and we move on to the next session and Lekshmi compeered from then on.

The first presentation was by red team leader, **Abina**. The theme on which she discussed was **Chandrayaan**. Chandrayaan was the first mission to moon by India. The mission life was for 2 years. It was sent for the main purpose of Remote Sensing and Planetary Science. It was launched on 22<sup>nd</sup> of October in 2008. By launching Chandrayaan India became the fourth nation to land on moon. Chandrayaan achieved 95% of its objectives. It found water on moon. Chandrayaan - II is expected to be launched by 2017 and it will be a Mars Rover. Specific areas of study include;

- High-resolution mineralogical and chemical imaging.
- Searching for surface lunar water-ice.
- Identifying chemicals in rocks.
- Observation of X-ray spectrum.
- Providing new insights in understanding the Moon's origin and evolution.

She concluded by saying that Chandrayaan - I laid a great foundation for the development.

Then was the turn of **Raksha** and she discussed on the subject **Prithvi**. Prithvi is a surface-to-surface short-range ballistic missile developed by DRDO of India. It was developed under the Integrated Guided Missile Development Program. The Government of India launched it in 1983 to achieve self-support in the development and production of wide range of Ballistic Missiles. The development in Prithvi is under 3 main projects. They are;

- **Prithvi I**- Army Version which can travel upto 150 km with a payload of 1,000 kg
- **Prithvi II**- Air Force Version which can travel upto 250 km with a payload of 500 kg
- **Prithvi III**- Naval Version which can travel upto 350 km with a payload of 1000 kg

**Mangalyaan** was the topic on which **Induja** presented. “History has been created today. We have achieved the near impossible”, - Modi. India was the first Asian nation to send a mission to Mars named „MANGALYAAN“. The mission was launched on 5<sup>th</sup> of November 2013. The mission duration was 6 months. Mangalyaan is orbiting Mars since 24 September 2014. The specification include: Lyman Alpha Photometer: It measures the intensity of light, Martian Exospheric Neutral Composition Analyzer: it measure the number of protons and neutrons in the Mars’s atmosphere, Mars Color Camera: takes colour image, Methane Sensor: measures the amount of methane in the atmosphere and Thermal Infrared Imaging Spectrometer: studies the amount minerals present in Mars.

**Sabrina** then shared ideas on **Param Super Computer**. Param Super Computer is considered as the fastest computer. The word param means Parallel Machine. Though it does not look like a computer it acts with a greater speed than a computer. It is used by weather forecasters and in military for testing new vehicles. Vijay Bhatkar invented it. This computer also assists in the

development of nuclear weapons. Param Series;

- **PARAM 8000:** It was a distributed memory architecture with which had 64 CPUs.
- **PARAM 8600:** PARAM 8600 was an improvement over PARAM 8000.
- **PARAM 10000:** PARAM 10000 used several independent nodes.
- **PARAM Padma:** It was introduced in April 2003. The maximum storage capacity was 1 TB.
- **PARAM Yuva:** It has a maximum speed of 38.1 TFLOPS and a maximum speed of 54 TFLOPS.
- **Param Yuva II:** Latest machine in the series of PARAM.
- **PARAM net:** It is a high-speed high bandwidth developed for the PARAM series. It was first used in PARAM 10000.

**Vinoj** then gave us a brief idea about **Agni-I**. Agni-I is a short-range ballistic missile developed by DRDO of India under the Integrated Guided Missile Development Program. It is a single-stage missile, which was developed after the Kargil War. It was first launched on January 25, 2002 from a road mobile launcher at Integrated Test Range, Wheeler Island. Agni-I can travel upto a range of 700–1250 km. The 15-meter tall Agni-1 missile, weighing about 12 tones, is capable of carrying both conventional as well as nuclear warheads of 1,000 kg.

Then was the turn of **Pradeep Narayanan** to present on his topic **Tejas Combat Aircraft**. The Tejas is a single-seat, single-engine, multi-role fighter which was developed by Hindustan Aeronautics Limited for India. It can travel at a maximum speed of 20025km/h. The range of kilometers that it can fly to its maximum is 3000km. It carries arsenal and thumps over the enemy targets. It also consists of CSH23 gun and the bullets travel very swiftly.

**PSLV** was the theme on which **Mejalin Arno** presented. The Polar Satellite Launch Vehicle, commonly as PSLV, is a dispensable launch system that was developed and is operated by ISRO. It was developed to allow India to launch its Indian Remote Sensing satellites. PSLV can launch small size satellites into geostationary transfer orbit. The gross weight of PSLV is 294 tones and it has 4 stages. It can be used for analyzing the agricultural status, for forest conservation and for many more purposes.

**Ragul** then shared some interesting facts about the development of **Aryabhata Satellite**. Aryabhata is an Indian mathematician and an astronomer. He explained about the lunar and the solar eclipse. The Aryabhata satellite was launched on 19<sup>th</sup> of April in 1975. The Aryabhata later developed into PSLV, GSLV and Chandrayaan - I and II. It was sent for the purpose of monitoring and studying the atmosphere.

**BrahMos** was the topic on which **Nishanth** presented. The BrahMos is a short-range ramjet supersonic cruise missile that can be launched from submarines, ships, aircraft or land. It was an effort of both India and Russia. The name BrahMos is formed from the names of two rivers, the Brahmaputra of India and the Moskva of Russia. It has the capability of attacking surface targets by flying as low as 5 meters in altitude. It is the only missile that can be launched from a submarine. It uses solid and liquid propellants. It is the world's fastest cruise missile. It can gain a speed of Mach 2.8, and has a maximum range of 290 km.

The last member of red team to present was **Niveth Shankar**. The theme on which he discussed was **GSLV**. Geosynchronous Satellite Launch Vehicle is a disposable launch system operated by ISRO. It was developed to enable India to launch its satellites without any reliance on foreign rockets and providers. GSLV has marked 8 successful launches till today. It was initiated in the year 190. Chandrayaan - II is expected to use GSLV and would be launched soon in the coming years. It uses Vikas engine and has solid, liquid and cryogenic stages involved. GSLV is generally designed to send communication satellite.

Blue team leader, **Jefin** then presented on the theme **Yellow Revolution**. Yellow revolution refers to sudden increase in the production of edible Oil due to the plantation of hybrid oil seed like mustard, sesame, etc. The growth, development and adoption of new varieties of oilseeds doubled oilseeds production 1987- 1997, was catalyzed by the Technology Mission on Oilseeds, brought about the Yellow Revolution. Yellow revolution means the cultivation of mustard as a part of crop rotation. It prevents the soil from being eroded and at the same time gives a rich crop of Oil seeds. The most suitable method for Yellow revolution is organic farming. It is used to improve technology for oilseed production, double production of oilseed. India is presently the 4<sup>th</sup> largest producer of oilseed in the world. The most common oilseed in Kanyakumari District is coconut.

**Ashmi** gave us brief idea about **Raman Effect**. Raman Effect, change in the wavelength of light that occurs when a light beam is deflected by molecules. When a beam of light passes through a dust-free, transparent sample of a chemical compound, a small fraction of the light emerges in directions opposite direction of the incoming beam. Most of this scattered light is of unchanged wavelength. A small part has wavelengths different from that of the incoming light. In short Raman Effect can be said a scattering of light.

Then was the turn of **Rudra** to share her views on the topic **Operation Food**. Operation Food was established in 1981 to tackle the growing problem of hunger. Operation Food Search has become the largest distributor of free food in the St. Louis bi-state region helping to feed the areas poor and hungry. The food is issued to the partner agencies and the partners distribute the food to the needy. The food is nutritious, edible and healthy.

Then **Shyamini** gave us a brief idea about **Blue Revolution**. Blue Revolution means the adoption of a package programme to increase the production of fish and marine products. The Blue

Revolution in India was started in 1970. There are more than 1800 species of fish found in the sea and inland waters of India, of which a very few are commercially important. The fishing season extends from September to March. The higher fish production in the Arabian Sea is due to the broader continental shelf. The important sea fish include catfish, herring, mackerels, perches, mullets, Indian salmon, shellfish, eels, anchovies and dorab. Similarly, the main fresh water fish include catfish, loaches, perches, eels, herrings, feather backs, mullets, carps, prawns, murrels and anchovies. The fish production in the country has increased from 0.75 million tons in 1950-51 to 68.69 million tons in 2006-2007.

**Silicone Implant** was the topic on which **Siyana** shared her thoughts. Silicone implant is used to change the eye colour permanently through a surgery. Iris determines each person's eye color. An artificial iris is a thin, flexible, non-toxic prosthesis which is compatible with body tissue. This can also be used for cosmetics and we can choose the colour as we wish. Removing an implanted silicone is also possible by another surgery, which removes the existing one and sets another new one in the same position.

**Navinjith** then presented on the theme **KAMINI**. Kalpakkam Mini reactor is a research reactor at Indira Gandhi Center for Atomic Research in Kalpakkam, India. Its first criticality was on October 29, 1996. It produces 30 kW of thermal energy. KAMINI is cooled by light water, and fueled with uranium metal. It is the world's only thorium-based experimental reactor, as of 2006. KAMINI was the first reactor in the world designed specifically to use uranium fuel. The fuel is the alloy of uranium and aluminum in the form of alloy.

**Shyam** then gave us a brief idea on the topic **Green revolution**. Green Revolution in India began in the 1960s, through the opening of high-yielding crop varieties, which led to an increase in food production in India. It began after high-yielding wheat was first introduced to India in 1963 by American Dr. Norman Borlaug, who is known as the Father of the Green Revolution M. S. Swaminathan is an Indian geneticist who is known as "Indian Father of Green Revolution" for his leadership and success in introducing and developing high-yielding varieties of wheat in India. He worked on it with an aspiration to get rid of hunger amid the world's poor.

**Aglin Bala** then discussed on the topic **Kallanai Dam**. Kallanai is an ancient dam built across the Kaveri River in Tiruchirapalli District Tamil Nadu. The dam was constructed by the Chola king Karikalan around the 2<sup>nd</sup> Century AD and is considered one of the oldest water-diversion structures in the world, which is still in use. The purpose of Kallanai dam was to divert the water to a fertile region through channels.

The last member of blue team to present was **Sree Meera** on the theme **INS Vikramaditya**. INS Vikramaditya is an aircraft carrier, which is in service with the Indian Navy from 2013. Its other name is floating city. The Indians got it from the Russians for about US\$400 million for purchasing it from Russia. It was commissioned on 16 November 2013 at Russia. On 14

June 2014, Prime Minister of India Narendra Modi formally initiated INS Vikramaditya into the Indian Navy. It has 4 propellers and is used to fight enemies.

**Reshma**, Maroon team leader then presented on the theme **INS Arihant**. INS Arihant is the guide ship of India that is a nuclear-powered ballistic missile submarines. The 6,000-ton vessel was built at the Ship Building Centre in Visakhapatnam. It was launched on 25<sup>th</sup> of July 2009. It is the first ever built nuclear submarine. It has a length of about 112m, draft of 10m and a beam of 11m. It is used for the defense purpose. It works using a nuclear reactor. It has the ability to stay longer than usual time under water. It uses a periscope to find enemies and gets into action once it sees them.

Then the co-leader of Maroon team, **Dani Rovas** presented on the theme **EDUSAT** and its development in India. EDUSAT stands for "Educational Satellite". Edusat is the first Indian satellite built exclusively for serving the educational sector. This is a Geo-synchronous satellite. The developments due to it include; Video conferencing, E-Learning, Supports curriculum based education, Interactive distance education and Teacher's training. The main technology in it is Audio-Video interactive communication. It provides the most interactive class and conferences with experts can be common which develops the skills of the children making them ready to become the future of India.

**Mereshea** then conversed on the theme **Solar Park at Charanka Village at Gujarat**. This solar park is Asia's largest solar park and is India's first Solar Park. It generates about 605 mega watt of electricity. The solar panel is made up of small cells. Each of these cells uses light to make electrons move. When there is abundant electrons electricity is generated. The cells are made up of 2 silicon layers. The first layer is loaded with electrons. When the light hits the first layer, the electrons move. The movement of the electrons generates electricity. As it is non polluting, little maintenance is required and is infinite it is greatly beneficial to the community.

**Jenisha** then gave us a clear idea about **Apsara reactor**. India's First Nuclear Reactor was Apsara. It was also the first nuclear reactor in Asia. It indicated the arrival of India's nuclear energy programme. Dr. Homi Bhabha himself made the design for the reactor and the reactor was built entirely by Indian engineers in a record time of about 15 months. Apsara is a swimming-pool-type reactor loaded with enriched uranium as fuel. The fuel core is suspended from a movable trolley in a pool filled with water. The pool water serves as coolant, mediator and reflector, besides providing the protection.

Then was the turn of **Kalidhas** to present on **Pokhran**. Pokhran is a city in the Jaisalmer district of Rajasthan. It is a remote location in the Thar Desert. This region has served as the test site for India's first underground nuclear weapon detonation. Until 1974, it was called Bhabha Atomic Research Centre. The devices used are highly explosive and certain army tests are taken place along with bombs. It is still an active nuclear test site and has made six successfully known tests.

Then **Abila** gave us a brief idea about **Yamuna Expressway**. It is a 165 km long expressway, connecting Greater Noida with Agra of Uttar Pradesh. It is India's longest six-lane controlled-access expressway stretch. The total project cost was 128.39 billion. It was inaugurated on 9 August 2012 by Chief Minister Akhilesh Yadav. The reason for its construction was to minimize the travel time connecting people commercially as well. The construction started by December 2001. At present nearly 100000 people travel across it every day.

Then **Shifi** gave us ideas about **Bt. Eggplant Hybrid**. Bt. Eggplant Hybrid is a genetically modified version of a regular brinjal. It is also called transgenic brinjals. The modified version has calories of 25, Sodium 2mg, Potassium 229mg, Sugar 3.5g, Protein 1g and magnesium 3%. Indian is a center for brinjal production. Earlier the Bt. Technology was cultured in fermenters. It has the capability of making the insects poison neutral and it does not harm the insects anymore. It can cause liver damage and has a bad impact on the human health.

**Aruna** then presented on the theme **LPG Liberalization, Privatization and Globalization**. Indian economy underwent many changes from the 1960s. The new model of economy, which is followed now, is called the LPG Liberalization, Privatization and Globalization. These changes took place for business, manufacturing, and financial services industries aimed at lifting the economy of the country to a more proficient level. Liberalization refers to the breaking of government regulations. Privatization refers to the participation of private sector businesses in businesses and services transfer of ownership from the public sector to the private sector as well. Globalization stands for the consolidation of the various economies of the world.

**Cloned Animal** was the theme on which **Prabin Kumar** shared some ideas. Cloning produces genetically identical copies of a biological body. In reproductive cloning, researchers remove a mature skin cell, from an animal that they wish to copy. They then transfer the DNA of the donor animal's skin cell into an egg cell that has had its own DNA-containing nucleus removed. The egg is allowed to develop into an early-stage embryo in the test-tube and then is implanted into the womb of an adult female animal. Eventually, the adult female gives birth to an animal that has the same genetic composition as the animal that donated the skin cell.

Then was the turn of yellow team members to present their presentation, the first member was **Edin Jijo** and he presented on the topic **Triple Helical Structure of Proteins**. Sir Gopalasamudram Narayanan found the Triple Helical Structure of Proteins. Collagen is a connective tissue of our body. It can be used in cellular architecture and to design vaccines. Collagen is vital for skin elasticity. Collagen is a protein made up of amino acids, which are in turn built of carbon, oxygen and hydrogen. Collagen contains specific amino acids – Glycine, Proline, Hydroxyproline and Arginine. Collagen makes up approximately 30% of the proteins within the body. Collagen helps to give strength to various structures of the body and protects structures like the skin by preventing absorption and spreading of pathogenic substances and cancerous cells.

**Abhirami** yellow team leader then presented on the theme **Thermal Ionization Mass Spectrometer**. Ionization is the process by which atoms or molecule gets a negative charge to form ions. Thermal Ionization Mass Spectrometer measures the isotopic radiation. In it the ion source produces the ions, the analyzer produces beam and analyzes it and the collector collects the beam. It can be used to decide the quality of the material and the measure its quantity.

**Tata Nano** was the theme on which **Jereshea** discussed. She stated that Nano is the most fuel-efficient petrol car and is produced by the multinational company TATA. The first car was put into action on March 23<sup>rd</sup>, 2013. Normal cars uses steal body. Nevertheless, Nano uses plastic body, which is highly inflammable and is not apt for long journey. The car has an unbalanced center of gravity. The engine used is two cylinder gasoline engines. It offers a mileage of 20km/l and its maximum speed id 90- 100km/h. 3 accelerators are being used in a Tata Nano.

Then was the turn of **Malavika** to share her thoughts on the theme **Yoga**. Yoga is a physical, mental and spiritual practice that denotes a variety of practices and goals in Hinduism, Buddhism and Jainism. Panchaly is the father of Yoga. The most common ones are the Hath yoga and Raja yoga. Yoga became popular in 1980s. Yoga must be practiced in empty stomach. By practicing yoga one can be free of every disease and it avoids the symptoms of every disease. Yoga decreases the pulse rate, decreases the EMG activities, increases the energy level and decreases the respiratory rate thus maintaining a healthy body. Yoga also helps in decreasing glucose level, decreases the level of sodium, decreases the total cholesterol in body, decreases the amount of ATP and increases Vitamin C. Yoga is technique that can control the body and the mind as a whole.

