



Training young minds for India’s space future

FROM CHANDRAYAAN TO GAGANYAAN, THE NEXT LEAP DEPENDS ON TRAINING THE NEXT GENERATION OF SPACE INNOVATORS

- Youth as a strategic asset: India’s demographic advantage can drive long-term leadership in space science and technology.
- Expanding access to space education: Outreach programmes, early education and regional-language content can democratise learning.
- Academia–industry collaboration:: Partnerships with startups and private players are enabling hands-on training and innovation.
- Bridging gaps for sustainability: Addressing rural access, faculty shortages and industry alignment is vital for future missions

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India has made remarkable achievements in space exploration in the last two decades, carving a distinctive position among space powers. From launching satellites for global clients to accomplishing the unprecedented mission of Chandrayaan-3 and gearing up for Gaganyaan human space flight, ISRO has set new benchmarks in the segment.

However, these achievements are just the beginning, as India’s most valuable asset, its youth, will keep the momentum going and growing. Hence, investing in training young minds will lead to a strong, innovative, and self-reliant space ecosystem.

Today, space education is no longer confined to elite institutions or specialized research centres. It is becoming a national priority, especially as space technology

increasingly merges with artificial intelligence, robotics , climate science, and life sciences. As one of the youngest nations on the planet, India has a demographic advantage that can be leveraged to fuel its space future.

By introducing space science early in education and creating pathways for hands-on learning, India can cultivate a generation of thinkers, builders, and explorers who will shape the next era of space innovation.

To support this vision, several outreach programs have been launched for students at various levels. For instance, ISRO’s Yuvika programme, also termed the Young Scientist Programme, inspires young students with comprehensive knowledge on Space Technology, Space Science, and Space Applications.

Such meticulously designed programmes motivate students to pursue



higher studies in Science, Technology, Engineering, and Mathematics (STEM) and contribute to the nation’s scientific growth.

In addition to these initiatives, prominent educational institutions like BIT Mesra are offering specialized programs in aerospace engineering and =rocket technology. These institutions are fostering interdisciplinary learning, encouraging students to explore the connections between space and other promising fields such as data science, environmental studies, and automation.

It is also important to mention the increasing role of the private sector in space education and innovation, as

classrooms, and regional language content can help democratize access to space knowledge. This inclusive approach ensures that talent from every corner of the country can contribute to India’s space journey.

Looking ahead, India’s space ambitions are set to rival those of established space powers like the United States, Russia, and China. Missions to study the Sun (Aditya-L1), Venus, interplanetary exploration and setting up our own Bhartiya Antariksha Station are advancing, and to support them, a highly skilled workforce with expertise in astrophysics, planetary science, and advanced propulsion systems will be essential. This makes it even more crucial to create a strong educational foundation today.

India’s rising prowess in space is a testament to its scientific expertise and visionary leadership. But the true potential lies in empowering the next generation of space scientists, engineers, and entrepreneurs. By investing in education, fostering innovation, and forging inclusive opportunities, India will not just prepare for future missions but will shape the future of space itself.

(The author is Head of Space Engineering & Rocketry at BIT Mesra)



Seerat-un-Nabi educational initiative identifies ‘100 Gems’ for advanced training programmes

HYDERABAD: A large-scale Seerat-un-Nabi competition concluded at Shahi Masjid Bagh-e-Aam, drawing a gathering of more than 2,000 participants here on Tuesday. The concluding ceremony was addressed by international motivational speaker Munawar Zama, who highlighted the importance of structured learning and character development.

The faith-based educational initiative was organized under the supervision of the mosque’s Imam, Maulana Ahsan Al Hamoomi, with the objective of promoting systematic study of the life and teachings of Prophet Muhammad (PBUH). Participants from diverse backgrounds—including students, working professionals, and senior citizens—took part in the program. According to the organizers, around 1,200 candidates appeared for written examinations conducted in two sessions after a three-month preparation period. Study materials were made available in multiple languages to ensure wider participation.

Addressing the gathering, Munawar Zama, Founder and CEO of English House Academy, announced the selection of 100 top-performing participants, referred to as the “100 Gems,” who will be enrolled in advanced development programs.

These programs will focus on communication skills, debating, and emerging technologies, including artificial intelligence. He also announced a 50 percent fee concession for deserving candidates and full scholarships for orphaned students. Maulana Ahsan Al Hamoomi proposed the introduction of annual leadership camps for the selected participants to further enhance their sense of social responsibility and community engagement.

The event witnessed several moving moments, including senior citizens returning to examination halls after several decades. Organizers announced plans to make the Seerat-un-Nabi competition an annual event, with possibilities of expanding it to other parts of India.

Today is National Say It Now Day

EXPRESSING THANKS: A GIFT THAT BUILDS RELATIONSHIPS

In today’s fast-paced world, youngsters often move from one goal to another without pausing to reflect on the people who support them along the way. Friends who listen, family members who sacrifice, and loved ones who encourage us quietly shape our lives every day. Learning to express gratitude and appreciation to these people is not only a kind gesture but also a powerful habit that can transform relationships and personal well-being.

