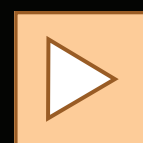
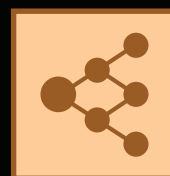


# Dream

## 2047

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### SCIENCE COMMUNICATION, POPULARISATION, AND ITS EXTENSION (SCOPE) IN INDIA

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**EDITORIAL**

Dr Nakul Parashar

# Synonym to SCoPE– Vigyan Prasar

## SCIENCE

& technology continues to impact our lives continuously, moment-on-moment, every moment. Yet, have we ever realized how much are we scientifically aware? A large part of the population of our nation still needs to be abreast with the scientific & technological advancements made by our country. This awareness will enable them to realise new job & business opportunities and thus, they can commence imbibing & appreciating the role of science & technology in their daily lives. Meaning, we all can start thinking more astutely and start delivering quickly and smartly for the nation's ongoing development. Candidly, this need is not new. This need has been felt since we got our independence. As a result, efforts at various levels emerged at both government and non-government levels. How far have they been successful can be fathomed by the benchmark that Vigyan Prasar has set forth in the domain of science & technology communication popularization and its extension (SCoPE).

With *think scientifically, act scientifically*, Vigyan Prasar has successfully tried to penetrate every state of the nation in its journey of 33 years. From Kashmir to Kanyakumari and Kutch to Kamrup, during the past 33 years of existence, Vigyan Prasar has penetrated 700+ districts through its core activities related to Science Communication, Popularization, and Outreach in a holistic manner covering every stratum of the society. This has been achieved by the regular & relentless efforts of Vigyan Prasar in building networks pan-India, and partnerships with government & non-government organizations.

Vigyan Prasar was created to fulfil the constitutional mandate under Article 51 A(h) of the Indian Constitution—scientific temper & spirit of enquiry. Vigyan Prasar is

relentlessly working pan-India in the area of science & technology communication, popularization and its outreach for the past 33 years (since 11th October 1989). Science & Technology Communication, Popularization & Extension (SCoPE) is a highly sought-after domain in every S&T policy and national-level decision. Vigyan Prasar has thus, been the only government organizational interface between, society, scientists, media and policymakers.

In 1989, Late Dr NK Sehgal, founder-director & Kalinga-UNESCO award winner for Science Communication, envisioned the organization as the nodal agency for SCoPE. I distinctly recall how Dr Sehgal & his team took up the 1995 total solar eclipse event and made the public aware nationwide. Dr Sehgal's vision of how India would be in 2047 gave birth to Vigyan Prasar's lead monthly newsletter—Dream 2047 (in Hindi & English) with India's highest circulation for any popular science monthly. His successor and noted scientist, Dr V B Kamble steered Dr Sehgal's vision further to reach a much bigger audience through a nationwide Science-on-train (Vigyan Rail). IndiaScience, the nation's only OTT channel that produced more than 4000 popular science films in less than four years, and many more stories of notable deliverables that have built an endless list of milestones speak volumes of Vigyan Prasar's glorious past with the exciting present and promising future.

Thus, Vigyan Prasar is currently at an inflexion point in the nation's growth story, driven by science & technology communication, popularization and extension at a stage when it possesses the required ability to evolve as the nodal centre of excellence.

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# Vigyan Prasar: Promise made and delivered

## Vigyan Prasar: Its roots and stated purpose

T. Ramasami

The establishment of Vigyan Prasar by the Department of Science and Technology, Government of India in the 1989 may need to be seen in the framework of Indian Science and Technology landscape where science communication needs of the Government are addressed through institutions under

Council of Scientific and Industrial Research. Science communication and spread carry similar but neither identical nor overlapping objectives.

Pursuit of Science is also a cultural activity fostered by various civilizations. In ancient Indian civilization, Vigyan formed part of a spiritual growth of a human being. Upanishads ordered the sequence, pranamaya, annamaya, manomaya, vighyanamaya and anandamaya. Vigyan was perceived as part of an inner journey towards spiritual elevation of thought of a human being. It is not surprising that a nation which chose to include among the duties of citizen “scientific temper” attaches importance to Vigyan Prasar. Spread of vighyan among the citizens, as a cultural

endeavor with focus on individual may be the motive behind of Vigyan Prasar.

The nobility behind the formation of Vigyan Prasar as an autonomous entity to be nurtured and not controlled by the Department of Science and Technology may have been out of esoteric perception of the founders. Science communication relates to an act of sharing scientific information while Vigyan Prasar is slated to spread vighyan or in the more immediate context of scientific temper, a constitutional duty of citizens through an amendment in 1976 Article 51(A) h for developing a spirit of enquiry.

A careful review of its past schemes, projects, deliverables and activities would reveal to discerning reader the efforts made by Vigyan Prasar along its esoteric goals and value for money



### Some Examples of programs of Vigyan Prasar and deliverables

Some key examples of activities and





programs of Vigyan Prasar are listed below. They are 1) Vigyan Mail, 2) science club, 3) ham radio, 4) a TV serial under the name Aysa Hi Hotha Hai etc. The institution is unique with footprint in nearly 700 districts of India. One of the special features of Vigyan Prasar is that they focus on child centric activities for spreading scientific temper among people. There was a conscious effort to debate on dogmas and superstition and focus on the spirit of enquiry among the youth. There were some key efforts to spread space related knowledge among the youth for catching their imagination. The TV serial organized by Vigyan Prasar enjoyed high TRP rating.