**Argnishya** then gave us a clear-cut idea about **Interaseptar Sewage System**. In 1976, the RVRS was awarded with a grant for the construction of the sewage plant. This reduces the pollution level in water and is cheaper than other methods. The sewage can separate substances like oil, plastic, twigs, solids, grease. They segregate the waste from the water and after water purification, it is distributed to the people for various purposes.

Then was the presentation by **Vidhya** on the theme **Cosmic Ray**. Cosmic ray is the term given to high-energy radiation, which strikes the Earth from space. Some of them have ultrahigh energies in the range 100 - 1000 TeV. Such extreme energies come from only a few sources like Cygnus X-3. The peak of the energy distribution is at about 0.3 GeV. The intensity of cosmic radiation increases with altitude, indicating that it comes from outer space. It changes with latitude, indicating that it consists at least partly of charged particles, which are affected by the earth's magnetic field. Almost 90% of the cosmic rays, which strike the Earth's atmosphere, are protons and about 9% are alpha particles. Electrons amount to about 1%. About 0.25% is light elements and this has greatly enriched these elements in the universe.

**Ragul** then presented on **Ultra short radio waves**. Radio waves are of five different types: Very-short frequency, Very-high frequency, Ultra-high frequency, Super-high frequency and Extremely high frequency. The frequency of Very-high frequency ranges from 30MHZ to 300MHZ.

The range of Ultra-high frequency is between 300MHz and 3GHz. 3GHz to 30GHz is the frequency of Super-high frequency. Extremely high frequency has a frequency that varies from 30GHz to 300GHz.

**Vijay Raj** and he presented on the theme **Invitro fertilization**. In vitro fertilization is a process by which an egg is fertilized by sperm outside the body. The process involves monitoring and stimulating a woman's ovulatory process, removing egg from the woman's ovaries and letting sperm fertilize them in a liquid in a laboratory. The fertilized egg is cultured for 2–6 days in a growth medium and is then implanted in the same or another woman's uterus, with the intention of establishing a successful pregnancy. The first successful birth of a test tube baby, Louise Brown, occurred in 1978.

The last member of yellow team was **Leena** and she presented on the theme **Zero**. The Babylonians, Mayans and Indians invented zero independently; although some researchers say the Babylonians were influenced by the Indian number system. The Babylonians got their number system from the Sumerians, the first people in the world to develop a counting system. Aryabhata one of the world's greatest mathematician-astronomer, was born in the south of India in Kerala. His greatest contribution has to be ZERO, for which he became immortal. Zero was implicit in Aryabhata's place-value system.

Then I shared my thoughts on the scientific development in **Cataract Surgery**. A cataract is a clouding of the lens in the eye that affects vision. Cataract is the protein of the natural lens that gradually becomes cloudy. The lens is a clear part of the eye that helps to focus light on the retina. The lens must be clear for the retina to receive a sharp image. The earliest form of cataract surgery, now known as 'couching', was first found in ancient India and then introduced to other countries by the Indian physician Sushruta. The two common methods used today are;

**Phacoemulsification:**

- » small incision in the cornea
- » tiny probe is inserted
- » device emits ultrasound
- » removed by suction

**Extra capsular surgery:**

- » longer incision is made on the cornea
- » cloudy region is removed as one piece
- » the rest is removed by suction

The latest method used **Femtosecond Laser-Assisted Cataract Surgery**. The steps involved in it are;

1. Laser makes the incision on the cornea.
2. The laser cuts a perfectly circular shaped opening in the lens capsule.
3. Capsule is extracted manually.
4. The laser divides the lens into smaller pieces
5. The cataract is extracted by phacoemulsification.
6. An artificial intraocular lens is then implanted

Finally, I concluded by saying that; Development in medical field is growing in a fast rate. We must come up with ideas to make this method more suitable for common people and overcome its drawbacks.

The co-leader of green team **Jisfia** then presented on the theme **Crescograph**. Crescograph is equipment used to measure the growth of plant. It was invented in the early 20th century by Sir Jagadish Chandra Bose. The Bose crescograph uses a series of clockwork gears and a smoked glass plate to record the movement of the tip of a plant at magnifications of up to 10,000. The Electronic Crescograph plant movement detector is capable of measurements as small as 1/1,000,000 of an inch.

**Bhabha Scattering** was the theme on which **Srinidi** presented. This scattering was named after its inventor Homi. J. Bhabha. Atoms are the basic building blocks of matter. They are made of three sub-atomic particles: Electron, Proton and Neutron. Electrons are the sub-atomic particles with negative charge. Positrons are the electrons with positive charge. Bhabha scattering is based on the Quantum Mechanics Principle. It clearly states the scattering of positrons by the electron. This scattering is used as luminosity monitor in wide range.

**Delhi Metro** was the theme on which **Ayana** presented. Delhi Metro is a metro system serving Delhi and its satellite cities of Gurgaon, Noida, Faridabad and Ghaziabad. The Delhi Metro is the 13<sup>th</sup> largest in terms of length in the world. One of the greatest advantage of a metro is it reduces pollution, saves a lot of time and reduces the risk of accidents. The major disadvantage is the accidents caused during construction. Planning for the metro started in 1984, when the Delhi Development Authority and the Urban Arts Commission came up with a proposal for developing a multi-modal transport system for the city. The Government of India and the Government of Delhi jointly set up the Delhi Metro Rail Corporation registered on 3 May 1995. Physical construction work on the Delhi Metro started on 1 October 1998.

**Akash Surface to Air Missile** was the theme on which Soorya Vijay Presented. It was developed by the Defense Research and Development Organization and is being operated by Indian Air Force and Indian Army. The Akash missile is used as a weapon. It used by either Indian Air force or Indian Army. The missile is 720 kg and can carry a payload of about 50kg. The approximate cost was Rs. 492.41 crore. Akash missile can destroy a target 30 km away. Each battery can track up to 64 targets and attack up to 12 of them. The missile is guided by phased array fire control radar called Rajendra which is termed as Battery Level Radar.

**Ageesha** then gave us a clear idea about the **Siddha Medicine**. Siddha Medicine is usually considered as the oldest medical system known to humankind. Siddhars were the leading scientists of ancient days. Siddhars, mainly from Southern India laid the foundation for this system of medication. Generally, the basic concepts of the Siddha medicine are almost similar to Ayurveda.

The drugs used by the Siddhars could be classified into three groups: herbal product, inorganic substances and animal products. The treatment should be commenced as early as possible after assessing the course and cause of the disease.

Then was the presentation by **Sree Ram** on **TATA Swach**. The Tata Swach is a water purifier developed by Tata Chemicals, a part of the Tata group in India. Swach was designed as a low cost purifier for Indian low-income groups, who lack access to safe drinking water. In the Tata Swach design, water purification is carried out using processed rice husk ash impregnated with nano silver particles for purifying the water and to destroy disease causing bacteria, germs and other organisms.

**Shruthikrishna** then shared her views on the theme **Ayurvedic Medicine**. Ayurvedic medicine is a system of Hindu traditional medicine native to the India. Ayurveda have been discovered since the times of Indus Valley Civilization is what is anticipated to be. Ayurveda has eight ways to diagnose illness, called Nadi Mootra, Mala Jihva, Shabda, Sparsha, Druk, and Aakruti. Plant-based treatments in Ayurveda may be derived from roots, leaves, fruits, bark or seeds such as cardamom and cinnamon. Ayurveda uses alcoholic beverages called Madya. Ayurveda flourished throughout the Indian Middle Ages. The medical works of both Sushruta and Charaka were also translated into the Chinese language in the 5<sup>th</sup> century, and during the 8th century, they were translated into the Arabic and Persian language and this simply emphasizes the value of it.

**Aakash Tablet** was the theme on which **Ashwin** shared his ideas. It is an android based computer. It was promoted by Government of India as part of an initiative to link 25,000 colleges and 400 universities in an e-learning program. The Aakash is a low-cost tablet computer with a 7-inch touch screen, ARM 11 processor and 256 MB RAM running under the Android 2.2 operating system. It has two universal serial bus ports and delivers high definition quality video. For applications, the Aakash will have access to Getjar, an independent market, rather than the Android Market.

The **Haritha** gave us a brief idea about the **Thanjai Kovil**. The Peruvudaiyar Kovil is a Hindu temple dedicated to Shiva that is located in the city of Thanjavur in the Indian state of Tamil Nadu. It is an important example of Tamil architecture achieved during the Chola dynasty. It is also known as Periya Kovil, Brihadeshwara Temple, RajaRajeswara Temple and Rajarajeswaram, It is one of the largest temples in India and one of India's most prized architectural sites. Built by emperor Raja Raja Chola-I and completed in 1010 AD, Peruvudaiyaar Temple, also popularly known as the 'Big Temple', turned 1000 years old in 2010. The temple is part of the UNESCO World Heritage Site known as the "Great Living Chola Temples." An axial and symmetrical geometry ruled the temple layout.

The last member of green team, **Kaviya Shree** presented on the theme **Palampore**. A palampore is a type of hand-painted and mordant-dyed bed cover that was made in India for the export MARKET during the eighteenth century and very early nineteenth century. Only the

wealthiest classes could afford to buy palampore; therefore, the few examples that have survived are often quite valuable today. Palampore were primarily exported to Europe and to Dutch colonists in Indonesia and what was then called Ceylon. A palampore was made using the kalamkari technique, whereby an artist drew designs on cotton or linen fabric with a kalam pen containing mordant and then dipped the textile in dye.

Finally, a maroon team member, **Mary Sushmija** presented on the theme **Nishant Unmanned Aerial Vehicle**. The DRDO Nishant is an Unmanned Aerial Vehicle developed by India's ADE, a branch of DRDO for the Indian Armed Forces. The Nishant UAV is primarily tasked with intelligence gathering over enemy territory and for reconnaissance, training, surveillance, target designation, artillery fire correction, damage assessment, ELINT and SIGINT. The UAV has an endurance of four hours and thirty minutes. Nishant has completed development phase and user trials. The 380 kg Nishant UAV can be recovered by a parachute system. It launches at a velocity of 45 m/s and carried out in 0.6 second with 100 kW power and subsequent launches can be carried out in intervals of 20 minutes.

We were in the closing part and the organizer took charge. He congratulated all for our performance. He announced about the next program that is to be inaugurated at Excel Central School. He also insisted us to ask for suggestions and improve our work. The main thing that we are to remember is, not to under estimate our self.

Mr. Perumal then stated that life is a continuous learning. He added few tips to improve our presentation like;

- visible text
- light background
- the information that we add must be understandable
- use hints in presentation
- a welcome page is not necessary

Mr. Benziga Rajan stated that there are nearly 34 million acres of fertile land and none is aware about it. He insisted us not to copy and paste texts. Instead, we must read understand and put it in our own words. He also advised us to use diagrams that are a systematic way of presenting a presentation. The Mr. Gopalan stated that though we all were interested in and working on our academics, we have taken effort to present this presentation really well. None is perfect but we are to make our self-perfect by practice. He halted by saying that all learnt something new and interesting from our presentations.

Then Mr. John Rabi Kumar stated that most presented well but not all due to their lack of interest. He also added a few tips to enhance out presentation like using hints and using apt background. He finally concluded by saying that we are lucky indeed and we must use it to its extent. Mr. Bergin added that there is a quite a lot of improvement in our presentation from the previous one. There must be a relation between our topic of presentation and the theme of the day. It

is always better to include our point of view on the topic that we present. Science begins from questions he added. Mr. Balakrishnan insisted us to keep up all the advices.

Mr. Edwin Sam stated that KAP is the only organization celebrating National Science Day. We have come across 56 new topics that we must keep in mind and it is sure to help us any day in the future. Lekshmi added that the people who have an interest did well. We must research and do things on our own which is the key way to improve our creativity. Getting a second chance in life itself is a great thing. In addition, we the young scientists must be grateful to have several chances to improve our self.

Finally, Mr. Velaian asserted that we all are lucky as all the students got a chance to present. He also made a short note about the upcoming programs. Then the whole crowd stated melting away. Analyzing and being aware of the scientific development in India is quite very necessary in today's developing world. I was in cloud nine to have unveiled the developments in India. This made us all feel more confident and we all felt proud to have obtained so much of knowledge. We felt thankful and grateful to KAP for taking so much of initiative in developing the scientific temper of the student community, which is to be the community of the future. This program made us aware of the Science in terms of development. All the students were given a chance to present and they were grilled with questions to improve their presentation skills and to know their true caliber. On National Science Day, it was really a great opportunity for us to know about the scientific rank of India. This was an outstanding instance in our life.

Thanks to KAP and all good minds for their support. My deep sense of gratitude to Mr. Velaian, Dr. James Wilson, Dr. Allan James, Mr. Muthu, Mr. Joseph Fernando, Mr. Fasaludin, Mr. Edwin Sam, Mr. Bergin, Mr. John Rabi Kumar, Mr. Gopalan, Mr. Benziga Rajan, Mr. Johnson, Miss. Lekshmi and Mr. Perumal for making this a grand fete.

**Dani Rovas,  
Maroon Team.**

India is a developing nation in all aspects and especially in Science. The citizens of a nation should be aware of their country's technology as it is what that changes the darker part of their life into a brighter one through the advancement in technology. Keeping this in mind KAP conducted a splendid program **National Science Day Celebration on Scientific Development in India**, on **National Science Day** at **SIGMA College of Architecture, Moododu** that brought together the minds of all the Young Scientists to be aware of the scientific achievements in their own country. The day also remembered all about the success of Sir C. V. Raman who is being praised as *National Historic Chemical Landmark* by the American Chemical Society.

The meeting enabled me explore the significance of National Science Day. National

Science Day is celebrated each year to mark the discovery of the Raman Effect by the Indian physicist Sir Chandrasekhara Venkata Raman on 28 February 1928. Sir C. V. Raman stated that change in the wavelength of light that occurs when a light beam is deflected by molecules using the Raman Effect for which he was awarded Nobel Prize in 1930. The basic objective of observation of National Science Day is to spread the message of importance of science and its application among the people.

I, S. Dani Rovas, anchored the session. All the distinguished dignitaries were welcomed to the Dias and then I acknowledged their presence by giving the welcome address. Dr. James Wilson, Dr. Allen James, Shri. L. Muthu, Mr. Joseph Fernando, Mr. Fasaludin and Mr. Mullanchery M. Velaian were present on the Dias. **All that begins well ends well.**



Similarly the astonishing program of “National Science Day Celebration on Scientific Development in India” had a good start with an Invocation to Goddess Tamil.

I then gave a brief idea about the program of the day. National Science Day is being celebrated every year to make people aware about the significance of scientific applications in the daily life of the people, efforts and achievements in the field of science for human welfare, to discuss all the issues and implemented new technologies for the development of the science, to give an opportunity to the scientific minded citizens in the country and to encourage the people as well as popularize the Science and Technology. National Science Day is essential to accelerate the pace of development. Every year National Science Day is given a theme and the theme of the year 2015 is **“Science for Nation Building”**. Science has now touched every sector and sphere of India from telecommunications technology to transportation technology. Our nation is a developing nation. The advancement in science can keep our nation growing. Therefore, the theme for National Science Day- 2015 needs to aim at making young and smart minds aware and think about it. Since future India depends on we young scientists, we should also contribute for the building up of our nation through Science.

Then Mr. Mullanchery M. Velaian, founder, patron and the lifeblood of KAP, was called to give the introductory address. He began with the specialty of the day, National Science Day. After giving a short idea about it, he emphasized that KAP was the only organization in Kanyakumari, which celebrates National Science Day with full ebullience in order to create awareness on the importance of Science in our day-to-day activity, as everything around us is Science. He then welcomed the gathering as **Welcoming is one of the two important things a man should do.** He clearly stated that. *“Our own participation with our own interest and effort, without seeking the help of others completely is the best participation”*. However, the Indian education is not developing this mentality among the students. Here the most active participation in the class is of the teachers whereas the students are just meant to listen what the teacher teaches says. This is destroying the active participation of the students, he said. He further said that KAP is giving many tremendous opportunities. People say that “Opportunity seldom knocks twice” but KAP is waiting until the door

opens and receives the opportunity to enjoy the total advantage.

The Dr. James Wilson, Chairman of Sigma College of Architecture, was welcomed next to share his vision with us. He said that a small innovation is the base for many inventions. The discovery of the Raman Effect was the foundation for various other discoveries related to magnetic field. Technology development is enhancing our life. The yellow lamps were converted into fluorescent lamps and then to CFL and finally to LED. As technology was kept on being implicated into different appliances, it eliminated the obscurities faced from it and acts as a useful one in every aspect of our life. It is being discovered that Weather plays a major role in energy conservation. In places like Finland, the sun shines its light for a maximum of 3 hours, making it not so good to use a solar panel. Here the source of energy should be from any other resource especially renewable, for sustainability, which is found here in abundance. Graeme Franks said that **Success leaves clues**. In order to discover the path to success, a proper guidance is given by KAP.