Gratitude is more than simply saying “thank you” out of politeness. It is about acknowledging how someone’s presence, words, or actions have made a meaningful difference in our lives.

When youngsters take the time to tell a friend, “You helped me believe in myself,” or tell a parent, “Your support gave me strength,” they create moments of deep emotional connection. These honest expressions remind others that their efforts matter and are noticed.

Encouraging youngsters to express appreciation also helps them develop empathy and emotional intelligence. By reflecting on how others have influenced them, young people learn to see beyond themselves. They begin to understand that success, happiness, and growth are rarely achieved alone. This awareness fosters humility and strengthens bonds built on respect and understand-

ing. Expressing gratitude can also have a positive impact on mental health. Studies and everyday experiences show that people who practice gratitude feel happier, less stressed, and more optimistic. For youngsters facing academic pressure, social challenges, or uncertainty about the future, focusing on appreciation can shift their mindset from what is lacking to what is meaningful. Sharing gratitude out loud amplifies this effect, creating a cycle of positivity between individuals.

Moreover, telling loved ones how they have made a difference can leave a lasting impression. Words of appreciation are often remembered long after gifts or

achievements fade. A simple message, letter, or heartfelt conversation can strengthen relationships and even heal misunderstandings. For some, hearing appreciation at the right moment can provide motivation, comfort, or hope.

In conclusion, encouraging youngsters to express gratitude and appreciation is an investment in stronger relationships and healthier communities. By openly telling friends, family, and loved ones how they have shaped their lives, young people learn the value of kindness, connection, and emotional honesty. A few sincere words can make a lifetime of difference—for both the speaker and the listener.



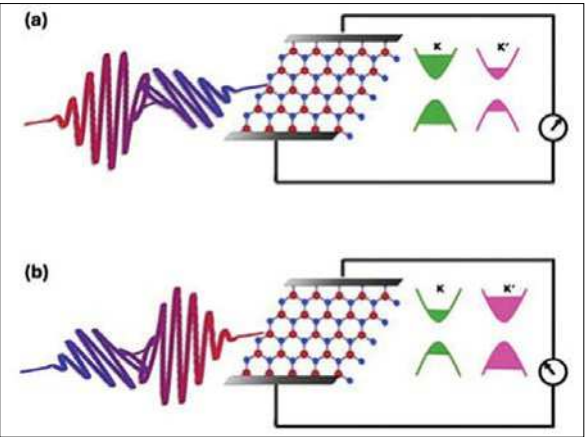
Single light pulse can control quantum states in 2D materials: IIT Bombay

Scientists at the Indian Institute of Technology (IIT) Bombay announced that they have discovered a simple new way to use light to control quantum states inside ultra-thin materials, a breakthrough that could lead to computers that are far faster and more energy-efficient than today’s electronic devices.

The research focuses on two-dimensional semiconductors, materials that are only one atom thick and thousands of times thinner than a human hair. Inside these materials, electrons can exist in two distinct quantum states known as valleys, labelled K and K’.

These two states can be compared to the 0 and 1 used in digital computing, forming the basis of a growing research area called valleytronics.

Until now, controlling these valley states has been



difficult. Earlier techniques required complex laser setups using circularly polarised light and multiple laser pulses, and even then, the control was often incomplete or hard to measure.

As a result, reliable and reversible switching between the two valley states remained a major challenge.

The IIT Bombay team has now shown that this com-

plex setup is not necessary. In a study published in the journal ‘Advanced Optical Materials’, the researchers demonstrated that a single linearly polarised laser pulse can both control and read the valley state of electrons.

The key lies in introducing a small, controlled skew in the laser pulse’s polarisation. According to Prof. Gopal Dixit from IIT Bombay, this

slight asymmetry in the laser pulse is enough to push electrons into either the K or K’ valley.

By reversing the skew in the pulse, the electrons can be switched back to the other valley. This makes the process fully reversible, with the two valley states effectively acting as quantum versions of 0 and 1.

What makes the discovery even more significant is that the same laser pulse also generates a tiny electric current.

This current acts as a built-in signal that reveals which valley state the electrons have moved into. In simple terms, the system can be controlled and read at the same time, without the need for extra lasers or measuring devices.

The researchers also found that the method works across a wide range of laser wavelengths and does not need to be finely tuned to the material’s energy levels.

Sir CV Raman National Olympiad Talent exam held

Suchirindia conducted the prestigious Sir CV Raman National Olympiad Talent Exam for students from Classes 1 to 10. The examination witnessed enthusiastic participation from around 90,000 students across 730 centres nationwide. Young participants displayed strong competitive spirit. Toppers will be honoured with scholarships, medals, and Young Genius Awards at a grand ceremony scheduled on February 3, 2026, at Ravindra Bharathi, Nampally, Hyderabad

Photo: Adula Krishna