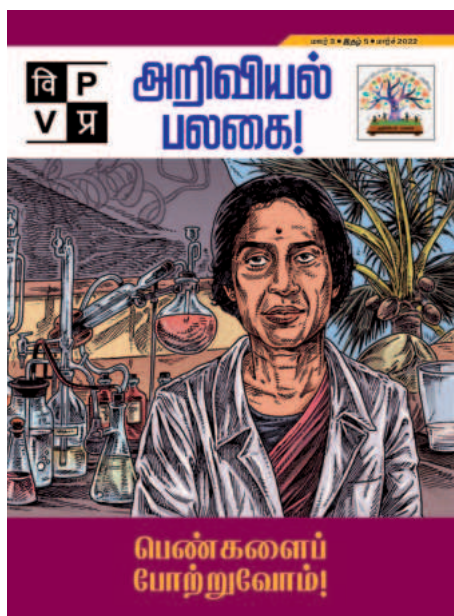
Vigyan Prasar has brought out a larger number of publications both in print and electronic media and has been making efforts to enhance its impact by bringing out publications in 12 India vernacular India languages. Several inspirational materials from icons in science have been brought out and exhibitions and road shows conducted. The footprint of Vigyan Prasar from among the youth population of India and in science and technology landscape of India is large. In recent times, following the advice of the Honorable Prime Minister of



India Vigyan Prasar has been championing commemoration of birth centenaries of some inspiring scientists of India. These activities are

not just designed in the nature of outreach of scientific developments of the country from national establishments but with a focus on spreading the spirit of science among the youth population and play the role of a catalyst in delivering on the responsibility of social mobilization towards inquiry and open mindedness.

Dream 2047 is a publication that has attracted wide readership and has emerged as a much appreciated effort among thought leaders in science.. Dream 2047 is not just a dream but an effort to realize the dream of scientific temper in the country.



### Open Questions in the manner of scientific temper

Could the objective of nurturing scientific temper be measured in terms of outputs/inputs ratios and Dream2047 be wounded up in 2022? Are we aborting the dream of scientific temper? Let not the past become enemy of the future!

**T. Ramasami** Former Secretary, Department of Science and Technology, Government of India & Distinguished Professor of Eminence, Anna University, Guindy, Chennai 600 025

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# Effective Science Communication by Vigyan Prasar

Anuj Sinha

Science popularisation encompasses a variety of activities and approaches that seek to communicate science to a large audience. ‘Science communication is a multidimensional construct involving (i) a vocabulary of basic scientific developments to absorb information in the media, (ii) an understanding of the nature of scientific inquiry and (iii) some level of understanding the impact of new science and technology on the society’ said the late Dr Narendra K. Sehgal addressing scientists of Vigyan Prasar (of which he was the founder Director) on 28th February 2010.

‘Advances in sciences and mathematics in the middle-ages were based on scientific method and this was the beginning of empirical research. However, this was largely confined

to the upper hierarchy of the society’ explained Prof Yash Pal, the eminent science communicator to delegates of National Children’s Science Conference at Chennai in December 2010. There is widening gap between the elite and the common man and Vigyan Prasar is equipped to bridge this.

## Science Communication for Women

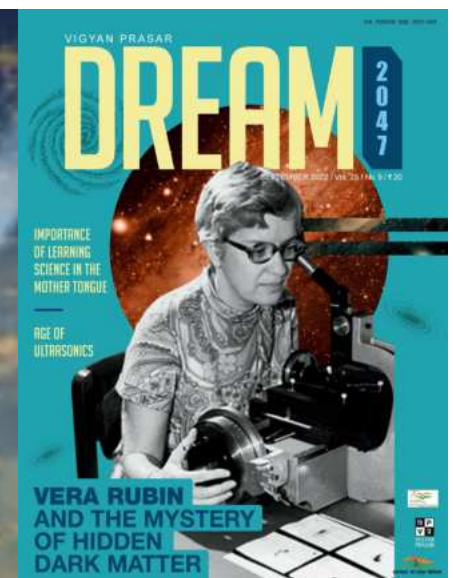
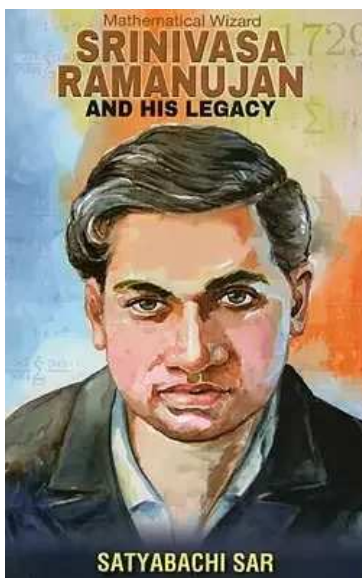
There is still no accepted definition of science popularisation. Effective science communication is much more than simplification of a specialized subject. Language content and narrative of the message are each critical for a common person to absorb basic concepts that are essential for further enquiry. Understanding is a mental agreement between the sender and the receiver. As a variable it can be attributed to both message and audience.

Vigyan Prasar convened eminent

women scientists at National Science Centre, Delhi on International Women’s Day, 8th March, 2010 to deliberate on strategies for communicating science for women’s development. The recommendations helped in initiating a new programme ‘Science for Gender Development.’ This has promoted innovative science communication strategies addressing needs of rural and tribal women. Digital repositories have been created on agricultural tools that have become a guide for institutions working on drudgery reduction of women farmers.

## Promoting Science Films

A major objective of science communication is to stimulate and increase the capacity of people in how to think, how to enquire and how to solve problems to improve their quality of life. A mix of processes is applied





by science communicators-visual, verbal, written, electronic and folk channels. Folk theater, puppet shows and other traditional expressions are credible channels of communication in developing societies. Local, regional and national field programmes employing skits, street theater and puppet shows have resulted in adoption of progressive agriculture technologies.

Developments in information and communication technologies have resulted in use of broadcast media (radio and television) and digital communication as new dissemination tools. Producing and disseminating books, CD-ROMs, DVD, etc. to schools, universities and voluntary organisations, interesting science serials for broadcast through All India Radio in regional languages, quiz formats, talk shows, news, serials for science popularisation on Doordarshan and Lok Sabha and Rajya Sabha channels. An OTT India Science channel has reached a vast interested population.