Then Mr. Joseph Fernando, the Principal of SIGMA College of Architecture, gave a tempting talk on Science and Technology. We people are enjoying the fruits of science and technology but at the same time, it should not harm our environment and should also sustain the future of it too. To achieve it there is a simple way. We all might have known that only when the forces applied in both the sides are equal, there is zero resultant force. Similarly, rather thinking only in one direction, the benefits, our thought should be in both the direction, including the benefits and the effects that can result. The future depends on the young hands of today so we should sustain future in all the activities we do. The need for water is increasing these days. One of the reasons behind that is the Coco-cola Company. Since granite blocks are broken considerably, there is a fall in the stability of groundwater table. This is indirectly causing fall in demand in the field of agriculture, as water is an essential element for it. Science and technology is nowadays playing a major role to solve the problem and give out the apt solution, which keeps it sustainable.

Then we lent our ears to hear the motivational and inspiring words of the honorable chief guest, Shri. L. Muthu, Deputy Manager IPRC Valiamala. Each individual is being gifted with talent but identifying it and sharpening it is something hard. These kind of help and assistance is given to the student community by KAP. KAP is shaping our present for the betterment of our future. They are not doing for the present benefit of the student but completely for the future of theirs and for the nation. He made us aware of the social and environmental issues from his talk. Awareness is being aware of what is around us. He said that there is a Climate Change and Climate Control International conference being held at Trivandrum, on the same day but we being close to Trivandrum aren't aware of it. Science is everything around us and so we must spend our valuable time in learning it. **Action speaks louder than words**. Learning only the theory in science without any practical or without any basic understanding is of no use. Therefore, it is better that we afford to planetariums and scientific centers to have a practical understanding in Science. **Questions are the birth of Science**. Only when we think why and how, we come to know about Science. A question that arose in Sir C. V. Raman's mind was the foundation for his discovery of Raman Effect. He

asked “**Why the Ocean is Blue?**” Sir C. V. Raman found the answer to the question after ages of hard work and so he is remembered until today and he won Nobel Prize for his discovery. Learning is the most important thing in the world. Spending more time on playing only gives benefit for the present but what about the future? Therefore, learning is a must. Though it does not benefit us maybe now but definitely, it will be beneficial one day in the future. **Knowledge is power** so we should not stop ourselves from gaining knowledge. Gaining of knowledge can be from books, from eminent people and so on. It can even be from experiences as “Experience is the best teacher”. So we should widen our knowledge. He gave us even more information that was really useful and amazing to listen. His talk was motivational and it motivated all the young scientists. Finally, I gave the Vote of thanks and the Inaugural session ended. Then began the Presentation Session with the anchoring of Miss. Lekshmi.

First Abina presented on the topic “**Chandrayaan**”. Chandrayaan was India’s first lunar probe. It has a life span of 2 years. It was for the main purpose of acquiring knowledge in Remote Sensing and Planetary Science. It was launched on 22<sup>nd</sup> of October in 2008. India is the 4<sup>th</sup> country to send satellite to moon. 95% of the objective is being fulfilled by Chandrayaan. The greatest achievement of Chandrayaan was that it found water on moon and sent photographs on the traces of water. Chandrayaan-1 was launched using Polar Satellite Launch Vehicle. **Lunar craft would orbit around moon 100 km from moon surface. Chandrayaan provides new insights in understanding the Moon’s origin and evolution. The satellite maps the height variation of features of the lunar surface too. This satellite helps in the identification of chemicals in lunar highland rocks and to search for surface or sub-surface lunar water ice, especially at the lunar poles.**

Then **Raksha** shared the technology of “**Prithvi**”. The Prithvi was India's first indigenously developed surface-to-surface short-range ballistic missile. Defense Research and Development Organization of India developed it.

- **Prithvi-I:** Carry a payload of 1,000 kg. It has been in army service since 1994. It has a weight of 4400kg and length of 9m.

- **Prithvi-II:** Can carry a payload of 500-750 kg. It is currently in Air Force service. It was first test-fired on January 27, 1996. Its total weight is 460 kg whereas its total length is 9m.

- **Prithvi-III :** Can carry a payload of 1,000 kg and is currently under development. It is also referred to as the Dhanush. Prithvi-III was first successfully tested on September 21, 2001, and will soon be integrated into the Indian Navy. Its total weight is 5600kg with a total height of 8.56m

Induja was called to share views on the topic “**Mangalyaan**”. “*History has been created today. We have achieved the near impossible*”, said our PM Modi. India should be proud of itself that, it is the first Asian country to send a mission to Mars. It is also the first country throughout the world to complete the mission to Mars successfully in the first attempt itself. The mission was successfully launched on November 5, 2013 from Sriharikota using PSLV-XL C25 with duration of 6 months. The primary aim of the mission was to see if India had the technological capability to get to Mars. **Mission Mars: India’s Quest for the Red Planet.** To hold costs down, India relied on technologies it has used before and saved on fuel by using a smaller rocket to put its spacecraft into Earth orbit first to gain enough momentum to slingshot it toward Mars. The mission will now study the surface of the planet to establish the presence of methane, among other tasks using the five instruments in its 15-kilogram payload.

Sabrina presented about **PARAM Super Computer**. The word PARAM means Parallel Machine PARAM is a series of supercomputers designed and assembled by the Centre for Development of Advanced Computing. Param Super Computer is the fastest computer with dynamic memory. The superfast computer that assists in the development of weapons was invented by Vijay Bhatkar. PARAM series was first used in PARAM 10000. PARAM SERIES:

- ✚ **PARAM 8000** : It was a distributed memory architecture with which had 64 CPUs.
- ✚ **PARAM 8600** : PARAM 8600 was an improvement over PARAM 8000. It was a 256 CPU computer.
- ✚ **PARAM 10000** : PARAM 10000 used several independent nodes.
- ✚ **PARAM Padma** : It was introduced in April 2003. It had a peak storage of 1 TB. It used PARAMnet II as its primary interconnect.
- ✚ **PARAM Yuva**: It has a maximum sustainable speed of 38.1 TFLOPS and a peak speed of 54 TFLOPS.
- ✚ **Param Yuva II** : Latest machine in the series of PARAM.
- ✚ **PARAMnet** : It is a high speed high bandwidth developed for the

Vinoj then gave us a clear idea about **Agni-I**. Agni-I is a short-range ballistic missile developed by DRDO of India under the Integrated Guided Missile Development Program. The 18-meter long, 7.5-ton Agni has a range of up to 2,500 km and is capable of delivering a 1,000-kg payload. Agni-1 uses only a single stage motor. India refers to the Agni not as a weapon system but as a "technology demonstrator project" to establish re-entry vehicle technologies. Development of the Agni-1 began in 1999 and the missile was first tested in January 2002.

Pradeep Narayanan was given chance next to present on **Tejas Combat Aircraft**. The Tejas single-seat, single-engine, lightweight, high-agility supersonic fighter aircraft has been undergoing flight trials in preparation for operational clearance. The aircraft's design and development program is being led by the Aeronautical Development Agency (ADA) of the Indian Department of Defense, with Hindustan Aeronautics Limited (HAL) as the prime industrial contractor. The maximum speed of Tejas

is 20025km/h. Its origin is in India and is a multi-role fighter. Electronic warfare, targeting, surveillance, reconnaissance or training pods can be carried on the hard points. Drop tanks can also be carried. The range of kilometers that it can fly to its maximum is 3000km. The weight of Tejas Combat Aircraft is 5450kg.

Next we came to know about **PSLV** from Mejalin Arno. The Polar Satellite Launch Vehicle, commonly as PSLV, is a dispensable launch system that was developed and is operated by ISRO. It is made of 4 stages-The first stage with solid, the second stage with liquid, the third stage with solid and the fourth stage with liquid. The Polar Satellite Launch Vehicle which is considered as ISRO's workhorse launcher capable of launching 1600 kg satellites in 620 km sun-synchronous polar orbit and 1050 kg satellite in geo-synchronous transfer orbit. In the standard configuration, it has a height of 44.4 m and a lift off weight of 295 tonnes. The launcher was designed and developed by Vikram Sarabhai Space Centre, Trivandrum. The main purposes: to launch mostly remote sensing satellites for analyzing the agricultural status. It was designed and developed in the early 1990s.

Ragul then spoke on **Aryabhata Satellite**. The Aryabhata satellite was named after the great Indian mathematician and astronomer, Aryabhata. It was launched on April 19, 1975 by Soviet Intercosmos rocket. The launch mass was 360kg. It was basically sent for the monitoring and studying of atmosphere. The satellite established infrastructure for the fabrication of spacecraft systems.

**BrahMos** was the topic on which **Nishanth** presented. The **BrahMos**, the world's fastest cruise missile in operation, is a short range ramjet supersonic cruise missile that can be launched from submarines, ships, aircraft or land. The missile travels at speeds of Mach 2.8 to 3.0. The land-launched and ship-launched versions are already in service, with the air and submarine-launched versions currently in the testing phase. An air-launched variant of BrahMos is planned and is expected to come out in 2012 and will make India the only country with supersonic cruise missiles in their army, navy, and air force. A hypersonic version of the missile namely BrahMos-II is also presently under development with speed of Mach 7 to boost aerial fast strike capability. It is expected to be ready for testing by 2017.

Niveth Shankar did the presentation on the “**Geosynchronous Satellite Launch Vehicle**”. Geosynchronous Satellite Launch Vehicle is an expendable launch system operated by the Indian Space Research Organization. GSLV was initiated in 1990. It is 49m tall with a mass of 415tonnes. It works with Vikos Engine. It is made of three stages: solid, liquid and cryogenic stage. This launch vehicle having the ability to carry a payload of 5000kg was developed to enable India to launch its satellites without dependence on foreign rockets and providers. This launch vehicle sends satellites to geo-synchronous orbit.

Then Jefin shared information on the theme “**Yellow Revolution**”. Yellow revolution means the cultivation of mustard as a part of crop rotation. It prevents the soil from getting eroded and at the same time gives a rich crop of oil seeds. Yellow revolution refers to sudden increase in the production of edible oil due to the plantation of Hybrid oil seed like mustard, sesame, etc. The most suitable method for Yellow revolution is organic farming. The growth, development and adoption of new varieties of oilseeds and complementary technologies nearly doubled oilseeds production from 12.6 mt in 1987-88 to 24.4 mt in 1996-97, catalyzed by the Technology Mission on Oilseeds. Uses: improved technology for oilseed production, double production of oilseed. India is presently the 4th largest producer of oilseed in the world. The most familiar oilseed in Kanyakumari District is coconut.

Ashmi gave an introduction to “**Raman Effect**”. Raman Effect is change in the wavelength of

light that occurs when a light beam is deflected by molecules. The phenomenon is named for Indian physicist Sir Chandrasekhara Venkata Raman, who first published observations of the effect in 1928. Raman scattering is perhaps most easily understandable if the incident light is considered as consisting of particles, or photons, that strike the molecules of the sample. Most of the encounters are elastic, and the photons are scattered with unchanged energy and frequency. The Raman Effect is feeble; for a liquid compound; the intensity of the affected light may be only 1/100,000 of that incident beam. The pattern of the Raman lines is characteristic of the particular molecular species, and its intensity is proportional to the number of scattering molecules in the path of the light. Thus, Raman spectra are used in quantitative analysis. Gases have low molecular concentration at ordinary pressures and therefore produce very faint Raman effects; thus liquids and solids are more frequently studied.

Rudra gave a presentation on the topic “**Operation Food**”. It was established in 1981 to address the growing problem of hunger. A food bank is a charity organization that receives food donations to distribute to smaller hunger relief agencies that directly serve those in need. St. Louis bi-state region is also a food bank that feeds children who has no certainty of a healthy lunch, the working poor who cannot afford groceries and the senior citizen who must choose between food and medicine. Hunger does not discriminate. It exists everywhere. In addition, it only exists because we allow it. We can solve hunger by such initiatives.

Shamini did her presentation next. Her topic was “**Blue Revolution**”. The term blue revolution refers to the remarkable emergence of aquaculture. Aquaculture refers to all forms of active culturing of aquatic animals and plants, occurring in marine, brackish, or fresh waters. Many species of freshwater and marine organisms are being cultivated because they are highly productive and nutritious crops for consumption of humans. Marine fisheries contribute about 50 per cent of the total fish production of the country. Kerala is the leading producer followed by Maharashtra, Karnataka, Gujarat, and Goa. The fishing season extends from September to March. The higher fish production in the Arabian Sea is due to the broader continental shelf. The important fish varieties include sardines, mackerel and prawn. The East Coast contributes about 28 per cent of the total production of marine fish in the country. The fishing activity along the East coast is mainly carried on from Rameswaram in the south to Ganjam in the north, with fishing season from September to April along the Coromandal Coast.

Seanna presented on “**Silicone Implants-chaining eye color permanently**”. Iris determines each person's eye color. It is the eye's pigmented part with a hereditary nature. Its color is usually brown, black, blue, gray or green. An artificial iris is a thin, flexible, non-toxic prosthesis which is compatible with body tissue. Artificial iris is made of materials that are used in manufacturing intraocular lenses. In order to change the eye color and for removing the existing one two different surgeries are done.

Naveenjith shared information on the topic “**KAMINI**”. Kalpakkam Mini Reactor was the first reactor in the world designed specifically to use uranium-233 fuel. This reactor functions as a

neutron source with a flux and facilitates carrying out neutron radiography of radioactive and non-radioactive objects and neutron activation analysis. Facilities are also available in the reactor for carrying out radiation physics research, irradiation of larger samples and calibration and testing of neutron detectors. Kamini reactor was designed and built jointly by Bhabha Atomic Research Centre and Indira Gandhi Centre for Atomic Research. This mini reactor produces 30 kW of thermal energy at full power.

Shyam Sagar gave a presentation on “**Green Revolution**”. The Green Revolution refers to a series of research, and development, and technology transfer initiatives, occurring between the 1940s and the late 1960s that increased agricultural production worldwide, particularly in the developing world beginning in the late 1960s. Mr. Norman Borlaug is the father of Green Revolution. The causes of green revolution are; increase of population, shortage of food, less agriculture and undeveloped agricultural system. The main problem caused by Green Revolution was low irrigation. Some of the developments due to Green Revolution are improvement in food production, introduction of HTV seeds using genetic engineering and overture of new irrigation systems.

Aglin Bala was called out next for her presentation on “**Kallanai Dam**”. Kallanai Dam is one of the oldest irrigation dams in the world built around 2000 years ago. The Chola King, Karikal Valavan, built it across the river Cauvery. The main purpose of building Kallanai was to divert the Cauvery water for irrigation in the Tanjavur delta. Kallanai has a strong foundation and solid structure. This dam is still used as a major irrigational dam in Tamil Nadu.

Sree Meera Subramaniam gave detailed talk on “**Vikramaditya Aircraft Carrier**”. This aircraft carrier was brought from Russia which has a length of 284m, maximum beam of 50m and with a speed of 59km/h. The other name of this is floating city. This creates a displacement of 44500tonnes. This aircraft carrier has 4 propellers for fast travel. The electrical re-cabling is 2300kms of cable. This was being built by Black Sea Shipyard, USSR and Sevamsh, Russia. INS Vikramaditya is a modified Kiev-class aircraft carrier that entered into service with the Indian Navy in 2013. She has been renamed in honor of Vikramaditya, a legendary 1st century BCE emperor of Ujjain, India. It was commissioned on 16 November 2013 at a ceremony held at Severodvinsk, Russia. On 14 June 2014, Prime Minister of India Narendra Modi formally inducted INS Vikramaditya into the Indian Navy and dedicated it to the nation.

Reshma presented on “**INS Arihant**”. INS Arihant is the lead ship of India's Arihant class of nuclear-powered ballistic missile submarines. The 6,000 tonne vessel was built under the Advanced Technology Vessel project at the Ship Building Centre in Visakhapatnam. The completion of INS Arihant will make India one of six countries in the world with the ability to design, build, and operate its own nuclear submarines. INS *Arihant* was introduced to the public on 26 July 2009 at a symbolic launch ceremony by the Prime Minister Manmohan Singh's wife Gursharan Kaur.

I spoke on the topic “**EDUSAT**” next. EDUSAT is the first Indian satellite built exclusively

for serving the educational sector. It stands for Educational Satellite. This satellite weighing of 1950 kg, was launched on 21st of September by the Indian Space Research Organization (ISRO) successfully. Edusat is expected to have a life of seven years in space, during which it will help educational institutions. It is mainly intended to meet the demand for an interactive satellite based distance education system for the country. There is a lack of adequate rural educational infrastructure and non-availability of good teachers in sufficient numbers which adversely affect the efforts made in education. Educational Satellite can establish the connectivity between urban educational institutions with adequate infrastructure imparting quality education and the large number of rural and semi-urban educational institutions that lack the necessary infrastructure. Edusat is a geosynchronous satellite. Edusat enables education to:

- Video conferencing: is the conducting of a conference by a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions
- Online education through internet: EduSat network can be used for group discussion, lectures, demonstrations, video-shows, training and capacity building programs.
- It intends to promote all types of education in our country and distribute education to the people of all occupations.
- supports curriculum-based education
- Training of teachers

Jereshea gave a brief idea on “**Solar Park at Charanka village in Gujarat**”. The largest site within the Gujarat Solar Park is being built on a 2,000-hectare (4,900-acre) plot of land near Charanka village in Patan district, northern Gujarat. This hosts about 19 different projects by different developers. It also became the world's second largest photovoltaic power station. When fully built out, the Charanka Solar Park will host 500 MW of solar power systems using state-of-the-art thin film technology, and should be finished by the end of 2014. The investment cost for the Charanka solar park amounts to some US\$280 million. Construction began on third of December 2010.

