My Dear Students,

Among the 84 lakh species of living beings, human being stands out unique, special and extraordinary, owing to his reasoning, logical thinking, analytical, comprehension skills and more than anything, his capacity to imagine!

Our vision is limited to a narrow bandwidth, our audibility is limited to a small bandwidth and capacities of our senses are greatly limited. Despite all these limitations, human being is able to climb the top of the evolution ladder. All these are possible because of his skills and intelligence.

There is a budding scientist in every student, who is highly inquisitive and curious about various things happening around him. This curiosity should move us to the next stage of experimentation, observation, analysis and comprehension.

I am sure that ‘Vagdevi Vilas Vignan Patrika’ will kindle the scientific spirit in every student and help to transform into a budding scientist.

I congratulate and thank all those who have contributed to this news bulletin becoming a reality.

- Shri. K. Harish
  Chairman, Vagdevi Vilas Institutions
**Editor’s Note**

Scientists are not made over night. Scientists are evolved over a period of years!

What makes a person a scientist? ‘Curiosity’ could be the simplest answer. Curiously watching and observing a phenomenon leads to the wonderful world of experiment and discovery.

An apple falling on Newton led him to the discovery of ‘Newton’s Laws of Gravitation’. A boiling kettle made ever curious Thomas Alva Edison to invent Steam Engine. Many discoveries and inventions have begun with simple but curious observations, to say the least.

Another factor that pursues discoveries and inventions is ‘Questioning’. More adept you are with the art of questioning, better explorer you become.

Children should be encouraged to question as much as they can.

Let’s hope that our young ‘Vagdevians’ start observing things around them with curiosity and go to the depth of happenings with right type of questions.

We at R&D wish good luck to our future scientists!

-- R&D Dept.
“Talk to yourself at least once in a Day.. Otherwise you may miss a meeting with an EXCELLENT person in this World… ”

- Swami Vivekananda

PRE-PRIMARY SCIENCE EXHIBITION:

As a part of annual exhibition, our tiny tots arranged wonderfully all the experiments. It was looking like Einstein and Marie curie coming down to earth start explaining about their achievements. Colourful butterflies, motor running planets and chemical fountains were also seen in the exhibition.

Little Scientists described about principles of physics and chemistry experiments, biology life cycles. Teachers’ and parents’ efforts was worth appreciable.
YOUNG SCIENTISTS AT THEIR BEST!
“The whole secret of existence is to have no fear. Never fear what will become of you. Depend on no one. Only the moment you reject all help, you are freed. “

-Swami Vivekananda

Stephen Hawking (8 January 1942)

Stephen Hawking is an English theoretical physicist, cosmologist, author and Director of Research at the Centre for Theoretical Cosmology within the University of Cambridge. His scientific works include a collaboration with Roger Penrose on gravitational singularity theorems in the framework of general relativity, and the theoretical prediction that black holes emit radiation, often called Hawking radiation. Hawking was the first to set forth a theory of cosmology explained by a union of the general theory of relativity and quantum mechanics. He is a vigorous supporter of the many-worlds interpretation of quantum mechanics.

Stephen Hawking is an Honorary Fellow of the Royal Society of Arts, a lifetime member of the Pontifical Academy of Sciences, and a recipient of the Presidential Medal of Freedom, the highest civilian award in the United States. Hawking was the Lucasian Professor of Mathematics at the University of Cambridge between 1979 and 2009 and has achieved commercial success with works of popular science in which he discusses. His own theories and cosmology in general. His book A Brief History of Time appeared on the British Sunday Times best-seller list for a record-breaking 237 weeks.

Hawking suffers from a rare early-onset, slow-progressing form of amyotrophic lateral sclerosis (ALS), commonly known as motor neurone disease in the UK, that has gradually paralysed him over the decades. He now communicates using a single cheek muscle attached to a speech-generating device. Hawking married twice and has three children.
“All differences in this world are of degree, and not of kind, because oneness is the secret of everything.”

- Swami Vivekananda

Louis Braille was a French educator and inventor of a system of reading and writing for use by the blind or visually impaired. His system remains known worldwide simply as braille.

Blinded in both eyes as a result of an early childhood accident, Braille mastered his disability while still a boy. He excelled in his education and received scholarship to France's Royal Institute for Blind Youth. While still a student there, he began developing a system of tactile code that could allow blind people to read and write quickly and efficiently. Inspired by the military cryptography of Charles Barbier, Braille constructed a new method built specifically for the needs of the blind. He presented his work to his peers for the first time in 1824.

In adulthood, Braille served as a professor at the Institute and enjoyed an avocation as a musician, but he largely spent the remainder of his life refining and extending his system. It went unused by most educators for many years after his death, but posterity has recognized braille as a revolutionary invention, and it has been adapted for use in languages...
“All the powers in the universe are already ours. It is we who have put our hands before our eyes and cry that it is dark. “

-Swami Vivekananda

Har Gobind Khorana (January 9, 1922-November 9, 2011)

Khorana was born in Raipur, British India (today Tehsil Kabirwala, Punjab, Pakistan) and became a naturalized citizen of the United States in 1966, and subsequently received the National Medal of Science. He served as MIT's Alfred P. Sloan Professor of Biology and Chemistry, Emeritus and was a member of the Board of Scientific Governors at The Scripps Research Institute.