Productive discussions with Indian Science Congress Association, Kolkata, led to introducing a Science Film Festival

being organized by Vigyan Prasar concurrently with the annual Indian Science Congress from 2011. This was inaugurated by an eminent scientist and comprised discussions on several facets of science films. Awards for outstanding films were presented during the valedictory session presided over by an eminent filmmaker. This festival has become an annual feature promoting high quality science films.

### Science Communication and Science Academies

Vigyan Prasar has over the last few decades supported science communication for different population groups using different channels. There has been notable impact of well-coordinated programmes by these institutions which need to be studied with proper tools.

Representatives of all the national science academies were invited to a



roundtable discussion on the multi-disciplinary nature of science communication on the National Science Day on 28th February, 2011. The deliberations at Indian Institute of Public Administration, New Delhi began with a presentation on innovative efforts of science communication by Vigyan Prasar. Delegates shared their schemes and proposals and agreed to consult their academic councils. Vigyan Prasar would convene the next roundtable for further consultation.

Prof Y K Alagh, an economist of international standing and then Minister of State (Science & Technology) said 'Many scientific developments have public policy implications. Science communication has become essential to every democracy for a well-informed electorate. This is both a challenge and an opportunity for science communicators and Vigyan Prasar a national institute with this mandate.' He was recording an interview for DRAM 2047 at Ahmedabad in January 2011.

**A major objective of science communication is to stimulate and increase the capacity of people in how to think, how to enquire and how to solve problems to improve their quality of life.**

**Er Anuj Sinha** is an engineer, manager, teacher, author, development economist and science communicator. He volunteers with NOSTC to promote science in the country. He was former Scientist G and Head NCSTC, DST and former Director, Vigyan Prasar.

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# Science Communication in India

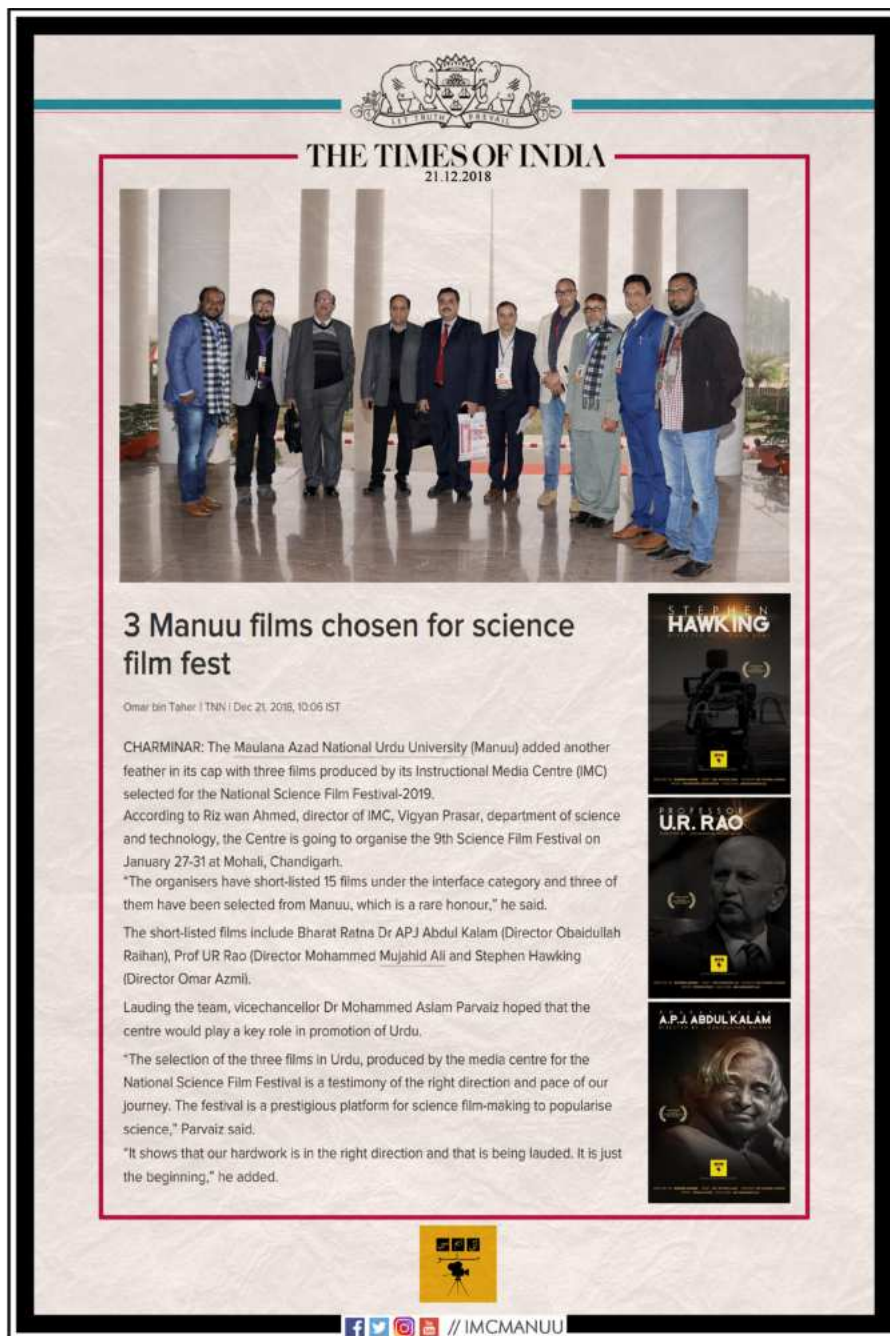
Rizwan Ahamd

“Science communication entails taking science, its discoveries to lay public who are non-scientists.” -Davis (2010). Taking science to a large and diversified audience is a task and an arduous one at that. A uniform communication model or an outreach activity does not work as the range of stakeholders involved is huge. During the last five decades, our country has seen several organizations and individuals that have been making laudable efforts in the field of Science Communication in India.