Jenisha presented on “**APSARA REACTOR**”. Apsara is the oldest of India's research reactors. The reactor was designed by the Bhabha Atomic research Center (BARC) and built with assistance from the United Kingdom. Apsara first went critical on 4th August 1956. Apsara is a light water swimming pool-type reactor with a maximum power output of one megawatt thermal. The reactor burns enriched uranium in the form of aluminum alloyed curved plates. Fuel for the reactor is supplied under contract from the United Kingdom, provided it is safeguarded. The Apsara reactor is utilized for various experiments including neutron activation analysis, radiation damage studies, forensic research, neutron radiography, and shielding experiments. The reactor is also used for research and the production of radioisotopes.

Kalidas presented on “**Pokhran**”. Pokhran is a remote location in the Thar Desert region and served as the test site for India's first underground nuclear weapon detonation. The Pokhran Test Range

is a key component of India's nuclear programme. Within the government, the device's development was known formally as the Peaceful Nuclear Explosive, but elsewhere it continues to be known generally as Operation Smiling Buddha. The Ministry of External Affairs designated the test "Pokhran-I". Indian government declared that it was intended to manufacture nuclear weapons to make India self-reliant in nuclear technology and harness nuclear energy for peaceful purposes. The bombs used in Pokhran I are: Shakti I, Shakti II, Shakti III, Shakti IV and Shakti V.

Abila gave a brief introduction about “**Yamuna Expressway**”. This is a road network that connects Delhi and Agra. This toll way was opened on 20012. The total length of the expressway is 165.537km. Its greatest junctions are from Greater Noida to Agra. It is located in the state of Uttar Pradesh. The Yamuna Expressway project was implemented by Jaypee Group. Yamuna Expressway minimizes the travel time between the two places and relieves traffic congestion in National Highways. The pavement here is rigid. There is 1 rail over the bridge, 1 major bridge and 42 minor bridges. The Yamuna Expressway is expected to be used by over 100000 vehicles every day. The Yamuna Expressway was developed in three phases. Phase I: between Greater Noida and Taj International Aviation Hub. Phase II: between Taj International Aviation Hub and intermediate destination. Phase IV: between intermediate destination and Agra.

Shifi shared some information about “**Bt. Egg Plant Hybrid**”. Bt Brinjal is a suite of transgenic brinjals also known as eggplants. Earlier Bt Brinjals was cultured by fermentation. But now the completed constructs are inserted into cotyledons itself. It is the genetically modified version of regular brinjal. The amount of nutrients and minerals per 100 gram: calorie-25, cholesterol -0, sodium-2, sugar-3.5, protein-1 and magnesium 3%. Bt. Egg Plant Hybrid causes risk to human health. It also makes the soil acidic thus harming the environment. There is no effect on animals due to this eggplant but the microorganisms are affected.

Aruna then presented on “**Liberalization, Privatization and Globalization**”. Liberalization refers to a relaxation of previous government restrictions usually in such areas of social, political and economic policy. To some extent it is also referred to as deregulation. Privatization is the process of transferring ownership of a business, enterprise, agency, public service or public property from the private sector either to a business that operates for a profit or to be non-profit organization. The economic liberalization is associated with privatization. Globalization is the process of international integration arising from the interchange of world views, products, ideas and other aspects of culture. The term globalization has been increasingly used since the mid-1980s.

Prabin Kumar shared information on “**Cloning of Animal**”. Cloning refers to processes used to create copies of DNA fragments, cells or organism. Cloning of animals shortens the life span, weakens the immune system, the animals become inefficient and the cloned animals suffer from pneumonia. Pyrenean Ibex was the first extinct animal to be cloned back to life. There are four steps involved in Cloning:

- 1) fragmentation
- 2) ligation

- 3) transfection
- 4) screening

After lunch Edin Jijo presented his presentation on the topic “**Triple-Helical Structure of Protein**”. Gopalasamuthra Narayana discovered X-Ray diffraction. Collagen is the main structural protein of the various connective tissues in animals. As the main component of connective tissue, it is the most abundant protein in mammals making up from 25% to 35% of the whole-body protein content. Collagen is made of two compounds- Gelatin and Elastin. Gelatin is used for the fairness of skin and for the removal of wrinkles and lines. Elastin is for the youthful skin and for the strengthening of tissue.

Next was Abhirami’s turn to present on her topic. Her topic was “**Thermal Ionization**”. Ionization is the process by which an atom acquires a negative charge. To ionize an atom the following steps should be followed:

- 1) Create gas phase ions
- 2) Separate the ions according to the mass
- 3) Measure the abundance of ion

To do the process three things are required. They are the Ion Source, Analyzer and finally a Collector. The analyzer analyses the ions according to their mass. There are three sources of ionization. They are:

- Electron Ionization
- Chemical Ionization
- Desorption Ionization

Mereshea was called to present on “**Tata NANO**”. It is a car manufactured by TATA Motors. The most fuel-efficient petrol car in the world is NANO. It was created by Ratan Tata on 10<sup>th</sup> January, 2008. NANO car uses plastics and adhesives. In terms of petrol variability there are 4 types of NANO. They are 2013 CX, 2013 LX, Twist XT and Twist XE. The total length of it is 3100mm. Its total width is 1500mm. The sum height is 1600mm. The net weight is 600kg. The topmost speed of the car is 95 to 100km/h. It has advantages like low cost with good mileage. The car is only suitable for short drives, easily flammable; engine is located in the back so that the centre of gravity is not in balance. These are all the disadvantages of Tata NANO. The future model of NANO is diesel powered, Hybrid powered NANO.

Malavika did her presentation on “**Yoga**”. Yoga is a physical, mental and spiritual practice. It is actually a meditative exercise. The origins of Yoga have been speculated to date back to pre-Vedic Indian traditions, but most likely developed around the sixth and fifth centuries BC, in ancient India. Yoga is the best form of health insurance. It makes our muscles flexible and tension free. Yoga enables our muscles to be loosened and keep them relaxed. It also reduces the stress of our mind and improves

the efficient working of our organs. By practicing yoga one can be free of every disease and it avoids the symptoms of every disease. Yoga decreases the pulse rate, decreases the EMG activities, increases the energy level and decreases the respiratory rate thus maintaining a healthy body. Yoga also helps in decreasing glucose level, decreases the level of sodium, decreases the total cholesterol in body, decreases the amount of ATP and increases Vitamin C. Pathanjali established Yoga.

Argeneshea gave a clear picture about “**Interceptor Sewage System**”. This system was designed to settle the solids. This is a cheaper method of Sewage System. The method is also implemented in Yamuna River. Interceptor Sewage System reduces the pollution level. The sewage can separate substances like oil, plastic, twigs, solids, grease. It segregates the waste from the water and after water purification it is distributed to the people for various purposes.

A ppt on “**Radiation**” was presented by Vidhya. Radiation is the emission or transmission of energy in the form of waves or particles through space or through a material medium. Radiation can also be referred to as the energy, waves or particles being radiated. It can be categorized into two types: ionizing radiation and the other is non-ionizing radiation. We cannot avoid exposure to radiation in small doses but large doses can be dangerous to our health. The ionizing effect produced by radiation causes damage to cells and tissues in our bodies and can also lead to the mutation of genes.

Raghul presented on “**Ultra short Radio Waves**”. Radio waves have the longest wavelengths in the electromagnetic spectrum. Radio waves are of five main types:

- Very short frequency
- Very high frequency: has frequency from 30MHz to 300MHz
- Ultra high frequency: has frequency between 300MHz and 3GHz
- Super high frequency: has frequency that ranges from 3GHz to 30GHz
- Extremely high frequency: has frequency between 30GHz and 300GHz

Vijayaraj said about “**In-vitro Fertilization**”. It is a process by which an egg is fertilized by sperm outside the body in vitro. The process involves monitoring and stimulating a woman’s ovulatory process removing ovum from the ovaries and letting sperm fertilise them in a laboratory. The fertilized egg is cultured for 2-6 days in a growth medium and is then implanted to uterus with an intention of establishing a successful pregnancy. In-Vitro Fertilization is a technique of assisted reproductive technology for treatment of infertility. This includes three main steps:

- 1) ovulation induction
- 2) egg loocyte
- 3) fertilization in lab

Leena was called next to say about “**Zero**”. Brahmagupta, a Hindu, was the first to treat zero as a number in its own right. This helped to develop the decimal system of numbers. The concept of zero as a number and not merely a symbol or an empty space for separation is attributed to India,

where, by the 9<sup>th</sup> century AD, practical calculations were carried out using zero, which was treated like any other number, even in case of division. The earliest text to use a decimal place value system, including zero, is Jain Text from India.

Gby Atee gave a presentation about “**Cataract Surgery**”. A cataract is a clouding of the lens in the eye that affects vision. Cataract is actually a protein of the natural lens that gradually becomes cloudy. The lens is a clear part of the eye that helps to focus light on the retina. The lens must be clear for the retina to receive a sharp image. The earliest form of cataract surgery, now known as 'couching', was first found in ancient India and then introduced to other countries by the Indian physician Sushruta. The two common methods used today are Phacoemulsification and Extra capsular surgery. The latest method used is Femtosecond Laser-Assisted Cataract Surgery.

Jisfia gave a concise idea about “**Cresco graph**”. It is a device for measuring growth in plant. There are two important things in this instrument which help to measure the growth and these are as a smoked plate and a number of clockwise gears. The plate is marked after regular distance intervals and the clockwise gears are used to measure that how growth is influenced and how it moves on under different conditions. It was developed in 20<sup>th</sup> century by Sir.Jagadish Chandra Bose.

A brief idea on “**Bhabha Scattering**” was given by Srinidhi. This scattering is named after its inventor Homi.J.Bhabha. Atoms are the basic building blocks of matter. They are made of three sub-atomic particles: Electron, Proton and Neutron. Electrons are the sub-atomic particles with negative charge. Positrons are the electrons with positive charge. Bhabha scattering is based on the Quantum Mechanics Principle. It clearly states the scattering of positrons by the electron. This scattering is used as luminosity monitor in wide range.

Ayana was called to speak on “**Delhi Metro**”. Delhi Metro is the world's 13<sup>th</sup> largest network in terms of length. India's third urban mass transportation system is Delhi Metro. The physical construction of the road began on 1<sup>st</sup> October 1998 and it was inaugurated on 24<sup>th</sup> December, 2002. It reduces accident, lessens pollution and saves time. But during its construction there were many accidents as well as lot of energy was used.

Soorya Vijay shared information on “**Akash-Surface to Air Missile**”. It is a medium range mobile surface-to-air missile defense system designed by DRDO in India. The missile has a weight of 720kg with a length of 578cm and a diameter of 35cm. The missile system can target aircraft up to 30km away at altitudes up to 18000cm. The missile has a 60kg high explosive, pre-fragmented warhead with proximity fuse. The Akash system is fully mobile. The defense providers are defense missiles coverage for an area of 2000km<sup>2</sup>. Akash flies at supersonic speed, reaching around Mach 25. The missile has command guidance in its entire flight.

Ageesha spoke on “**Siddha Medicine**”. It is considered as the oldest medical system known to mankind. Siddha medicine originated in South India, in the state of Tamil Nadu. Siddha is reported

to have surfaced more than 10000 years ago. Siddhars were premier scientists of ancient days. India laid the foundation for Siddha Medicine. Sage Agathiyar is considered the guru of all Siddhas. This system of medicine was generated from Dravidian culture. This medicine flourished in the period of Indus Valley Civilisation. Siddha Medicine means medicine that is perfect.

Sree Ram shared the technological development of “**Tata Swach**”. It is a water purifier developed by Tata chemicals. It consists of Nanotech purification and Tata Swach Bulb. Nanotech purification is the water purification carried out using processed rice husk ash. Tata Swach Bulb is the main purifying unit that can purify about 3000 litres of water after which the bulb must be replaced. There is no need of electricity. NO chemicals are added in this Tata Swach, hence is considered safe.

Shruthikrishna was called to present on the topic “**Ayurvedic Medicine**”. It is the system of Hindu traditional medicine native to the Indian subcontinent. The origins of Ayurveda are found in Atharvaveda. Ayurvedic practices include the use of herbal medicine, mineral or metal supplementation by massages. This system of medicine was originated in prehistoric times. There are eight components of derived Ayurveda. Ayurvedic medicine is composed of 3 doshas and 5 elements. The central idea of Ayurveda derived from the Vedic philosophy. Ayurvedic doctors regard physical existence, mental existence and personality as a unit.

Aswin presented on “**Akash-Tablet**”. Akash is an Android-based tablet computers promoted by Government of India as part of an initiative to link 25,000 colleges and 400 universities in an e-learning program. It is produced by the British-Canadian company Data Wind. It is manufactured by the India-based company Quad, at a new production centre in Hyderabad with a planned trial run of 100,000 units. The tablet was officially launched as the Akash in New Delhi on 5 October 2011. The Indian Ministry of Human Resource Development announced an upgraded second-generation model called Akash 2 in April 2012. The Akash is a low-cost tablet computer with a 7-inch touch screen, ARM 11 processor and 256 MB RAM running under the Android 2.2 operating system. It has two USB ports and delivers HD quality video.

Haritha did her presentation on “**Thanjavur Periya Kovil**”. The Peruvudaiyar Kovil is a Hindu temple dedicated to Shiva that is located in the city of Thanjavur in the Indian state of Tamil Nadu. It is an important example of Tamil architecture achieved during the Chola dynasty. It is also known as Periya Kovil, Brihadeshwara Temple, RajaRajeswara Temple and Rajarajeswaram, It is one of the largest temples in India and one of India's most prized architectural sites. It was built by emperor Raja Raja Chola-I and completed in 1010 AD. Peruvudaiyaar Temple, also popularly known as the 'Big Temple', turned 1000 years old in 2010. The temple is part of the UNESCO World Heritage Site known as the Great Living Chola Temples. An axial and symmetrical geometry rules the temple layout.

Kavya shared her views on “**Palampore**”. A palampore is a type of hand-painted and mordant-dyed bed cover that was made in India for the export market during the 18<sup>th</sup> century. A

palampore was made using the kalamkari technique, whereby an artist drew designs on cotton with a kalam pen containing mordant and then dipped the textile in dye. The dye adhered to the cloth only where the mordant had been applied. This lengthy process had to be repeated for each color in the design. Small details were then painted by hand on the cloth after the dying process was completed. Palampore patterns were usually very complex and elaborate, depicting a wide variety of plants, flowers, and animals, including peacocks, elephants, and horses. Because a palampore was hand-created, each design is unique.

Last but not the least Mary Sushmija explained on “**Nishant-Unmanned Aerial Vehicle**”. The Nishant is an Unmanned Aerial Vehicle developed by India's ADE for the Indian Armed Forces. The Nishant UAV is primarily tasked with intelligence gathering over enemy. Nishant has completed development phase and user trials. The 380 kg Nishant UAV requires rail-launching from a hydro-pneumatic launcher and is able to be recovered by a parachute system. It launches at a velocity of 45 m/s are carried out in 0.6 second with 100 KW power and subsequent launches can be carried out in intervals of 20 minutes. Nishant is one of the few UAVs in the world in its weight-class capable of being catapult-launched and recovered by using parachute, thus eliminating the need for a runway as in case of conventional take-off and landing with wheels.

Next was the time for the renowned resources of KAP to suggest their views on our presentation. Mr. Mullanchery M. Velaian said about our next team meet. He then said that we should do only what we are able to do. Whatever we do should be only our own effort and we should not depend on others for our preparation of the presentation. He then handed over to mike to Mr. Perumal for his suggestions. Mr. Perumal suggested three main points to improve our presentation.

- Words in PowerPoint should be visible to all.
- Information should not be copied as such from net.
- The slides in the PowerPoint should be in bullet points.

Er. Benzigar Rajan gave few more tips. PowerPoint should only have bullet points that comprise all the information in the form of key points. Only 3-4 points per slide. Shri. P. Gopalan appreciated all of us for our involvement in the presentation. We all got a clear idea about all the scientific developments in India.

Shri. John Rabi Kumar said us that ALL PRESENTED WELL. He gave us some more tips to contour our presentation skill.

- Powerpoint should consist of 3 to 4 key points in one slide.
- Text in powerpoint must be made visible to all.
- Do not depend only on internet for information.
- Try your level best to answer all the questions asked.

Mr. Bergin gave some more suggestions to get better in our presentation

- Know what you want to convey on your topic.
- Be sure with all the key points in your PowerPoint.
- Include your views about our topic in your presentation.