Har Gobind Khorana was an Indian-American biochemist who shared the Nirenberg and Robert W. Holley for research that showed how the order of nucleotides in nucleic acids, which carry the genetic code of the cell, control the cell’s synthesis of proteins. Khorana and Nirenberg were also awarded the Louis Gross Horvitz Prize from Columbia University in the same year.

Khorana and his team had established that the mother of all codes, the biological language common to all living organisms, is spelled out in three-letter words: each set of three nucleotides codes for a specific amino acid. Nobel lecture was delivered on December 12, 1968. Khorana was the first scientist to chemically synthesize oligonucleotides.

Khorana was elected a Foreign Member of the Royal Society (For MemRS) in 1978. The University of Wisconsin-Madison, the Government of India
“You have to grow from the inside out. None can teach you, none can make you spiritual. There is no other teacher but your own soul.”

-Swami Vivekananda

Satyendra Nath Bose was an Indian physicist specialising in mathematical physics. He is best known for his work on quantum mechanics in the early 1920s, providing the foundation for Bose–Einstein statistics and the theory of the Bose–Einstein condensate. A Fellow of the Royal Society, he was awarded India's second highest civilian award, the PadmaVibhushan in 1954 by the Government of India.

Satyendra Nath Bose, presented several papers in theoretical physics and pure mathematics from 1918 onwards. In 1924, while working as a Reader (Professor without a chair) at the Physics Department of the University of Dhaka, Bose wrote a paper deriving Planck's quantum radiation law without any reference to classical physics by using a novel way of counting states with identical particles. This paper was seminal in creating the very important field of quantum statistics. Though not accepted at once for publication, he sent the article directly to Albert Einstein in Germany. Einstein, recognising the importance of the paper, translated it into German himself and submitted it on Bose's behalf to the prestigious Zeitschrift für Physik. As a result of this recognition, Bose was able to work for two years in European X-ray and crystallography laboratories, during which he worked with Louis de Broglie, Marie Curie, and Einstein.
Why do some planets have rings?

The rings of Saturn are magnificent. They are bright, wide, and colourful. Uranus has nine dark rings around it. Neptune’s rings are also dark. The ring of Jupiter is thin and dark.

Scientist have not come to an agreement on the origin of these rings. The rings may have formed from the dust knocked off the planet’s moons when they were bombarded by meteoroids. Some of them might have come from moons torn apart by the gravity of the planet, or they could have formed as the planets formed. The rings of Jupiter, Uranus, and Neptune are made of dust, and very tiny pieces of rock and ice. The rings of Saturn are made of large particles of ice.

Sahiti. V,
Grade 4 C,
VVS, Marathahalli.

Why are some stars brighter than others?

When we look at the night sky, we see plenty of stars, but can hardly differentiate one from another. Some may appear bigger, and some brighter than the other stars. One way of recognising stars are from their spectra, by studying the light emitted.

By studying the details of the spectrum of light from the stars, astronomers have found that stars range from blue to red. Our sun is yellow, so it ranges in the middle of the series. Blue stars are very hot, having a surface temperature of 50,000 degree Celsius, or more. The sun is about 6,000 degree, and red stars are comparatively cooler, with a surface temperature of 3,500 degree Celsius. The brightness of a star is called its magnitude. Magnitude is denoted by numbers.

The larger the number, the lesser will be the magnitude. Depending on their magnitude and the distance, some stars appear brighter to us than others do.

ShriAbhay,
Grade 6 D. VVS, Marathahalli.
We are what our thoughts have made us; so take care about what you think. Words are secondary. Thoughts live; they travel far. “

-Swami Vivekananda

Stem Cell Bank and Its Importance

Cord Blood Banking is an Once-In-A-Lifetime Opportunity to Protect Your Family's Long-Term Health

Your baby’s umbilical cord blood is a rich source of special blood cells called stem cells. These cells are the body’s building blocks for blood, organs, tissue, and the immune system and are genetically unique to each baby. When you bank your baby’s cord blood, you preserve a unique biological resource that is like a ‘self-repair kit’ for your child and other family members.

A growing number of families everyday are choosing to bank their babies’ umbilical cord blood as a potential cure for dozens of cancers, blood disorders, immune and genetic diseases. This is especially true for families that have a history of disease. StemCyte offers many options to help families just like yours afford to save this precious resource.

There are many decisions to make during your pregnancy as well as preparation for the newest addition. Saving your baby's stem cells should be one of them. Cord blood can only be collected in the first few minutes after birth, so you must make this decision by your 3rd trimester, if not sooner, so that you have your collection kit with you to bring to the hospital. In some instances, you can get a collection kit when you arrive at the hospital. Not all hospitals have this option, so you really should enrol sooner, if possible.

Cord blood provides a rich source of stem cells for use in many situations where bone marrow is considered today. Cord blood stem cells are used in disease treatment to fight over 80 diseases including many forms of malignancies such as leukaemia, autoimmune diseases, lupus, and inheritable diseases such as sickle cell anaemia.