The establishment of several Governmental, Non-Governmental Institutions and societies such as the National Institute of Science Communication (NISCOM), National Council for Science and Technology Communication (NCSTC), the Indian Science Writers' Association (ISWA), Indian Science Communication Society, Vigyan Prasar, National Council of Science Museums, etc have made tremendous efforts in the Popularisation of Science. The Article 51 A(h) of Indian constitution tells us “To develop scientific temper, humanism and the spirit of inquiry and reform has been stated as the fundamental duty of every citizen”.

Vigyan Prasar is among the few organizations that have really spearheaded the mantle of not just communicating science but laying down the seeds to build scientific temper amongst masses.

My association with this esteemed organization goes back to the year 2016, when I was working as Deputy Director to Govt of India in the Ministry of Information and Broadcasting. I was posted at the Directorate of Film Festivals (DFF) known for organizing signature events such National Film Awards and



**THE TIMES OF INDIA**  
21.12.2018

**3 Manuu films chosen for science film fest**

Omar bin Taher | TNN | Dec 21, 2018, 10:06 IST

CHARMINAR: The Maulana Azad National Urdu University (Manuu) added another feather in its cap with three films produced by its Instructional Media Centre (IMC) selected for the National Science Film Festival-2019. According to Rizwan Ahmed, director of IMC, Vigyan Prasar, department of science and technology, the Centre is going to organise the 9th Science Film Festival on January 27-31 at Mohali, Chandigarh. "The organisers have short-listed 15 films under the interface category and three of them have been selected from Manuu, which is a rare honour," he said. The short-listed films include Bharat Ratna Dr APJ Abdul Kalam (Director Obaidullah Raihan), Prof UR Rao (Director Mohammed Mujahid Ali and Stephen Hawking (Director Omar Azmi).

Lauding the team, vicechancellor Dr Mohammed Aslam Parvaiz hoped that the centre would play a key role in promotion of Urdu. "The selection of the three films in Urdu, produced by the media centre for the National Science Film Festival is a testimony of the right direction and pace of our journey. The festival is a prestigious platform for science film-making to popularise science," Parvaiz said. "It shows that our hardwork is in the right direction and that is being lauded. It is just the beginning," he added.

IMCMANUU

International Film Festival of India, Goa. On 12th July 2022, DFF received a communication from Vigyan Prasar for a review meeting on 19th July 2022 regarding the National Science Film

Festival of India. During the meeting, I represented DFF at Vigyan Prasar's Noida office. Agenda for the meeting was quite ambitious and covered a range of items. I was impressed with the

zeal and vigor of Vigyan Prasar staff members with which the meeting was conducted. Within no time the outcome of the meeting was visible all across the nation and most of the programmes were on implementation mode.

In the journey of Science Communication in India I consider "The Turning Point" by Prof Yashpal and the activities of Vigyan Prasar as milestones as they have shaped public opinion and have a recall value. The contribution of Prof Yashpal as an individual and Vigyan Prasar as an organization is unparalleled and would be recorded in the history of science communication as the magnum opus "Mughal-e-Azam" and R K Films are to Hindi Cinema history. Due to its consistent efforts, Vigyan Prasar has become a part of public memory and its footprints are now all across India which is inimitable.

Vigyan Prasar basically serves the science popularization agenda which the organization has been doing with full gusto. It has been almost six years since I had my first interaction

with Vigyan Prasar and since then the outreach of the organization has been phenomenal. I have been part of the several Science Film Festival (NSFFI) editions of Vigyan Prasar and coming from a film festival administration and programming background, I rank NSFFI as one of the top ranking Science Film Festivals of the world, in terms of its programming and administration. The festival has not only revolutionized science filmmaking India but also has taken science to the common man through films.

Vigyan Prasar has launched a range of science communication activities which have been carefully planned and are outcome based. Through its well crafted programmes Vigyan Prasar is catering to the masses and has achieved the maximum benefits. Diversified audiences require a multi pronged outreach approach which Vigyan Prasar has mastered by using a variety of media platforms to reach out to its target audience. SCoPE launched in multiple languages, India Science OTT channel, traveling Science Film Festival are laudable initiatives

which have footprints all across India and are benefiting a large chunk of population. If that wasn't enough, popular science books and newsletters are regularly disseminated through print media and are maintained as digital repositories also. Vigyan Prasar's video science programmes on various aspects of science and technology in different Indian languages are a great help in understanding the complex science concepts. India Science Wire, VIPNET Clubs, training and workshops programmes are a huge effort in bringing all stakeholders on appropriate platforms and to channelise the content in the right direction.

Vigyan Prasar has a definite role in science communication and its extension in India. Through its multiple outreach programmes, Vigyan Prasar is not only serving the Nation but all the initiatives have been preserved through digital medium for posterity.

**Rizwan Ahmad** is currently working as Director, Instructional Media Center, MANUU, Hyderabad. He is a member of International Council of Film, Television and Audio-Visual Communication (ICFT) UNESCO Paris and also International Documentary Association (IDA) Los Angeles USA. He is former Deputy Director, Ministry of I & B, Govt of India.  
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# Appreciation for science ~ are we lagging?

Rintu Nath

Science and technology are integral parts of our life that we encounter in different forms every day. However, progress in science and technology alone may not be enough for the overall development of a society. Despite scientific inventions and cutting-edge technology breakthroughs worldwide, we see widespread superstitions, counterproductive rituals, and the propagation of pseudo-science. We have made progress in all science disciplines, including medical science and astronomy. Yet snakebites kill thousands of people every year, and pseudo-scientific claims by astrologers and exaggeration by media during any eclipse or astronomical events continue to happen. A large section of the population is still entangled with pseudo-science—the shackle of false beliefs and superstitions is predominantly retarding individuals' well-being and society's overall development.