He further said that we should lend our ears to our friend's presentation so that we will be able to raise questions. This will enable us gain new and more information. **Questions are the start of Science.**

Shri. Balakrishnan said that our presentation topics should be presented in terms of Science and Development. Shri. L. Edwin Sam said a bombshell news to us which made all feel proud of KAP. Kumari Arivial Peravai is the only organization celebrating National Science Day with full enthusiasm, passion, pleasure and gusto.

National Science Day Celebration on Scientific Development in India was an excellent opportunity to all the Young Scientists to celebrate National Science Day with zest and to discuss the Scientific Development in the developing nation of India. This was a good chance to bring out the true caliber of we students. We all got a wonderful opportunity to present in front of many distinct dignitaries. The meeting increased our confidence level and molded our presentation skills. The moderators questioned us thus making all courageous to face all the questions asked, even if they knew the answer or not. It was my greatest chance to discover about the development in India. I am grateful to SIGMA College of Architecture and KAP for providing this greatest opportunity.

**Reshma,  
Maroon Team**

**“The science of today is the technology of tomorrow”.**

**-Edward Teller**



The National Science Day was celebrated by KAP on 28<sup>th</sup> February, 2014 at Sigma College of Architecture, Moododu. We young scientists were given an opportunity to present PowerPoint on various topics to know more about the development of India in science and technology. We young scientists gathered in a hall at 8:10 am. The compeering was done by **Dani Rovas**, the co-leader

of maroon team. She welcomed the dignitaries to the Dias. The dignitaries include **Dr. James Wilson, Chairman Sigma College of Architecture, Dr. Allen James, Mr. Mullanchery M. Velaian, the organizer of KAP, Shri. L. Muthu, Dy. Director, LPSC/ISRO Valiamal Rtd, Mr. Josphe Fernando, Principal of SICA and Mr. Fazuldeen, director of SICA.** Each and every KAP meeting begins by praising our Mother Tamil. The meeting began with Tamil Thai Vazhthu. Dani gave a hand of welcome to all the dignitaries. She gave a brief description about the National Science Day.

February 28 is celebrated as the National Science Day all over India. It is celebrated for the discovery of Raman Effect by C. V. Raman. He received Nobel Prize in the year 1930.

She then invited **Mr. Mullanchery M. Velaian** to give the introductory address. He wished us a fine morning. KAP utilizes every opportunity to nurture the talents in young children. The National Science Day is not being celebrated by any of the schools in India. But KAP celebrates the National Science Day in a grand manner each and every year. He glorified Dr. James Wilson. We get new experience in each and every KAP program. The place where the food is served with happiness will develop, he said. Hospitality is very important to have strong bond between people. Experiencing different things make us to grow in our thinking and it improves our talents. The result of each and every KAP meeting is great. We have got opportunity to know about the development of India in science. When we serve society, we will face some troubles and obstacles. But we should overcome all those things. An organization's growth depends upon its members, he said. He welcomed one and all and concluded his talk.

Dani thanked him and welcomed **Dr. James Wilson, Chairman of SICA** to give a short talk. The National Science Day is celebrated to honor Sir C. V. Raman for the discovery of Raman Effect in the year 1928. He appreciated KAP for its voluntary work. He said that this year is very special to us because the National Science Day has fallen on Saturday and we are able to celebrate National Science Day on the very day. Raman Effect refers to scattering of light. Raman Effect has helped in the invention of medical equipments, he added. In 1980s, in Kerala 110 volt bulb was available. Unless technology developed, we might have faced power shortage. Common bulbs were replaced by fluorescent lamps. Then other specialized lamps with mercury were used. Then CFLs were used and at present LED lights are used. So, from this we can understand that technology has been developing. Lightning temperature and humidity brings different consumption energy. Too cold or too hot temperature is very tough to manage. Controlled automatic windows were used in European countries to overcome this. Sun's solar radiation is present in Finland, Denmark only for few hours. Other time, it is very dark. Therefore, depending on solar power is not so good and so new technologies are developed to overcome this. Then he said that choosing 56 topics for presentations is not easy as pie. All these researches in the topics will definitely help us in our future. He concluded his talk by wishing the programme to be successful.

Dani thanked him and then welcomed **Mr. Joseph Fernando** to give a talk. We hear many news about water scarcity, pollution, forest fire and so on. On the other hand, we see nuclear power stations, coke factories and others rising in various places. The reason for all these is that we have grown in science and technology. We have crossed our limits now and so world is destroying. Now it's the time for us to live with our nature. We have to think about our future generations, he said. Environment should be maintained. The solution for all the problems lies in science and technology itself, he asserted. Creative interest among young children is required to bring or direct the science and technology into the right path. He thanked Mr. Velaian and ended his talk.

Then **Shri L. Muthu** was invited to give a talk. Science has more subjects and avenues. It's essential for us to choose them depending upon our wish and then concentrate on it to pursue our dream. KAP helps us to know and identify a variety of subjects. It's tough to collect data and present

something. Awareness refers to the consciousness about what is happening around us. We should have the total commitment to know the things happening around us. The fundamental thing to be aware of science is to go and visit various places. Sir C. V. Raman came up with the discovery of Raman Effect. When we don't know the answer for a question, we should find its answer. We should dedicate our school life to know about science to develop our orientation. Super big antennas are kept switched on to track small sounds from the universe. We her science literacy from televisions but we should search for specific information from journals and magazines. Learning is a continuous process, he stressed. In US, students are exposed to know more about nature. So they innovate new things and become better scientists. Government organizes science clubs in each school to create awareness among students. He advised us to "Develop interest in science". He stressed four important point:

- Select areas of science
- Study thoroughly
- Create curiosity
- Ask questions and find solutions

Our contribution to the humanity is very important. Technology has science. It can either create or destroy. It lies in our hands. Dani thanked him and gave the vote of thanks. She thanked all the dignitaries, guides, coordinators, consultants and others and then we moved on to the next session. Then we had the presentation session at 9:15 am. The moderators were **Shri. M. John Rabikumar, Shri. S. Johnson, Shri. P. Gopalan, Shri. Perummal** and **Shri. Berjin. Lekshmi, former young scientist** compeered the session. The first chance was given to red team. **Abina**, the leader of red team gave her presentation on the topic "**CHANDRAYAAN**". Chandrayaan was the first mission to moon from India. In her presentation she covered the topics like; Chandrayaan, its achievements and its development over time. Chandrayaan weighs about 1380 kg. It was launched by PSLV-C11 from Sriharikota. The launch mission was on 22<sup>nd</sup> October, 2008. This mission made India the fourth nation in the world to touch the moon, the only natural satellite of the Earth. Its achievements were:

- ✓ Discovered traces of water
- ✓ Lunar global imaging
- ✓ Establishment of processes for collaboration with other space agencies
- ✓ Finding thermal environment

ISRO is going to launch Chandrayaan- II in late 2016 or in the beginning of 2017. Its main development was that it laid a foundation to launch other satellites to moon. Questions were raised after her presentation. The questions were:

- ✎ What was the main purpose of sending Chandrayaan?  
To find more about moon and its composition.
- ✎ What is the distance between the earth and the moon?  
384,400 km
- ✎ What is the gravity of the moon?

1/8 of earth

- ✎ What indicates the presence of water molecules on moon?  
As significant amount of hydrogen

Her presentation was followed by **Raksha**. She presented on the topic “**PRITHVI**”. A missile is a weapon that is fired and projected at a target. Prithvi is used by Indian Army, Indian Air Force and Indian Navy. Prithvi 1 has a speed of about 15 km range. Its payload is 1000 kg. It has been in army service since 1994. Prithvi 2 has a speed of about 250 km range. It is under the control of Indian Air Force and has a payload of 500-700 kg. Prithvi 3 has a speed of about 350 km range and 1000 kg of payload. It uses solid propellant. The questions raised were:

- ✎ What is the difference between a missile and launch vehicle?  
Missile is a body which is used as a weapon whereas a launch vehicle is a body that launches satellite into space.
- ✎ Explain IBCB.  
Prithvi is a part of IBCM. IBCM stands for Inter Continental Ballistic Missile.
- ✎ Who is known as the missile man of India?  
Dr. Abdul Kalam

The chance for presentation was then given to the co-leader of red team, **A. S. Induja**. Her topic was “**MANGALYAAN**”. She began her presentation with the words of our Prime Minister **Shri. Narendra Modi**. “**History has been created today. We have achieved the near impossible**” India is the first Asian nation to reach the orbit of Mars. Mangalyaan was carried by PSLV C25. It was launched on November 5, 2013. About 450 crores were spent to launch Mangalyaan. It has a payload of 15 kg. Instruments like LAP, MENCA, MCC, MSM and TIS are present in Mangalyaan. LAP measures the intensity of light. It also measures the relative abundance hydrogen atoms in the Martian atmosphere. MENCA weighs about 3.56 kg. It measures the relative abundance of neutral constituents, in the mass range of 1-300 amu. It goes 372 km above the Martian surface. MCC captures colour images. It weighs about 1.4 kg and studies the Martian surface topography. It also monitors the dynamic events and weather of Mars. It takes images of the natural satellite of Mars and other asteroids encountering the orbit. MSM measures the amount of methane in parts per billion in Martian atmosphere. TIS measure the thermal emission and maps the surface composition and mineralogy of Mars. Mangalyaan took 299 days to travel to the orbit of Mars. It was launched in 2013 and reached the orbit of Mars in the year 2014. It travelled first to the orbit of Earth and then went to the orbit of Mars. In her presentation was the image of the first picture captured by Mangalyaan. The launch of Mangalyaan brought pride to India. India joined the US, ESA and the former Soviet Union in the elite club of Martin explorers while China and Japan have failed.

- ✎ What is the distance between the Earth and the Mars?  
About 42 crore km
- ✎ Which force did the Mangalyaan use to enter into the orbit of space?  
It used the gravitational force of the Mars
- ✎ Which mineral is found abundant in Mars?

## Iron

- ✍ What is the present condition of Mangalyaan?  
It captured images and send signals
- ✍ What does Mangalyaan do in space?  
What is the time duration for the images to reach us?  
About 10 minutes
- ✍ How did the scientists solve the problem occurred in MOM's regulator?  
The scientists changed the programs

**M. Sabrina Lynette Fernando** gave her presentation on the topic "**PARAM – SUPERCOMPUTERS**". Super computers have great speed and do all the jobs quickly. One of the types of super computers is the PARAM supercomputers. PARAM refers to Parallel Machine. It was assembled by C-DAC of India. C-DAC stands for Centre for development of Advanced Computing. It helps to predict the weather and is used by the meteorologists. It is also used by military soldiers. PARAM supercomputers were invented by Vijay Bhatkar in the year 1991. PARAM is considered as India's first supercomputer. Its series include PARAM 8000, PARAM 8600, PARAM 9900, PARAM 10,000, PARAM PADMA, PARAM YUVA, PARAM YUVA II and PARAM NET.

- PARAM 8000 : It was invented in the year 1991
- PARAM 8600 : It was improved from PARAM 8000
- PARAM 9900 : It was designed to be a MPP system
- PARAM 10,000 : It was unveiled in 1999. It uses several independent modes.
- PARAM PADMA: It was introduced in April 2003. Padma means Lotus in Sanskrit. Its peak speed is 1024 GFLOPS. Its peak storage is 1TB.
- PARAM YUVA : Yuva means youth in Sanskrit. It was unveiled in November 2008.
- PARAM YUVA II: It was disclosed on February 8, 2013. It would have been ranked in the November 2012 ranking list of Top500.
- PARAM NET : It is a high speed low network developed for the PARAM series. It's a type of software. It was first used in PARAM 10,000.

A super computer has more parallel processors, tera bytes of dynamic memory and more RAM while a computer is a simple form of it. This the major difference between an ordinary computer and a supercomputer.

The development in Indian "**AGNI**" was the theme on which **Vinoj** discussed. Agni is a rocket made in India. It carries nuclear weapons and equipments. Agni 1 was tested in the year 1991. It came into effect on 25<sup>th</sup> January, 2002. It weighs about 12,000 kg and is about 15 km in length. It moves upto 100 km. **Pradeep Narayana** gave his presentation on the topic "**TEJAS COMBAT AIRCRAFT**". Tejas means radiance. Teja is a Sanskrit word. It was developed by HAL which stands for Hindustan Aeronautics Limited. It was modified from LCA which stands for Light Combat Aircraft. It is a multi-role fighter. It is used by Indian Air Force and Indian Navy. Its unit is about 200

Creore. Nearly 16 such aircrafts have been built in India. Its first flight was made on 4<sup>th</sup> January, 2001. The approval for this project was given in the year 1998. Its specifications are:

- Maximum speed : 2,025 km/hr
- Maximum altitude : 15,200 m
- Range of flight : 3,000 km
- Weight : 5,450 kg
- Target speed : 2,500 km/hr

This aircraft is made up of light wind material. Its function is to carry weapons and aerial survey for civilian application. He briefly explained the working of it as well. First the air is drawn into the nozzle and gets burned inside it. It releases hot gas. This makes the aircraft lift upwards. Elevens help in elevating the aircraft. Multi-mode radars are present which is used for communication purposes. Some of the aircrafts which is used as flight fighters in Indian airports are F15, Miraj 2000, F16 from USA etc.

The next turn was that of **Mejalin Arno**. His topic was “**PSLV**”. PSLV weighs about 294 TS. It is 44 m in height. It has four stages. The first stage is solid, the second stage is liquid, the third stage is again solid and the fourth stage is again liquid. Its diameter is about 2.8m. It rotates from north to west. It is used in many applications like agriculture, forest, desert, fishing etc. PSLV stands for Polar Satellite Launch Vehicle and it carried IRS (Indian Remote sensing Satellite).

The next presentation was given by **P. R. Raghul** on the topic “**ARYABHATTA**”. Aryabhata was launched in April 1995 by Soviet Union using tosmos-3M launch vehicle. Its apogee is 611 km and perigee is 568 km. It weighs about 360 kg. After Aryabhata, Bhaskara, Rohini and other satellites were launched by ISRO. It is used to monitor cloud patters, send TV signals and capture image of planets. One of the main reasons for sending Aryabhata sent to space was to study X-ray phenomena in outer space. It was named after the great mathematician Aryabhata.

His presentation was followed by **S. Nishanth**. He gave a PPT on the topic “**BRAHMOS**”. BRAHMOS is a short range ramjet supersonic cruise missile. It is based on P-800 Oinks cruise missile. It was named after the river Brahmaputra in India and the Moskos in Russia. It has a diameter of about 70 cm. Its wing span is 1.7 m its maximum altitude is 14000 m. It was first test fired on 12<sup>th</sup> June, 2001 from ITR (Integrated Test Range). BRAHMOS- II is under development. BRAHMOS- II is a hypersonic cruise missile. It’s going to be launched in 2017 or 2018. BRAHMOS is the only missile which can be launched from under the sea. BRAHMOS- II is liquid propellant, so that it can travel in any path.

A presentation on the topic “**GSLV**” was given by **C. J. Nivedh Shankar**. GSLV stands for Geosynchronous Space Launch Vehicle. It was initiated in the year 1990. It was operated by ISRO. It

uses major components of PSLV. GSLV was launched eight times of which three resulted in success. Its final launch was on 5<sup>th</sup> January, 2014. Chandrayaan-II is planned to be launched using GSLV by 2017. It uses Vikas engine. It has three stages namely solid stage, liquid stage and cryogenic stage. Both PSLV and GSLV are launched by ISRO. GSLV helps to send communication satellites. Some of the questions raised were



List some uses of communication satellites.

It is used to send TV and radio signals, mobile signals, fax and internet usage.

The presentation of red team members got over and we had a short tea break at 10:40 am. The break refreshed us and energized us to go further. The break got over by 11:00 am. The presentations began with the blue team members. First the leader of blue team, **Jefin R. Wensely** gave his presentation on the topic “**YELLOW REVOLUTION**”. Yellow revolution increased the growth, development and adaptation of oil seeds. Dr. Brindeshwar is known as the father of yellow revolution. The main aims of yellow revolution were to reduce the demand of oil seeds and to increase the cultivated area and income of farmers. Mustard, sunflower etc are known as edible oil seeds. Yellow revolution used some methods like organic farming and crop rotation in the cultivation of them. India ranked 4<sup>th</sup> in oil seeds production when yellow revolution was implemented here. He showed us a graph showing the area, production and productivity of annual oil seeds crops in India. Its achievements are that it doubled the oil seed production from 12.6 mt to 24.4 mt and there is decline in import of oil seeds from other countries to India. We cleared our doubts regarding the yellow revolution.



What is meant by edible seed?

Edible seeds are those used in industries for manufacturing soaps, bio-diesel and cosmetics.



What type of oil do we use in our Kanyakumari district? We use coconut oil and cashew oil mostly.

His presentation was followed by **Sree Meera Subramaniam**. Her topic was “**VIKRAMADITYA AIRCRAFT CARRIER**”. INS Vikramaditya is about 284 m in length. Its maximum beam is 60 m. Its other name is floating city. It can displace 44,500 tones mega structure of steel. It can carry 30 aircrafts. It is a type of Kiev aircraft carrier. It's used for defense purposes. Its cost is about \$2.35 billion. It was commissioned on 16<sup>th</sup> November, 2013. We the Indians purchased it from Russia. INS can be expanded as Indian Naval Service.