Doctors have increasingly turned to cord blood stem cells as a life-saving alternative to bone marrow transplants. There is a lower probability of graft vs. host disease (GVHD) and a greater likelihood of finding an appropriate tissue type match because the match does not need to be as exact as for bone marrow. Stem cell research is exploring new applications for treatment every day. This research may prove effective in the future treatment of many common diseases and injuries that plague today’s society, including spinal cord injury, stroke, Parkinson’s disease, Alzheimer’s disease, heart disease, diabetes, and HIV.

Tirumala Reddy P, Research Facilitator, R&D dept., VVI.
Hey all!!

Serum Revolution

Off late, we have been coming across the new word ‘serum’ which was not that familiar to us before. Serum was known and confined to medical field from many years though. It’s a buzzing word in Cosmetic industry now. There are many serum based cosmetics like shampoos, antiaging creams and serum based conditioners etc. popularising these days. Ever wondered what this serum is?

The clear liquid that can be separated from clotted blood is called serum. Cosmetic Serum is a highly concentrated product based on water or oil as any other cream. It contains approximately ten times biologically active substances than normal creams. Serum is rich in peptides that boost production of collagen and elastin in deep layers of the skin. This helps in restoring firmness of skin, scalp or texture of the hair. That’s the reason why there is lot of research going on in cosmetic industry to come up with new formulations for serum based products.

The serum based creams are made by a combination of active ingredients like antioxidants, peptides, retinol, growth factors, alpha and beta hydroxyl acids and unique botanicals or plant extracts in definite proportions. While rich protein content of serum in cosmetics nourishes the cells, hormones and growth factors play a major role in stimulating cell growth rate and function. As serum is anatural body fluid, it acts as an excellent natural buffering agent and helps maintain the pH of skin acting as a protective layer against pollutants and climatic changes.

Hair serums are made up of silicon based content, amino acids and ceramides. This mixture acts as the mask or plastic wrap on the hair scalp and prevents dryness, hair fall, dandruff, fungal infections and is most popularly used in hair styling as it gives the hair a healthy appearance.
Now you got it - How celebrities flaunt their smooth, glowing, silky hair?

Wait a minute!! Before we get impressed about the serum based products, let’s not forget…products with natural bioactive substances have a very short life span and so come with a package of disadvantages too. Remember! It’s always better to be safe. Consult a good expert before choosing.

Smt.AnithaSukhdev,
Deputy Head - Research Department.
Materials

plastic water bottle, Drinking straws, Wooden shish-kabob skewers, 4 plastic bottle caps, Balloon
Duct tape or masking tape, Nail, hammer, knife, scissors.

What You Do:

The water bottle forms the chassis, or body, of your balloon car. You can start by mounting the wheels on this body.

1. Cut a drinking straw into two pieces as long as the water bottle is wide. Use strips of tape to attach them to the bottle - one near the front and one near the back. The axles for the wheels will run through these straws, so line them up carefully so the wheels won't be crooked.

2. Use a hammer and a small nail to poke holes through the center of four bottle caps. Cut two pieces of a wooden skewer about an inch-and-a-half longer than the pieces of straw you taped to the bottle. Push one end of each skewer through the hole in the center of a bottle cap. If the cap doesn't fit snugly on the skewer, use some modeling clay to hold it in place. Next, thread the skewers through the straws on the bottle and attach the other wheels to the other ends. Make sure your car rolls smoothly.

3. Stretch out a large balloon by blowing it up and then letting the air out of it a few times. Next, make a nozzle. The size of the nozzle is very important. If it is too small, the air can't escape with enough force to propel the car forward. If it is too big, the air will escape too fast and the car won't go very far. Create the nozzle by taping four drinking straws together. Insert the straws into the mouth of the balloon and seal the opening by wrapping a strip of duct tape around it several times. another, and keep experimenting to make your design better! 4. To mount the balloon/nozzle on the car, use a knife to cut two perpendicular slits (to make an X) in the top of the car about 4' back from the mouth of the bottle. Thread the nozzle through this opening and out through the mouth of the bottle. Leave about an inch of the nozzle sticking out of the mouth.

5. Find a hard surface, like a long table, linoleum floor, or sidewalk. Blow up the balloon through the straws at the mouth of the bottle. Pinch the base of the balloon to prevent the air from escaping too soon. Set the car down, let go of the balloon, and watch it go!
Do you know?

1) Chocolates are so tasty! The more one eats them, the more one wants. Because chocolates contain theobromine which causes addiction.

2) The potato is an underground stem and sweet potato is the modified root of the plant.

3) When the lenses of the eyes become cloudy and opaque, the condition is known as cataract.

4) DPT vaccine immunizes against three killing diseases of children. The diseases are Diphtheria, tetanus and whooping cough or pertussis.

5) Oxalic acid can best remove stains of ink or rust from iron on clothes, tables and sheets.

6) Most bacteria are harmless. Some bacteria are harmful and cause diseases like anthrax and typhoid.

Send your answers to: researchdep.vvi@gmail.com