An understanding and appreciation of science is an essential life skills. While it aids in solving many real-life problems, it also helps develop logical thinking. Inculcating scientific temper is essential if we want to see a society where everyone can think rationally with a pursuit of truth than prejudice. The role of scientific institutes engaged in science communication are of paramount importance in spreading awareness among the masses.

## Pursuit of truth

Eclipses-Solar and Lunar, are a common astronomical events that happen at regular intervals. The cause of the eclipse is easy to understand, and scientific reasons are being taught



Pseudo-scientific claims by astrologers and exaggeration by media during any eclipse or astronomical events continue to happen

in every education system around the world. With simple geometry, the event can be explained to any layperson. Then why do such large-scale superstitions still exist in society? False claims, wrong suggestions, and fear are spread by a group of people during any eclipse, whether solar or lunar. Mass media, including news channels, create story after story in pursuit of TRP, not truth. Some news channels organise debates among scientists and astrologers to explain the eclipse from different perspectives. Recently I was invited to participate in one such discussion and experienced how the whole episode was biased toward superstitions and false claims. I wanted to know why it was required to create confusion and doubts among the masses. I was told

that not many scientists and science communicators come forward to tell the truth and explain the phenomena of eclipse. Perhaps we need more science communicators and organizational support to reach out to people.

Snake bites kill more than 46,000 people in India every year. This number is astonishingly higher compared to the global average. A study suggests only 30 percent of those bit by reptiles go to hospitals to seek medical help. Most people in rural India prefer alternative methods of treating victims by quacks, even though at least a modest healthcare facility is available in each district or panchayet in India. Scientific awareness could save the majority of victims.

There are other health, hygiene, and livelihood related issues that can best



Sustainable Development Goals

be tackled by creating more awareness. A holistic approach to creating rational and scientific thinking is the panacea.

**Silver lining**

If we look back two decades and compare it with the present scenario, there is some relief—things changed for the better. There are a few indicators that suggest scientific awareness among the masses has increased. For example, during the total solar eclipse on October 24, 1995, only some enthusiasts and science communicators were seen to observe the phenomena. Awareness increased, and a large number of the general public assembled to observe the total solar eclipse on July 22, 2009. Even if news media is tilted towards propagating superstitions, the number of people who observed the partial solar eclipse on October 25, 2022, is more than in all previous cases. However, miles to go. The question arises: Is the number of people observing any eclipse event quantifiable to measure scientific temper? Statistical figures definitely project a trend. Similarly, the number of snake bite deaths have decreased over the year.

**Bigger picture**

There are other global concerns.

Increased pollution, global warming, climate change, pandemic, resource crunch, depleting underground water level, safe drinking water, depleting natural resources, plastic menace, concerns over land and ocean ecosystem to name a few.

Interdisciplinary research toward sustainable development goals is the need of the hour. Science research must create an impact immediately—research to increase fuel efficiency, harness natural energy, increase productivity, agricultural produce, derive a solution to tackle global warming and climate change, and so on. Without an appreciation for science by ordinary people, we will always be lagging. Science can no longer be limited to research laboratories—science must spread its wing to reach out to every person without discrimination. Scientific temper needs to percolate to society as the only way of life.

**Challenges**

The literacy rate of India, including many other countries, is still far below than hundred percent. Quality of education, especially primary education, is a concern. Superstitions and predominant counterproductive

rituals are the fallout of low literacy. Low per capita income is another concern. Reduction of traditional skill-based livelihood, migration of people from rural areas, and financial uncertainties of the workforce of unorganized sectors are the challenges that need immediate attention.

**Conclusion**

It may appear most of the challenges are societal that need administrative and financial interventions. However, careful observation would reveal that societal needs, sustainable development goals, cutting-edge research & development, and creating scientific awareness in society are interlinked, and one can't be achieved without the other. Appreciation for science is of paramount importance. A multi-pronged approach of science communication is required to reach out to more people within a definite time frame. Science communication and its outreach will go a long way in creating scientific temper and addressing some challenges.

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# Science Communication ~ Potency & Latent Potential

**Kinkini Dasgupta Misra**

Ever imagined how people in the villages reacted when they first saw a monstrous size steam-belching engine chugging through the countryside? Many were wary of the black monster breathing fire and smoke and called it a 'shaitan' and ran for their lives. Similarly, when poles were erected for telegraph lines, rumors spread like wildfire that these are meant for hanging people who were against the imperialistic rule. Well, these are examples from the mid-nineteenth century when the country was under British rule. There are also examples from the recent past that shows people in certain pockets are still averse to getting their children vaccinated fearing that it will lead to some physical deformity or impotency. There were instances when the vaccination team was attacked or violently turned away. Well, these are the typical examples from the past and present, that show how lack or absence of communication can be counterproductive. These untoward incidents could have been avoided had the people been informed, conveyed, and convinced of these things in advance. Who can do that and how it is to be done is the moot question. Well, the answer is plain and simple—*Science Communication* holds the key.

The Constitution of India under the Fundamental Duties states "It shall be the duty of every citizen of India to develop scientific temper, humanism and the spirit of inquiry and reform." It was added through the forty-second amendment in 1976, and thirteen years down the lane in 1989, an autonomous organization of DST, solely dedicated to science communication and popularization came into being. This is the genesis of Vigyan Prasar. Well, if Science & Technology (S&T) is for the welfare of people it must reach the last man on the ground. This can only be done through Science Communication, which plays a crucial role in inculcating scientific temper among the masses and making them adopt S&T in their day-to-day lives~making it a way of their lives.

There are numerous programmes and projects, through which Vigyan Prasar (VP) is making people informed and aware of scientific developments, and practices, adopting and adapting to these. For any science communicator, science and communication are two sides of the same coin. Both complement each other and none has its utility sans the other. During the COVID times, when gloom was cast and people started to lose hope, Vigyan Prasar (VP) along with other government organizations played a significant role in spreading the word of science. Not only this, VP has collated

and aggregated a series of scientific information on COVID in form of a newsletter and help spread awareness among people. VP used several arrows that it had in its quiver~Science Channel, India Science Technology and Innovation (ISTI) Portal, India Science Wire to spread the word of caution "*Do Gaj ki Doori, Mask hai jaroori*" and why it is necessary to get the jab.