**J. S. Ashmi** gave a presentation on the topic “**RAMAN EFFECT**”. Raman Effect was found by Sir C. V. Raman in the year 1928. The phenomenon of scattering of the monochromatic light into different colours is known as Raman Effect. Rayleigh scattering, Stokes scattering and anti Stokes scattering are the three types of Raman Effect. The exchange of energy does not take place in Rayleigh scattering. In Stokes scattering, the atoms or molecules absorb energy whereas anti Stokes scattering,

the atoms or molecules losses energy.

✍ Why is red light visible from far whereas violet rays are not visible from far? The wavelength of red colour is more whereas the wavelength of violet is less. This is one of the applications of Raman Effect.

Then **Rudra** came forward to present her presentation on the topic “**OPERATION FOOD**”. Operation food was established in the year 1981. Its aim was to prevent the hunger of poor. Each and every month, operation food distributes 2.7 million pounds of food. Both perishable and non-perishable food is distributed. Food is distributed to the partner agencies and then given to the people. In our district, the ration card system is similar to the operation food system. Next the chance was given to **Shyamini** to give her presentation on the topic “**BLUE REVOLUTION**”. Blue Revolution means the adoption of a package programme to increase the production of fish and marine products. The Blue Revolution in India was started in 1970 during the Fifth Five-Year Plan when the Central Government sponsored the **Fish Farmers Development Agency (FFDA)**. The fish production in the country has increased from 0.75 million tons in 1950-51 to 68.69 million tons in 2006-2007.

**M. Seanna** gave her presentation on the topic “**SILICON IMPLANT- CHANGING EYE COLOUR PERMANENTLY**”. Silicone implant is one of the best techniques used. Scientifically, silicone implant helps to change the colour of the eye permanently. Medically it is called “Bright ocular iris implant”. Artificial lens made of silicone is folded and inserted into a slit that has been cut into the cornea. Then the iris is unfolded and adjusted to cover the eye. Only four doctors in this world have performed this silicone implant. Local anesthesia is used in this. A question raised in our mind. Why do they do silicone implant? The answer is for identification of colours.

**V. Naveenjith** did his presentation on the topic “**KAMINI**”. Kamini stands for Kalpakkam Mini Reactor. It is the world’s only thorium-based experimental reactor, as of 2006. KAMINI was the first reactor in the world designed specifically to use uranium-233 fuel. Use of the large thorium reserves to produce nuclear fuel is a key strategy of India’s nuclear energy program. The fuel is the alloy of uranium and aluminium.

A presentation on “**GREEN REVOLUTION**” was given by **V. Shyam Sagar**. Green revolution began in 1960s. Norman Borlaug is known as the father of green revolution. It was brought to India by Mr. M. S. Swaminathan. Green revolution was implemented due to increase in population, shortage of food and less agriculture. Green revolution helped the farmers to increase the food production. Though it benefited the people, it created land pollution. Is green revolution good or bad, was a question that rose in the minds of all. She stated that, it was once needed to overcome food shortage but also resulted in land pollution.

✍ Which central minister allotted fund for green revolution in India?  
Mr. C. Subramaniam.

**Aglin Bala** gave her presentation on the topic “**KALLANAI DAM**”. The grand dam or the Kallanai dam is the oldest dam in the world. It was constructed across the Cauvery River by Karikala Cholan in the 1<sup>st</sup> century. It has strong foundation and solid structure. It is made up of unhewn stone. It is 1080 ft long and 60 ft wide. Some additional information was given by the judges.

The next chance was that of the maroon team members. First myself the **leader of maroon team, R. J. Reshma** came forward to give my presentation on the topic “**INS ARIHANT**”. INS stands for Indian Naval Service. INS Arihant is the India’s first indigenously built nuclear submarine. It costs about \$9.2bn. It was jointly developed by Indian Navy, Bhabha Atomic Research Center (BARC) and Defense Research and Development Organization (DRDO). INS Arihant is a ballistic missile submarine (SSBN). INS Aridhaman, another nuclear submarine was constructed after INS Arihant. Two more INS Arihant class submarines are under construction. The displacement of INS Arihant is about 6,000 tones. The length of INS Arihant is about 112m (367 ft). Its beam is 11m (36 ft) and its draft is 10 m (33 ft). It has a design of Russian Akula-1 class submarine. According to size scale, INS Arihant class stands fourth in length. Chakra class is the biggest submarine next to Arihant class submarines. India is now a member of the exclusive club of countries that have built their own nuclear powered submarines. Arihant gives India the status of a nation possessing blue water navy because the missile can travel far and wide. Common submarines run on diesel whereas the nuclear reactors are used to run the nuclear submarines. Nuclear submarines can stay about 90 days in underwater whereas common submarines require surfacing often in order to charge their batteries. Nuclear submarines are used for defense purposes. Questions were raised by the judges.



Why do we keep the nuclear submarines underwater?

They are kept underwater to secretly watch the enemies and attack them when they come to attack us. Only the periscope stays on the surface of the water to watch the enemies.

The next presentation was given by **S. Dani Rovas**, the co-leader of maroon tam on the topic “**EDUSTAT**”. EDUSAT stands for Educational Satellite. EDUSAT was launched on September 21, 2004. It weighs about 1850 kg. It was launched from Sriharikota. It’s a geosynchronous satellite. EDUSAT has resulted in development of education in various ways:

-  Video conferencing
-  E-Learning
-  Supports curriculum based education
-  Interactive distance education
-  Teachers training

EDUSAT helps in audio-video interactive communication. It provides an interactive class and enables us to interact with subject experts. Questions based on her topic were asked.

✍ Which university in India concentrates only on e- learning? The university is Indira Gandhi Open University.

The next presentation was given by **J. M. Jereshea** on the topic “**SOLAR PARK AT CHARANKA VILLAGE**”. Solar Park is constructed to generate electricity through sun light using solar panels. This method of generating electricity saves energy. Although the sun is 150 million km away, it is still extremely powerful. Charanka solar park uses thin film photovoltaic power systems by different developers. It is constructed in Gujarat, India. It was opened on 19th of April, 2012. It covers about 2000 hectare in Patna district. It generates 605 MW which is about 60% of electricity generated from Gujarat. Totally \$280 million was invested for this project. It is one of the Asia’s largest solar parks. It is also India’s first solar park. When electrons carrying negative charge are more, the electricity is produced. One solar panel is made up of many small solar cells. Each of these cells uses light to make electrons move. Solar cells are made up of two silicon layers. The first silicon layer is loaded with electrons. The electrons flow from metal contacts as electricity and finally get stored in batteries. The solar park at Charanka village’s infrastructure include roads, power distribution network, telecom, fencing, compound wall, entrance, security towers, training institute, common facilities, helipad and fire station. Solar energy doesn’t cause any pollution. At present, hybrid systems are used. Hybrid system refers to wind, solar and other energies so that we can use alternate source of energy if one source is not available.

The next turn was that of **R. J. Jenisha**. Her topic was “**APSARA REACTOR**”. Apsara reactor begun in August 4, 1956. It is used for generating electricity. India's First Nuclear Reactor was Apsara. It was also the first nuclear reactor in Asia. Apsara is a swimming-pool-type reactor loaded with enriched uranium as fuel. The fuel core is suspended from a movable trolley in a pool filled with water. The pool water serves as coolant, moderator and reflector, besides providing the shielding.

**R. Kowsanth Kalidas** gave his presentation on the topic “**POKHRAN**”. Pokhran is a place situated in Rajasthan. Pokhran 1 was launched on May 18, 1974. Pokhran 2 was launched on May 11, 1988. It used bombs like Shakti I, Shakti II, Shakti III, Shakti IV and Shakti V. He explained the procedure about how a bomb explodes. First the fission bomb explodes. Then the atoms are emitted. They reflect at first and ignite fission spark plug. It ignites the fuel and uranium. Finally, the bomb explodes.

A presentation on “**YAMUNA EXPRESSWAY**” was given by **Abila**. The Yamuna expressway connects Great Noida to Agra. The project began its construction on December, 2001. Its approximate construction cost was Rs.13000 Crore. It was inaugurated on August 9, 2012. It provides the fastest moving corridor and connects commercial centers. It gives relief traffic congestion in National Highway. It has a length of 165.537 km. A car can move at a speed of 100 km/h and heavy vehicles can move at a speed of 60 km/h in this road. Nearly 1 lakh people are using this way every day. It connects Delhi and Uttar Pradesh. The next presentation was given by **S. J. Shifi** on the topic

**“BT. EGG PALNT HYBRID”**. The scientific name of brinjal is Solanum melongena Linnaeus. Bt. means that the plant has been genetically modified. Brinjal contains the following things:

⊕ Calories	-25
⊕ Cholesterols	-0s mg
⊕ Sodium	-2 mg
⊕ Potassium	-229 mg
⊕ Carbohydrate	-2 mg
⊕ Fiber	-3 g
Sugar	-3.5 g

She listed the varieties and hybrids of brinjal. In 2004, multi- location field trials were conducted in 11 locations with five brinjal hybrids. India is the centre of origin for brinjal or egg plant. It has been cultivated in India for the last 4000 years. The early bt. Technology was cultured by fermentation. Modern bt. Technology has a built- in mechanism of protection against targeted pests. It has improved pest management. It has reduced the usage of insecticide. Genetic engineering helps us and destructs us. If we use it wisely, we can be able to overcome the disadvantages, she added.

**K. R. Aruna** gave her presentation on the topic **“LPG or LIBERALISATION, PRIVATISATION AND GLOBALISATION MODEL”**. During the independence, our economic growth was very less. The father of LPG is Narasimma Roa. Manmohan Singh also played a very important role in this system. Liberalization means movement toward s free market system. The globalization is governed by the Dankal act. It included imports and exports. Liberalization refers to the freedom. We are free or given liberty to go to any other county.

A presentation on **“CLONED ANIMAL-BHASS”** was given by **K. K. Prabin Kumar**. The first cloned animal is called the Bhass. Clones are organisms that are exact genetic copies. It is used to recreate identical organisms for organ transplantation. The cloned organisms have short life spans and weakened immune system. Human cloning has been prohibited because they may misuse them. After his presentation, we had a lunch break at 1:10 pm. The college provided us delicious meals.

The lunch break got over by 2:45 pm. The presentations were then continued by the yellow team members. **Edin Jijo** gave his presentation on the topic **“TRIPLE HELICAL STRUCTURE OF PROTEINS”**. The founders of triple helical structure of proteins were Gopalamudram Narayana and Lyre Ramachandran. Collagen refers to the connective tissue of the body. There are two compounds namely gelatin and elastin in collagen. The gelatin given fairness to the skin, avoids wrinkles and lines. The elastin gives youthful skin and strengthens the tissues. He explained the synthesis of collagen. It uses are to arrange the tissues and to execute the biological reactions mediated by enzymes.

The next presentation was given by **B. Abhirami, the leader of yellow team** on the topic **“THERMAL IONIZATION”**. Ionization is a process by which an atom or molecule occurs in

negative charge to form ions. It creates gas phase ions and separates the ions according to their mass. The ionization process is of three types namely electron ionization, chemical ionization and desorption ionization. There are three primary components for this process.

- Ion source - ions are produced
- Analyzer - Beams are separated according to their mass
- Collector - Beams are measured

Her presentation was followed by **Mereshiya**, the co-leader of yellow team. Her topic was **“TATA NANO”**. Tata Nano is the cost efficient petrol car in India. It was found by Retan Tata, the chairman of Tata group. It was introduced on 10 January, 2008 in New Delhi at Praghathi ground. In 9th auto expo 2008, car launch programme was conducted. Selling of Tata Nano began from 23<sup>rd</sup> March, 2009. It is 8% shorter than Maruti 800. It has 21% more interior space than Maruti 800. Tata Nano is very cheap because it uses plastics and adhesive materials. It doesn't have AC. It doesn't have power steering and side mirrors. Power windows are absent. The petrol variant types are:

- 2013 CX
- 2013 LX
- Twist XT
- Twist XE

It has CNG XM in it. It has 10 colours. Nano graphite, Nano CX (black) and Nano LX (beige) are some of the colours. Their prices begin from 1.2 lakh onwards. It's top speed is from 95 to 100 km/h. Its height is 1600 mm and width is 1500 mm. Its length is 3100 mm. It has three accelerators instead of four. This car received the business monitoring Indian car of the year in 2010. It is of low cost and has good mileage. Its demerits include that it is not suitable for long drive and the engine is located at the back side hence front axle is 40% and the rear axle is 60%. It is easily inflammable.

A presentation on **“YOGA”** was given by **A. Malavika**. Yoga is a physical, mental and spiritual practice. In 1980, yoga became popular as a physical exercise in western countries. The types of yoga include Vedic yoga, classical yoga, pre-classical yoga and postclassical yoga. Yoga gives us free mind, flexible muscle and fitness to our body. Its merits are:

- ✓ Pulse rate decrease
- ✓ EMG activities decreases
- ✓ Energy level increases
- ✓ Respiratory rate decreases
- ✓ Glucose decreases
- ✓ Sodium decrease
- ✓ Cholesterol decrease
- ✓ ATP increases

A very important question was asked to her based on the topic.

Who is the guru of yoga?  
Pathancheri

The next presentation was given by **T. S. Argineshya** on the topic “**INTERCEPTOR SEWAGE SYSTEM**”. The interceptor sewage system includes interceptor tanks on house connections. This type of sewage system is set up in the river Yamuna. In 1976, RVRSA was awarded a grant to construct this type of sewage system. This system is cheaper than conventional sewers. The contents like soil (floating, immiscible), liquid and gases can be found in sewage.

A PPT on the topic “**CASCADE PROCESS IN COSMIC RADIATION**” was given by **M. R. Vidhya Dharshini**. Cosmic rays are immensely high-energy radiation, mainly originating outside the Solar System. Cascade process is any process that takes place in a number of steps, usually because the single step is too inefficient to produce the desired result.

The next chance was that of the green team members. First the leader of green team, **Gby Atee** gave her presentation on the topic “**CATARACT SURGERY**”. A cataract is a clouding of the lens in the eye which affects vision. The lens of the eye must be clear for the retina to be clear. A sharp object is pierced into the eye and cataract was removed in olden days. Nowadays modern methods are used. One of them is the phacoemulsification. In this, first a small incision is made in the eye. Then a probe emitting ultrasound is inserted and the cataract is broken and using suction process, the cataract is removed. Another modern method is extra capsular surgery method. In this a long incision is made first. The cloudy substance is removed by the process of suction. Femto second laser is an assisted cataract surgery. It is the present method of cataract surgery. It uses laser system. An artificial lens is replaced in the eye after the surgery.

Her presentation was followed by **J. Jisfia Shifany**, the co-leader of green team. She presented her PPT on the topic “**CRESCOGRAPH**”. A crescograph is a device which is used to measure the growth of a plant. It was invented by Jagadish Chandra Bose. It uses a series of clockwork gears. Modern electronic crescograph was invented by Randall, an American scientist. Farmers use this crescograph to measure the length of the plant to ensure that the plant is growing. It helps them to cultivate the apt crops for the seasons. It is widely used in the field of agriculture.

**N. Srinidhi** did her presentation on the topic “**BHABHA SCATTERING**”. The founder of Bhabha scattering is Homi Jahangir Bhabha. He was born on 30th October, 1902. He died on 24 January, 1966. Atom is the smallest unit of matter. It is composed of nucleus which has protons and neutrons. Positrons are electrons that carry positive charge whereas neutrons do not have any charge. Negative charge is carried by electrons. The scattering of positrons by the electrons is known as Bhabha Scattering. Positrons quickly react with the electrons of ordinary matter by annihilation to produce gamma radiations.

Her presentation was followed by **S. Ayana Treesa Raj**. She presented her PPT on the topic “**DELHI METRO**”. The managing director of Delhi metro is E. Sreedharan. It was physically constructed on October 1, 1998. It was inaugurated on December 24, 2002. It is the world’s 13<sup>th</sup> largest network in terms of length. The Delhi metro reduced accidents and save time of the people. During its construction, many accidents have been occurred and lot of energy was used for building. It is India’s 3<sup>rd</sup> urban mass transportation system. It has five colours indicating various routes in order to avoid accidents.

- RED : Rithala to Dilshad Garden
- YELLOW : Jhangirpuri to HUDA City center
- BLUE : Dwarka Sub City to Noida
- GREEN : Mundka to Inderlok
- ORANGE : Dwarka Sector to New Delhi

The next presentation was given by **Soorya Vijay** on the topic “**AKASH- SURFACE TO AIR MISSILE**”. The Akash- surface air missile was developed by DRDO (Defense Research and Development Organization). Its development began in the year 1983. It has a length of about 5.78 m. Its diameter is 0.35 m and weight is 720 kg. It is of two types- Mark- I and Mark –II. Mark- I was the first test flight and development was going on upto 1997. Mark –II began to be developed on June 11 2010. It’s an air to air missile. Akash missile can destroy a target 30 km away. It is used as a weapon. It is used by the Indian army and Indian air force. She concluded her talk after listing the failures of Akash missile system when launching. We had a short tea break at 3:30 pm after her presentation. The college provided us tea and snacks. The break got over by 3:40 pm.