My association with the organization has been a long and enriching one. From the print media heydays to the era of social media, Vigyan Prasar as an organization has kept pace with the times and has evolved in the field of science communication. In a bid to keep pace with the technological advancements, we are seriously mulling over including the concept of Artificial Intelligence (AI) and Machine Learning (ML) to give an entirely new dimension to the field of science communication.

Vigyan Prasar has excelled in the field of print, radio, and electronic communication and now is setting new milestones through new media/digital media/or social media outreach. The footprints of the organization in digital media have helped it in successfully accomplishing several outreach programmes and awareness campaigns, "Swachh Sagar, Surakshit Sagar" (Clean Coast, Safe Sea), a two-day national conclave "Science and Technology Empowerment of Tribal Community", Vigyan Sarvatra Pujyate (VSP) are some of the recent accomplishments to name a few.

Apart from communicating what is meant for the masses, Vigyan Prasar has been instrumental in catering to the communication needs of scientists, researchers, students, and even policymakers.





Well, it has been doing it through ISTI Portal, the project under Vigyan Prasar (VP). Collating a huge databank of scientific research, programmes & schemes, Startups, Innovations, fellowships & scholarships, etc. the Portal has an immense potential that goes beyond any simple calculation. In nutshell, we have tried to list out major and minor scientific research with their funding and outcomes. The data can be utilized in a scientific manner to identify similar projects or research that are going on in various government institutions and organizations and thus devise a mechanism to club these to get optimum results or do away with the underperforming or practically redundant ones. It would help save the public money and channel and pool the resources. It can help science policymakers or policymakers per se, in deciding which projects are to be continued, which ones to wind up, and which one needs a course correction. However, it is easier said than done and needs a comprehensive outlook and approach on the part of decision-

makers. However, the ISTI Portal has all that is needed for achieving this end. It also helps one scientific organization in knowing what is brewing in laboratories in other organization and facilitate the exchange of knowledge and ideas.

Further, programs like TechNeev@75 ~ try to gauge the science and technology empowerment of communities. It highlights the role Science, Technology, and Innovation are playing in empowering people and what difference it has made to the lives of common people. It also tends to nurture and promote grassroots innovation. Also, through its Gender and Technology Communication Programme, Vigyan Prasar has been reaching out to millions of women across the nation and has helped create livelihood opportunities while striving for gender equity and enabling them to make informed choices and take appropriate decisions for improving their quality of life.

Likewise, a study of Women Technology Park (WTP) across the country helped in gauging the state of women empowerment and livelihood

generation, particularly for rural women, through STI intervention. Further, a pilot initiative Science Society-Setu for Atmanirbhar Bharat, help take the knowledge institutions to the society and promote, nurture and provide scientific legitimacy to the people's centric solution. Such programmes have their utility in acting as a bridge connecting scientific institutions with society.

The development of Science Communication as a stream is an organic process, in which we learn from new experiments and often from mistakes. Course correction is inevitable, and the potential is immense. We must tap it optimally and of course, cautiously. The onus of keeping the citizenry informed of science and technology lies on our strong shoulders. We must keep moving, we have already come a long way since the mid-19th century when the "shaitan" moved through the countryside. But we have still miles to go.

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# Science Communication Through Videos (Vigyan Prasar footprints on Television, OTT and Social Media platforms)

**Kapil Kumar Tripathi**

Science on Television has emerged as one of the major activities/programmes of Vigyan Prasar. The objective of this activity/programme has been to bring out popular, interesting, knowledgeable, and engaging scientific video content from an Indian perspective for the common people, most probably in their languages, to demystify science and inculcate scientific temper among them. In the new digital era, most people in the world are receiving S&T-based knowledge through Television, website, and other internet-enabled devices like smartphones etc. Television was a very popular medium in the nineties in India. Still, it is being used extensively in almost every house for getting programmes related to entertainment, sports, news, knowledge etc. The only difference is that during that time, only one channel exists. Now, due to the advancements in space and satellite technologies, thousands of television channels are providing content simultaneously on different genres. Similarly, with the progress of internet-related technologies, the steaming of video becomes possible using internet protocols (IPs) which made websites, OTT and other social media platforms tools for getting first-hand information on any subject. This paradigm shift is giving a challenge to traditional communication media.

Vigyan Prasar has been utilizing Television for science communication since its inception and produced several

S&T-based videos. From time to time, it changed its strategy to produce video content per emerging media's needs, essentially adopting new and innovative formats based on people's interests. Vigyan Prasar has a vast canvas as the target population is a concern. It is pitching at urban and rural audiences, educated and otherwise, professional, working class and unemployed, young and children.

Science can become people's science only when they find involvement and appreciation in making science communication. Our communication platforms, science serials/science videos/films are an attempt to bridge the gap between labs and people. "Science is everywhere and for everyone" is the guiding principle of this activity of Vigyan Prasar. The present article discusses the journey of Vigyan Prasar in producing science video programmes from one- to two-hour programming annually for Doordarshan National (DTH) to run 24 x7 India Science OTT channels and DTH with two-hour programming daily.