The presentation was continued by **Ageesha**. Her topic was “**SIDDHA MEDICINE**”. The human body consists of five primordial elements. The Siddha medicine has no side effects. It regulates blood circulation and body weight. It cures digestive problems. Surgery is not possible in Siddha medicine and it takes too much time to act.

**H. Sree Ram** gave his presentation on the topic “**TATA SWACHH**”. Tata Swachh is a water purifier which is developed by the Tata Chemicals, a part of the Tata group in India. Water purification is carried out by using processed rice husk ash and nano silver particles. Tata Swachh Bulb is the main purifying unit. It doesn’t require electricity for the purification of water. It doesn’t need running water for purification. There is no wastage of water if we use this. The only demerit is that only the lower reservoir can store the water.

His presentation was followed by **Shruthikrishna**. Her topic was “**AYURVEDIC MEDICINE**”. The word „Ayurveda” is a Sanskrit word. Ayurveda is crowned as the mother of all healing. Nearly 80 per cent of the people use ayurveda. The main difference between the Siddha and ayurveda medicines are that the Siddha is a Tamil medicines whereas ayurveda is a Sanskrit medicine.

A presentation on “**AKASH TABLET**” was given by **Aswin Kumar**. Akash tablet is an android based computer gadget used for e-learning and is provided by the Indian government. It was

produced by Datawind, a British company. Its types are:

Akash I	2.2 Froya, wifi only
Akash II	4.0 ice cream sandwich, wifi only
Akash III	4.0.3 ice cream sandwich, wifi and GPRS

It demands include:

- improving RAM status
- Front facing camera
- Battery

Akash I: RAM- 256 MB: Battery- 2100 mAH

Akash II: RAM- 512 MB: Battery- 3000 mAH

Akash III: RAM- 512 MB: Battery – 3000 mAH

The main difference between tablets and laptops are that tablets have different operating systems and are not similar in size to laptops. His presentation was followed by **S. Haritha**. Her topic was “**BRIHADEESWARAR TEMPLE**”. The Thanjavur temple is an example of Tamil architecture. It is one of the largest temples in India. It was built by Raja Raja Chola II. It was completed in 1010 AD. There is a big statue of Nandi (scared bull), carved out of a single rock. This temple was built as a dedication to Shiva.

**Kaviya Shree** did her presentation on the topic “**PALAMPORE**”. A palampore is a hand painted and moderate- dyed bed cover that was made in India. It is used in furniture, cupboards, almirahs etc. It is also used in plumping supplies. It is a man-made fiber and sometimes causes allergy. It is widely used in textile shops.

**Mary Sushmija** gave her presentation on the topic “**NISHANT UNMANNED AERIAL VEHICLE**”. Nishant Unmanned Aerial Vehicle was developed by India’s ADE (Aeronautical Development Establishment). The first test flight was in 1995. Its aim was to the performance of Wankel engine used in UAV. The aircraft has a jam resistant command link and digital down link for transmission of imagery. It is launched using a mobile hydro pneumatic launcher. The air vehicle has autonomous flight capabilities and is controlled from a user friendly ground control station. Nishant is a highly mobile, compact and easily deployable system.

The presentations got over by 4:10 pm. Mr. Velaian told us about the next programme which will begin at Excel Central School, Thiruvattar. Mr. Perummal gave us some tips to enhance our PPT:

- Prefer white backgrounds
- Avoid more text
- Don’t copy the text from internet
- Use bullets

Mr. Benzigar Rajan gave remarks about our feedback. Shri P. Gopalan also gave feedback on our PPTs. He said that more topics are familiar to us after this programme. Shri John Rabikumar and

Shri Bergin gave few remarks. We should be clear about the concept. Our own ideas should be included in the presentations. We should try to develop questioning skills. Shri Balakrishnan gave few tips and rectified our mistakes. Shri Edwin Sam and Lekshmi too gave few ideas to improve our presentations. We were benefited a lot by their remarks. Finally, the meeting got over by 5:00 pm. I developed many skills through this programme. Confidence level in me improved. Questioning and answering skills were also improved. The sole reason for my development is KAP. I thank KAP for giving us this opportunity to celebrate National Science Day in a useful manner.

**J. M. Mereshiya,  
Yellow Team**

*“It stands to the everlasting credit of science that by acting on the human mind it has overcome man's insecurity before himself and before nature.”*

According to this proverb, the national science day celebration of Kumari Arivial Peravai on scientific development in India was held on 28<sup>th</sup> February, 2015 at Sigma College of Architecture. We boarded the collage sharply at 7.50 a.m. and we had our breakfast at that collage. We assembled in the seminar hall and the program commenced at around 8:00am and the first session was anchored by Dani Rovas, the co-leader of Maroon Team.



**Mr. Mullanchery M. Velaian**, the organizer of Kumari Arivial Peravai (KAP) gave away the introductory address. In his address each and every words he spoke encouraged us to celebrate national science day in a prolific way. After his speech she welcomed everyone presented there. Next she gave some information about national science day. She told that National Science Day is celebrated all over India with great

enthusiasm on 28<sup>th</sup> of February every year in order to commemorate the invention of the Raman Effect in India by the Indian physicist, Sir Chandrasekhara Venkata Raman on the same day in the year 1928. For his great success in the field of science in India, Chandrasekhara Venkata Raman was awarded and honored with the Nobel Prize in the Physics in the year 1930.

Next **Mr. James Wilson**, the chairman of Sigma Collage of architecture told us that Sir. C. V. Raman studied about the science and optics. 100 volt bulb is still available in Kerala. The climate will not be stable western countries. That's why automated windows are invented by the scientists that can be used according to the weather.

Followed by him, **Mr. Joseph Fernando**, the principle of the SIGMA collage gave a talk about water. He told about how to save water. He said about Kudankulam Atomic Power Station and the Co-Co Cola Company that consumes more water. While concluding his talk he appreciated and expressed

thanks to **Mr. Mullanchery M. Velaian** for creating awareness among school students.

Next Miss. Dani welcomed **Mr. Muthu** to give his talk. First of all he welcomed everybody. He said that he felt glad to be among the students particularly on that National Science Day. He advised us to develop interest in science. He asked us to have a habit of asking questions while learning about a topic. He concluded by advising us to have positive attitude towards all the situations we face in life. Then it was followed by the vote of thanks by Dani. The next session, i.e. presentation session was anchored by Lekshmi

Miss. S. Abina, leader of Red team presented about “**Chandrayaan**”. She said that, Chandrayaan-1 was India's first lunar probe. It was launched by the Indian Space Research Organization in October 2008. It operated until August 2009. Then she explained the achievements made by Chandrayaan. She said PSLV is a rocket used to launch the Chandrayaan satellite in space. Chandrayaan would orbit around moon 100 km from moon surface. It has detected X-Ray signals in space and Rock and mineral composition in Moon. Chandrayaan has completed 3000 orbits acquiring 70000 images of the lunar surface. Chandrayaan-1 which was at a height of 100 km from the lunar surface was raised to 200 km since November 2008 in order to enable further studies on

- Orbit deviations in space
- Gravitational field variation of the Moon.

Chandrayaan-1 had also detected water ice on the Moon. She also added that, “Chandrayaan-2 mission is planned to be launched by a Geosynchronous Satellite Launch Vehicle rocket being developed by the Indian Space Research Organization”.

Miss. R. S. Raksha, member of Red team presented about “**Prithvi**”. Prithvi is a surface-to-surface short-range ballistic missile (SRBM) developed by Defense Research and Development Organization (DRDO) of India. Prithvi was the first missile to be developed in 1983. The Prithvi missile project was designed in 3 models for the use by the Indian Army, Indian Air Force and the Indian Navy. She said, the three variants of Prithvi are

- \* Prithvi-I class is a surface-to-surface missile designed for Indian Army. It can hold up to 1,000 kilo grams of explosives. It can travel with a maximum distance of 150 km.
- \* Prithvi II class is also a single-stage liquid-fuelled missile exclusively designed for Indian Air Force. It can carry 500 kilo grams of explosives. It can travel with a maximum distance of 250 km.
- \* Prithvi III class is a two-stage ship-to-surface missile. The first stage is solid fuelled. The second stage is liquid-fueled.

Miss. A. S. Induja, co-leader of Red team presented about “**Mangalyaan**”. She said Mangalyaan is a spacecraft also called as Mars Orbiter Mission. Mangalyaan was launched on 5th November 2013 by the Indian Space Research Organization (ISRO) at Satish Dhawan Space Centre. Mangalyaan is India's first interplanetary mission. ISRO has become the fourth space agency to reach

Mars, after the Soviet space program, NASA, and the European Space Agency. India is the first Asian nation to reach Mars orbit. India is the first nation to send a satellite on Mars orbit in its first attempt. She then said that the total expenditure of the mission was roughly Rs. 450 Crore and is considered as a least-expensive Mars mission launched till date, said by Shri. K. Radhakrishnan, the chairman of ISRO. She also included the primary objectives of the mission.

Miss. M. Sabrina Lynette Fernando, member of Red team presented about “**PARAM Super Computer**”. She said PARAM is a series of supercomputers designed and assembled by the Centre for Development of Advanced Computing (C-DAC) in Pune, India. PARAM 8000 is considered as India's first supercomputer. The latest machine in the series is the PARAM Yuva II. The PARAM series are,

- PARAM 8000 is designed with 64 CPUs. It used a type of microprocessor architecture designed for performing many processes a single time
- .PARAM 8600 was an improvement over PARAM 8000. PARAM 8600 used 256 CPU computers.
- PARAM 9900/SS was designed with Super SPARC II processor and has 200 CPUs for processing.
- PARAM 10000 is designed with Sun Enterprise 250 server and each such server contained Ultra SPARC II processors. It is designed with 160 CPUs.
- PARAM Padma had a peak speed of 1024 GFLOPS (Giga Floating Point Operations).
- PARAM Yuva has a maximum speed of 38.1 teraflops and a peak speed of 54 TFLOPS.
- Param Yuva II was designed by Centre for Development of Advanced Computing (C-DAC) in a period of 3 months, at a cost of Rs. 16 Crore. It performs at a peak of 524 teraflops.

Mr. V. G. Vinoj, member of Red team presented about “**Agni**”. Agni is a ballistic missiles which was developed by Defence Research and Development Organisation of India (DRDO). This missile is exclusively developed for Indian Army. The Agni missile family consists of five variants namely,

- ❖ Agni-I is a short range ballistic missile tested at the test range in Chandipur off the coast of Orissa, India, in May 1989. It consists of a single engine. It can carry explosives up to 1000 kg and can travel up to 700-800km.
- ❖ Agni-II is a medium-range ballistic missile equipped with two solid fuel stages. It can carry explosives up to 2,000kg and can travel up to China.
- ❖ Agni-III was It was successfully test fired in April 2007 at its second attempt. This missile can carry explosives up to 2,490kg and can travel up to 4,500km.
- ❖ Agni-IV is a two-stage nuclear-capable intermediate range ballistic missile. The missile was first tested from Wheeler Island on Nov 2011. It reached an altitude of about 900km during the test. It can carry explosives up to 800kg and can travel up to 4,000km.
- ❖ Agni-V which is an intercontinental ballistic missile is being developed and is expected to enter service by 2014-15

Mr. Pradeep Narayanan, member of Red team presented about “**Tejas Combat Aircraft**”. Tejas aircraft is a fighter aircraft designed for Indian Air force developed by Hindustan Aeronautics Limited (HAL). The Tejas is the second supersonic fighter developed by Hindustan Aeronautics

Limited .Tejas aircraft is a tailless aircraft powered by a single engine. Tejas aircraft was named after the former Prime Minister Atal Bihari Vajpayee.

Mr. B. Mejalín Arno, member of Red team presented about “**PSLV**”. PSLV is the abbreviation of POLAR SATELLITE LAUNCH VEHICLE. The PSLV is a satellite launch vehicle or rocket. PSLV has been used for launching various satellites for missions like Chandrayaan-1, Mars Orbiter Mission, Space Capsule Recovery Experiment, Indian Regional Navigation Satellite System (IRNSS) etc. The height of PSLV is about 44m. Its diameter is about 2.8 meters. He said that PSLV has four stages for explosion. Then he described all four stages of PSLV as,

- ★ PS1 is the first stage of PSLV and it provides the launcher the high thrust that is required for lift off.
- ★ PS2 is the second stage of PSLV and is powered by the liquid engine.
- ★ PS3 is the third and penultimate stage of PSLV, and it uses a solid rocket for propulsion.
- ★ PS4 is the fourth and final stage of PSLV and it uses two liquid engines for propulsion.

Followed by him Mr. P. R. Ragul, member of Red team presented about “**Aryabhata**”. Aryabhata was India's first satellite, named after an Indian astronomer named Aryabhata. It was built by the Indian Space Research Organization. The weight of Aryabhata is 360kg. Aryabhata was launched by the Soviet Union on April 19, 1975 using a Cosmos-3M launch vehicle from a place called Kapustin Yar. The objectives of Aryabhata were to design and fabricate a space satellite system and evaluate its performance in orbit. The satellite re-entered the Earth's atmosphere on 11 February 1992. He said the satellite carried three experiments for,

- \* X-Ray Astronomy
- \* Solar Physics
- \* Aeronautics.

Mr. S. Nishanth, member of Red team presented about “**BrahMos**”. BrahMos is a two stage missile. The first stage is powered with solid fuel. The second stage is powered with liquid fuel. The solid and liquid fuels are used to propel with supersonic speed. BrahMos missile can be used in land, sea and sub-sea platforms. This missile can be installed on Ships, Submarines, Aircraft and Ground vehicles.

Following the presentation of Red team, Blue team presented their presentation. The presentation was started by Mr. Jefin. R. Wensely, Leader of Blue team. He presented onn “**Yellow Revolution**”. Yellow revolution is defined as production of Oil Seeds. Yellow revolution means the cultivation of mustard as a part of crop rotation. It prevents the soil from getting eroded and at the same time gives a rich crop of oil seeds. A potato farmer in Washington Mr. Dale Gies used mustards seeds to build soil organic matter in order to eliminate the need for chemical pesticides and fertilizers. Mr. Bindeshwar Prasad Singh who is an Indian farmer is considered as father of Yellow revolution in India. The Indian Vegetable Research Institute at Varanasi gave him silver medal for year 2007. Then he said

that, a survey report had a result that the growth, development and adoption of new varieties of oilseeds had nearly doubled oilseeds production from 12.6 metric tons to 24.4 metric tons within a period of 1987-1997 in India.

Miss. J. S. Ashmi, member of Blue team presented about “**Raman Effect**”. The Raman Effect defines that light was made up of particles known as 'photons'. The change in wavelength of the light beam is known as the Raman Effect. The scattering of these photons is known as Raman Effect or Raman scattering. An Indian scientist named Sir C. V. Raman is the inventor of Raman Effect. The Raman Effect can be used to find the movement of molecules. The Raman Effect can be used to explore chemical composition and the structure of different materials. Some of its application include; Geology, Material Science, Petro-chemistry i.e., for polymers, Pharmaceutical Industry, Nuclear Science and Forensic Science

Miss. Rudra Sathish, member of Blue team presented about “**Operation Food**”. Operation Food is a program initiated by Human services charity. Operation Food was established in 1981 in USA. It is not popular in India. The motto of Operation Food as to feed the poor and hungry people all over the world with healthy foods by directly visiting them. Consequently she said Operation Food Search is a charity organization which is a largest distributor of free food in United States. This service is operated 24 hours a day and 7 days a week to help poor people who starve out of hunger.

Miss. Shamini, member of Blue team presented about “**Blue Revolution**”. Blue Revolution is defined as to increase the production of fish and marine products. The Blue Revolution in India was started in 1970 during the Fifth Five-Year Plan. There are more than 1800 species of fish found in Indian sea and inland waters of India. Some of the important sea fish include catfish, herring, perches, mullets, Indian salmon, shell fish, eels, etc. Also she named some of the main fresh water fish such as catfish, loaches, carps, prawns, and anchovies. 50% of the India's total fish production comes from inland fisheries including ponds, tanks, canals, rivers, reservoirs, and fresh water lakes. Marine fisheries contribute about 50% of the total fish production of the country. Kerala is the leading producer of fish followed by Maharashtra, Karnataka, Gujarat, and Goa. Fish production in our country has increased from 0.75 million tons in 1950-51 to 68.69 million tons in 2006-2007.

Miss. M. Seanna, member of Blue team presented about “**Silicone implants-Changing Eye Color permanently**”. Silicone implants is an intraocular implant that is placed in the interior chamber of the eye to change the appearance of the iris for both medical and cosmetic reasons. Silicone implants can be used in patients with iris abnormalities such as, Ocular Albinism, Coloboma, Aniridia, Heterochromia and Iris Atrophy. It is a healthy and safe way to alter their eye color and serves as an alternative to colored contact lenses. Silicone is a material used in many different lenses used by patients with cataract or vision correction. The silicone material is safe and has passed ISO standardized regulations for manufacturing and testing. She then said that it is inert, non-toxic, and biocompatible with the human body. The implant is made to last the lifetime of the patient.

Mr. V. Naveenjith, member of Blue team presented about “**KAMINI (Kalpakkam Mini reactor)**”. It is a research reactor at Indira Gandhi Center for Atomic Research in Kalpakkam, India. Uranium-233 is a fuel used in it. It produces 30 kilowatt of thermal energy at full power. KAMINI was the first reactor in the world designed that uses uranium-233 as its fuel. The fuel is the alloy of uranium and aluminum. Some of the facilities include Radiographic examination and Activation analysis of components. The biological shield of the reactor is made of a combination of different types of interlocking concrete and lead bricks.

Next Mr. V. Shyam Sagar, member of Blue team presented about “**Green Revolution**”. The Green Revolution refers to a series of research, and development, and technology transfer initiatives that increased agricultural production worldwide, particularly in the developing world. In India Green Revolution has begun in the 1960s through the introduction of, High-yield crop varieties and Application of modern agricultural techniques. This led to an increase in food production in India. American agronomist Dr. Norman Borlaug is known as the Father of the Green Revolution. He continued saying that the introduction of high-yielding varieties of seeds and the increased use of chemical fertilizers and irrigation led to the increase in production of food grains mainly wheat. This made India self-sufficient in food grains.

Miss. Aglin Bala, member of Blue team presented about “**Kallanai Dam**”. Kallanai is an ancient dam built across the Kaveri River in Tiruchirapalli District in the state of Tamil Nadu. It is also called as the Grand Anicut. Kallanai Dam is one of the oldest irrigation dams in the world built around 2000 years ago and is still in use. It was built by the Chola King named Karikal Valavan. The main purpose of building Kallanai was to divert the Cauvery water for irrigation in the Tanjavur delta. The dam is 1080 foot long (329 meters) and 60 foot wide (20 meters). By the early 20<sup>th</sup> century, the irrigated area was about one million acres. At present the dam caters to irrigation needs of 12 Lakh acres.

Miss. Sree Meera Subramanian, member of Blue team presented about “**Vikramaditya - aircraft carrier**”. INS Vikramaditya is the largest aircraft carrier ship. Indian Naval Ship is the full form of INS. The original name of INS Vikramaditya is Baku and it was built by Russia. The carrier was purchased by India on 20th January 2004 at a price of \$2.35 billion. It was offered to Indian Navy in 2013. On 14th June 2014, Prime Minister of India Narendra Modi formally inducted INS Vikramaditya into the Indian Navy and dedicated it to the nation.

After the presentation of Blue team, subsequently the Maroon team presented on various developments in India. Miss. R. J. Reshma, Leader of Maroon team started her presentation on “**INS Arihant**”. INS Arihant is the lead ship of India's Arihant-class of nuclear-powered ballistic missile submarines. This ship was built at the Ship Building Centre in Visakhapatnam. INS Arihant is designed and constructed as a part of the Indian Navy's secretive Advanced Technology Vessel project. The Arihant-class submarines are reported to be comparable to the Akula-class submarine. Arihant has four vertical launch tubes, which can carry twelve smaller K-15 missiles or four larger K-4 missiles. The K-4 has a longer range of 3,500 km and has commenced trials. Further she said Arihant will be more of "a

technology demonstrator", rather than a fully operational SSBN according to Admiral Nirmal Verma.

Miss. S. Dani Rovas, co-leader of Maroon team gave her presentation on “**EDUSAT**”.

EDUSAT is the satellite completely devoted to meet the demands of educational sector. EDUSAT is also called as GSAT-3. EDUSAT was successfully launched into a Geosynchronous Transfer Orbit on the first operational launch. It was launched on September 20, 2004 by Indian Space Research Organization. It was specially designed to meet the increasing demand for a satellite-based distance education system for the country. It has revolutionized classroom teaching through IP based technology. The Expert can address the queries of the students in the live mode. The students can interact and ask questions using the following three methods as,

- 👉 Audio Video Conferencing
- 👉 Text Mode
- 👉 Through Telephones

Next Miss. J. M. Jereshea, member of Maroon team gave her presentation on “**Solar Park at Charanka village in Gujarat**”. Charanka Solar Park is considered as Asia’s largest solar park and India’s first solar park. The objective of the park is to generate electricity through sun light using solar panels and to save electricity for current and future use. Although the sun is 150 million kilometers away it is still extremely powerful. Charanka solar park is a group, using 17 thin film photovoltaic power systems by different developers. It is constructed in Gujarat, India. It was opened in 19th April 2012. It has an Area of 2000 hectare in Patan district. It generates 605MW which is 66% of electricity from Gujarat. Total investment for constructing this park is about 280 Million US dollars. The flow of electrons is called electricity. A solar panel turns the suns light into electricity. One solar panel is made up of many small solar cells each of these cells uses light to make electrons move.

Followed by her Miss. R. J. Jenisha, member of Maroon team gave her presentation on “**APSARA Reactor**”. Apsara is the oldest of India's research reactors. The reactor was designed by the Bhabha Atomic research Center and built with assistance from United Kingdom. Apsara is a light water swimming pool-type reactor with a maximum power output of one megawatt thermal. The reactor burns enriched uranium in the form of aluminum alloyed curved plates. Fuel for the reactor is supplied under contract from the United Kingdom, provided that the fuel is safeguarded. The Apsara reactor is utilized for various experiments including,

- Neutron activation analysis
- Radiation damage studies
- Forensic research
- Neutron radiography
- Shielding experiments
- Production of radioisotopes

Mr. R. Kowsanth Kalidas, member of Maroon team gave his presentation on “**Pokhran**”. Pokhran is a city and a municipality located in the Jaisalmer district of the Indian state of Rajasthan. It is a remote location in the Thar Desert region and served as the test site for India's first underground nuclear weapon detonation. In his presentation he also included the merits and demerits of it.

Followed him Miss. Abila, member of Maroon team gave her presentation on “**Yamuna Expressway**”. The Yamuna expressway stretches out for 165 kms. It connects international tourist destinations of Delhi and Agra. Yamuna Expressway is to be designed with a 6-lane access controlled Expressway. It is planned to have 5 LFDs (Land of concessionaire) with facilities of 4 Toll Plazas, and 6 Interchanges along the entire length. YEIDA notified area covers approx. 2,689 sq. kms.

Miss. S. J. Shifi, member of Maroon team gave her presentation on “**Bt. Eggplant Hybrid**”. Brinjal is also called as eggplant and Aubergine in North America and Europe. It is a very important and common vegetable in India. It is often described as a poor man's vegetable because it is popular amongst small-scale farmers and low income consumers. Brinjal is also called by some as the “King of Vegetables”. It is low in calories and high in nutrition. It has very high water content and is a very good source of fiber, calcium, phosphorus, and vitamins B and C. It is also used in ayurvedic medicine for curing diabetes, hypertension and obesity. In addition, dried brinjal shoots are used as fuel in rural areas. Brinjal is grown on nearly 550,000 hectares in India, making the country the second largest producer after China. It is an important cash crop for more than 1.4 million small, marginal and resource-poor farmers. In 2005-2006, the national average productivity of brinjal was recorded around 15.6 tons per hectare. Then she explained the merits and demerits of the genetically modified brinjal and concluded.

Miss. X. M. Mary Sushmija, member of Maroon team then gave her presentation on “**Nishant-Unmanned Aerial Vehicle**”. Nishant is a name of an Unmanned Aerial Vehicle (UAV) developed by Defence Research and Development Organisation (DRDO). It is designed for Indian Armed Forces. Nishant is a multi mission Unmanned Aerial Vehicle. Nishant is a highly mobile, compact and easily deployable system. An onboard flight control and navigation system enables the aircraft to fly in autonomous way point navigation mode. It can work Day/Night. It can be used for;

- Battlefield surveillance
- Target tracking & localization
- Artillery fire correction.

Miss. K. R. Aruna, member of Maroon team presented on “**LPG or Liberalization, Privatization and Globalization model**”. Liberalization refers to the loosening of government regulations. Liberalization has made continuous financial reforms in India since July 24, 1991. Privatization refers to transferring of ownership from the government sector to the private sector. Globalization stands for the integration or consolidation of the various economies of the world. Mr. K. K. Prabin Kumar, member of Maroon team presented on “**Cloned Animal-Bhass**”. Cloning is the process of producing similar populations of genetically identical individuals that occurs in nature when organisms such as bacteria, insects or plants reproduce asexually. He explained it was possible to

create identical animals for organ or tissue transplantation.

After the presentation of Maroon team, Yellow team gave away their presentation. Firstly, Mr. J. S. Edin Jijo, member of Yellow team gave his presentation on “**Triple Helical Structure of Proteins**”. The first high-resolution structure available for a triple helix has confirmed the model of three supercoiled polyproline II-like helices. It has defined a highly ordered water network whose regularity depends on the presence of 4-hydroxyproline. The role of the rod-like triple helix lies in its capacity to self-associate in a variety of forms as well as its ability to bind a wide range of ligands. The extensive hydrogen-bonded water networks, together with the high content of sterically restricted amino acids, are the major contributors to the stabilization of triple helices.

Next Miss. B. Abhirami, Leader of Yellow team gave her presentation on “**Thermal Ionization**”. Thermal ionization, also known as surface ionization or contact ionization. It is a physical process whereby the atoms are desorbed from a hot surface, and in the process are spontaneously ionized. Thermal ionization is used to make simple ion sources, for mass spectrometry and for generating ion beams.

Then I, Miss. Mershiya, Co-leader of Yellow team gave her presentation on “**TATA Nano**”. Tata Nano is a city car manufactured by Tata Motors. It was made and sold in India. The Nano was initially launched with a price tag of Rs. 100,000 which was ultimately increased with time. It has won several awards such as Business Standard Motoring Indian car of the year in the year 2010, Edison Awards, first place in the transportation category in 2010.

Miss. Malavika, member of Yellow team gave her presentation on “**Yoga**”. Yoga is a physical, mental, and spiritual practice or discipline that denotes a variety of schools, practices and goals in Hinduism, and Jainism, the best-known being Hatha yoga and Raja yoga. Yoga means union of the individual consciousness or soul with the Universal Consciousness or Spirit. Yoga is a 5000 year old Indian body of knowledge. Balancing and unifying various approaches is the practice of Yoga Asana. The science of Yoga helps to explore the complete Way of Life. Different forms of Yoga include,

- Gyan Yoga or philosophy,
- Bhakti Yoga or path of devotional bliss,
- Karma Yoga or path of blissful action,
- Raja Yoga or path of mind control.
- Raja Yoga is further divided into eight parts.

Next Miss. T. S. Argineshya, member of Yellow team gave her presentation on “**Interceptor Sewage System**”. She gave the detailed explanation. Then Mr. P. K. Raghul, member of Yellow team gave his presentation on “**Ultra short radio waves**”. He said, it was very short specific designating or of radio waves shorter than 10 meters in wavelength and above 30 megahertz in frequency. It is used for various scientific and engineering applications. Then he explained the merits and demerits of the

Ultra short radio waves. Finally he concluded his speech.

Lastly, Miss. S. Leena Saju, member of Yellow team gave her presentation on “**Zero (0)**”. Zero is both a number and the numerical digit used to represent that number in numerals. It fulfills a central role in mathematics as the additive identity of the integers, real numbers, and many other algebraic structures. As a digit, 0 is used as a placeholder in place value systems.

After the presentation of Yellow team, Green team gave away their presentation. Firstly, Miss. Gby Atee, Leader of Green team had presented her power point presentation on “**Cataract surgery**”. A cataract is a clouding of the lens inside the eye, causing vision loss that cannot be corrected with glasses, contact lenses or corneal refractive surgery. Cataract surgery is the removal of the natural lens of the eye (also called "crystalline lens") that has developed an opacification, which is referred to as a cataract. Two main types of surgical procedures are in common use throughout the world.

- Phaco-emulsification
- Extra capsular cataract extraction (ECCE).

In most surgeries an intraocular lens is inserted, she said and concluded. Jisfia then present on the theme Crescograph.

Followed by her Miss. N. Srinidhi, member of Green team had presented her power point presentation on “**Bhabha scattering**”. Bhabha scattering is the electron-positron scattering process. The Bhabha scattering rate is used as a luminosity monitor in electron-positron colliders. Bhabha scattering has been used as a luminosity monitor in a number of  $e^+e^-$  collider physics experiments. The accurate measurement of luminosity is necessary for accurate measurements of cross sections. Small-angle Bhabha scattering was used to measure the luminosity.

Then Miss. S. Ayana Treesa Raj, member of Green team had presented her power point presentation on “**Delhi metro**”. Delhi Metro is a metro system serving Delhi and its cities of Gurgaon, Noida, Faridabad and Ghaziabad in the National Capital Region of India. Delhi Metro is the world's thirteenth largest metro system in terms of length and a member of Nova Group of Metros. Delhi Metro is India's third urban mass rapid transportation system, after the Kolkata Metro and Chennai MRTS. The network consists of six lines with a total length of 189.63 kilometres with 142 stations of which 35 are underground.

Next Miss. Sourya Vijay, member of Green team had presented her power point presentation on “**Akash-Surface to Air Missile**”. Akash is a mid-range surface-to-air missile (SAM) system being built by India's state-owned Defence Research and Development Organisation (DRDO). Two versions of the missile are being built for the Indian Air Force (IAF) and the Indian Army (IA). The Akash SAM system can employ multiple air targets while operating in fully autonomous mode. Akash missiles are designed to

be launched from static or mobile platforms, including battle tanks and wheeled trucks, providing flexible deployment. It can handle multiple targets and destroy manoeuvring targets, such as unmanned aerial vehicles, fighter aircraft, cruise missiles and missiles launched from helicopters.

Then Mr. Sree Ram, member of Green team had presented her power point presentation on “**Tata Swach**”. Tata Swach is a water purifier developed by Tata Chemicals, a part of the Tata group in India. Swach was designed as a low cost purifier for Indian low-income groups, who lack access to safe drinking water. The product is sold in three variants as Tata Swach, Tata Swach Smart and Tata Swach Smart Magic.

Next Miss. S. Haritha, member of Green team had presented her power point presentation on “**Thanjavur Periya Kovil**”. Peruvudaiyar Kovil is a Hindu temple dedicated to Shiva that is located in the city of Thanjavur in the Indian state of Tamil Nadu. It is an important example of Tamil architecture achieved during the Chola dynasty. It is also known as Periya Kovil, Brihadeshwara Temple, RajaRajeswara Temple and Rajarajeswaram. It is one of the largest temples in India and one of India's most prized architectural sites.

Lastly Miss. A.Kaviya Shree, member of Green team had presented her power point presentation on “**Palampore**”. A palampore is a type of hand-painted and mordant-dyed bed cover. It was made in India for the export market during the eighteenth century and very early nineteenth century. She also added the merits and demerits of them.

After the completion of the presentation of all the students on their topics **Mr. Mullanchery M. Velaian** appreciated the students and informed about the venue of the next meeting. He appreciated the courage that we had during our presentations and he said us to improve that more in future.

Then **Mr. Perumal** said that we did our presentations well. He said us to prefer white background rather than black in slides. Then he said that we should choose small font sized letters and we should never take points as such from internet. Welcome screen is not necessary.

Then **Er. A. Benzigar Rajan**, Dy. Manager, ISRO Propulsion Complex Mahendragiri advised us to select good and explainable points from internet. And also we should not simply cut and paste directly from internet sources. We should prepare slides and explain in a systematic way.

Following him **Shri. P. Gopalan**, Headmaster Rtd said that he was amazed to watch our presentation because we were very much involved. As the final exams are arriving students would be busy preparing for their schools exams. But still they are prepping for KAP Presentations. He said that he had learnt many points though our presentation. He concluded by saying some encouraging words to us.

After him **Shri M. John Rabikumar**, ISRO Propulsion Complex Mahendragiri said all the students had presented well. Many students have not presented a presentation rather they read their presentation and that surely was not a good presentation, he continued. He advised us saying that we should never copy and paste directly from internet. We should ask questions so that our knowledge can improve. We, ourselves should do our presentation. He concluded by saying we should show some comparisons related with our topics.

Then **Shri P. Balakrishnan**, Head Master Rtd wished us and appreciated our presentation. Then **Shri L. Edwin Sam**, Social Scientist had said that every student got good opportunity to present the topics given to them. He concluded by appreciating us. Finally Miss. Lekshmi, former young scientist said the topics presented by all the students are tough. Students should show some interest while presenting their topics and she continued to say that when presenting, students should face the audience.

Through this program I have learned about many topics that include information about missiles, aircrafts, carrier ships like Arihant and automobiles like Nano rockets, satellites, electronic devices, different revolution, physics and more. I got many details about various range of topics while they presented. I offer my gratitude towards all the members of KAP, my guide teachers and advisors who shared their valuable thoughts and ideas with us to prepare our research topics.

**"Opportunities don't happen, you create them!!! Use KAP!!! Shine everywhere!!! Thank you KAP!!!"**