## Initial Efforts

Vigyan Prasar started its video production-related activity independently by producing a set of videos on the occasion of the Total Solar Eclipse of 24 October 1995. The event-based



efforts were enormously satisfying for the institution and generated a very good response from the public at large. A noteworthy production of Vigyan Prasar in 2004 was a three-part programme in Hindi, "Ananth Yatra", commemorating 100 years of the golden decade of 1895-1905 when significant discoveries that

successfully changed the face of the world were made. In 2005, Vigyan Prasar, in collaboration with the Development and Educational Communication Unit of the Indian Space Research Organisation (ISRO), started producing the science programme "Aisa Hi Hota Hai" which was telecasted on Doordarshan National. This created a need for a dedicated science slot on the Doordarshan National channel. After a round of discussion with various stakeholders, Vigyan Prasar, in 2007, entered into a landmark MOU with Prasar Bharati/ Doordarshan for a dedicated weekly science slot (Sunday Morning at Doordarshan National channel). With this arrangement, it was decided that Vigyan Prasar would produce the video programmes for a weekly slot, and Doordarshan would telecast them for free. This decision was a landmark decision that strengthened the science communication activity through Television in India. Later, dedicated slots became very popular, especially among children. After gaining popularity or this

# SCIENCE ON TELEVISION

slot, demand was generated for science programmes in a regional language. Based on viewers' requirements, Vigyan Prasar started dubbing programmes in 10 different languages- Assamese, Bengali, Gujarati, Malayalam, Marathi, Oriya, Punjabi, Telugu, Tamil, and Urdu and provided regional Doordarshan Kendras for the telecast purpose. With this understanding, Vigyan Prasar produced several science series till 2018. Some of the highly acclaimed television serials of Vigyan Prasar include a 26-part science quiz serial titled Jigyasa 12-part serial, Jeete Raho, on common ailments and medicines. A 26-part serial, Kahani Dharti Ki (The Story of Earth), produced as part of the International Year of Planet Earth 2008, a 26-episode serial on astronomy, Taaron Ki Sair, was created and telecasted. A 13-part serial, Baatein Raaz ki, using simple experiments to explain and illustrate basic scientific themes, was initiated last year in collaboration with DECU, Ahmedabad, Total solar eclipse, 26-part series Experiments that shaped the world' with Inter-University Accelerator Centre (IUAC), New Delhi-series covered the pathbreaking discoveries in the field of natural and biological sciences, instances of departures of thought that changed the course of science. 26- episodes serial "Question of Science" (Cutting-edge research & innovation), 13-episodes serial "Baatein Raaz ki" (Science in Daily Life), 13-episodes serial "Scientifically Yours" (Scientific Temper) jointly with NISCAIR, 13-episodes serial "The Maths Factor" (Mathematics), 13-episodes serial on "Chemistry" (Chemistry), 52-episodes serial "Khudbud" (Hands-on Experiments), 12-Documentary film on Biographies of Indian Scientist and discoveries, 10- Films on various National Campaigns like TSE, VOT, WYP, LHC, TMT, Chandrayaan Mission, Day Time Astronomy, INSPIRE, S&T Pravasi Bhartiya Divas. Later, all produced programmes were also telecast DD Bharti, DD Urdu, DD India, DD Kisan 10 Doordarshan regional Kendra. The format of this science programme was either documentary or docu-drama.

## Weekly Science News Programme:

Vigyan Prasar started telecasting of weekly science news programme Science Monitor in English and Gyan Vigyan in Hindi from Rajya Sabha Television, Lok Sabha Television (LSTV), now collectively called Sansad TV, in the year 2010. The telecast was continually done without brake till the year 2021. This science news-based programme was very useful for students, researchers, and civil services aspirants. Presently, the programme is being streamed through the India Science OTT channel.

## Launch of two platforms for Science Communication

Vigyan Prasar, under the guidance of the Department of Science and Technology (DST), Government of India, on 15 January 2019, launched two platforms DD Science—a one-hour slot on DD National, in collaboration with Doordarshan / Prasar Bharati and India Science—a 24x7 OTT channel. Per the MoU with Prasar Bharati, programmes were telecasted through Doordarshan National (5.00 pm to 6.00 pm daily from Monday to Saturday) channel until 31st March 2020. Due to the COVID-19 pandemic, the telecast through DD Science could not continue from Doordarshan's side. Still, Vigyan Prasar continued its operation for the India Science OTT channel and produced record programmes on India's efforts in combating Covid-19 covered all efforts made by Indian scientists and laboratories and highlighting the achievements of DST, DBT, ICMR, CSIR, MoHFW etc. The channel produced more than 490 videos on Covid related issues. Other agencies like PIB, the Ministry of Health, Social media groups etc., extensively used India science videos to form a positive opinion on the above issue.

Over-the-top (OTT) platforms are emerging as a new mode of communicating and popularizing science among the masses. Prominent science television channels like Discovery, BBC, Animal Planet, etc., have started on the OTT platform infotainment channels. In India, the only science channel from the



public sector available on the OTT is India Science, an initiative of the Department of Science and Technology managed by Vigyan Prasar. The channel gets funding from the National Council of Science and Technology Communication, Department of Science and Technology, Government of India.

*India Science* is India's first dedicated science and technology-based OTT channel for knowledge dissemination, with a strong commitment to spreading scientific awareness, especially with Indian perspectives, ethos and cultural milieu. India Science promotes making a scientific, rational, knowledge-based society. The platform has a facility to provide 24x7 live content and Videos on demand. The platform now has a vast science videos repository of more than 4000 videos in different categories like Agriculture, Biotechnology, Health and Medicine, Planet Earth, wildlife, Environment, Hands-on Science, Computer and Information Technology, Artificial Intelligence, Engineering, Mathematics, Grassroot Innovations, Covid-19 updates, Science News, Scientific Biographies, Meet the Scientist, Physics & Astronomy, Popular Science, Science and Arts, Science Festivals etc. These videos are being produced in Hindi and English using different formats like documentaries, studio-based interviews and talk shows, outdoor shows, specially conceived programmes, science magazines, R&D features, Innovation features, bulletins, live programmes etc. The channel focuses on showcasing the S&T achievements from Indian research institutes, besides a few stories from the international level. The platform can be accessed on any internet-enabled device like a laptop, desktop, smartphone (Android/iOS/KaiOS), smart TV etc. India Science is accessible on the following platforms:

- ▶ India Science App: Android / iOS App/KaioS (download from Google play store /Apple store/ Jio Store)
- ▶ India Science YouTube: [www.youtube.com/c/indiascience](http://www.youtube.com/c/indiascience)
- ▶ India Science Facebook: <https://www.facebook.com/indiasciencetv>
- ▶ India Science Website: [www.indiascience.in](http://www.indiascience.in)
- ▶ India Science Twitter: @indiascience
- ▶ India Science Instagram: [indiasciencetv](https://www.instagram.com/indiasciencetv)
- ▶ India Science LinkedIn: India Science
- ▶ India Science Pinterest
- ▶ Jio TV, Jio STB, JioTV+, JioChat

*Vigyanveer*-a series on INSPIRE MANAK Awardee (child innovators), Series on *STEM 3030* in collaboration with IIT Gandhinagar, *Life in Science with Pallava Bagla*, Explained, Series on *Self Reliant India*, Geology and Geography of India, Cosmic Quest, DST Golden Series, KRS Dam by M Visvesvaraya, *Aagaaz*-series on Indian startups are very popular among masses and recognized as a channel-driven content based on of its quality, presentation and feedback received from the viewers. In the channel, 52 % of the viewers are from the 18 to 34 age group. This shows OTT platforms are most popular among the younger generation. Feedback shows that most viewers regularly programme for a regular update in science and for their competitive examinations. The channel's reach has crossed 205 million in the last three years, with a dedicated subscription base of 4.5 lakhs. This shows that under Science and Technology category channel is performing well without much publicity. The channel is also helping to increase the S&T-related content in media. The channel has won several awards and honours. Recently, Vigyan Prasar won (i) Red Ink Award 2021 (Category: Science & Innovation-

Television)- "Life in Science with Pallav Bagla-World's First Fully Equipped Mobile Covid-19 Testing Lab" (ii) International Science Film festival 2021 at IISF 21, Goa (Category: Indian Science @75)-" Secrets of Super Foods Makhana and Sabudana" (iii) Special jury award for the Documentary film "Science through play" during Chitra Bharati Film Festival 2022 at Bhopal (iv) Federation for World Academics (FWA) Award: Media Ratna for Spearhead Journalism (v) Documentary film "SOLO - Wonder Herb of Ladakh" for International Science Film festival 2021 (Category- Indian Science @75) and films nominated for the award are (vi)The documentary film "Life in Science with Pallav Bagla -Masking India, Saving the World" for Red Ink Award 2021(Category: Health & Wellness-TV) (vii) Documentary film "Vigyanveer-Blind Cap" International Science Film festival 2021 (Category- Indian Science @75) (viii) Documentary film "Indian Heritage in Digital Space" for 12th Educational film Festival 2021, Poland. (ix) Documentary film "Indian Heritage in Digital Space" for Golden Tree Festival 2021, Germany (x) Documentary film "Nutraceuticals-New Age Avatar of Herbal Remedies" for The Paus Premieres Festival 2021 UK. Vigyan Prasar organizes screening of its films regularly for students at schools/science clubs/colleges etc., and also participates in various Indian or International films festivals.

It can be concluded that the India Science OTT platform is emerging as a nation's own Science channel. It has a significant effect on promoting science among the masses. People from various parts of India and 207 overseas countries show the quality of content produced by the India Science channel. The popularity of its videos can be assessed by the number of views received for its video. Since the post covid era changed the education landscape across the globe, the films produced in the channel can be used as a learning resource through students' smartphones. India Science has readied a precious treasure of varied genres during these three and half years that can make it a desirable player in the OTT space. In the last three years

of India, science has also seen many organic innovations and value additions. Among the most important ones has been the collaboration with Reliance Jio, which has made India Science available to an additional audience base of 400 million. The partnership with IBM helped initiate the Engage with Science platform to improve interactivity and engagement among school teachers and students. Ganga Gallery was created on the India Science platform in collaboration with the NamamiGange Programme of the Ministry of Jal Shakti, which helps create awareness of the River Ganga. In association with MyGov platforms, VigyanPrasar organized various competitions like quizzes, film making for school-going children,

which were beneficial activities to popularise both Science and India Science. Recently, Vigyan Prasar also received a request from the National Council of Education Research and Training (NCERT) to share India Science's content for the PM-eVIDYA platform, which shows that India Science's content attracts all stakeholders.

Currently, Vigyan Prasar is focusing on enhancing the reach of India's Science OTT channel so that the benefits of science, and technology, innovation can be reached up to the last section of society. "India Science" has now been established as a nation's science channel and built a huge national repository of S&T videos/films. The successful implementation of the science channel project with the support of the Department of Science and Technology, Govt of India and feedback from the viewers Vigyan Prasar demonstrated that it could do a significant amount of work with limited resources to meet the various demands in science communication towards nation building. The activity supports the aim that science and technology should solve prevailing problems, generate wealth for the nation, create employment, and, most of all, happiness.

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# A participatory approach to science communication is essential to engage the public

K B Bhushan

Science Communication popularisation and its Extension (SCoPE) aims to reach different audiences and make them aware of the importance of science. This article is about how exhibition-related activities can be used to communicate science to the public and a unique initiative, “AWSAR”, to help young researchers improve their writing skills. Both approaches are participatory in nature; the target population is different. In the case of

exhibitions, science communication is for individuals belonging to every level of society, including students, teachers, the common person, and others. Whereas, in the case of AWSAR, the target population is research scholars.

## SCoPE through Exhibition and Fairs

Exhibitions, as the name speaks, denote demonstrations. Moving to a bit descriptive meaning, this means an organised presentation or display of selected items to the public. Communicating science to a range of

individuals through live demonstrations is fruitful when it becomes engaging, calling for effective public participation. Also, understanding the subject strengthens when one views it with their own eyes, as one never forgets what one sees.

Vigyan Prasar has been working diligently to connect with the general public through exhibitions for a long time. The initiative taken to communicate with people from all walks of life and provide them with scientific information was commendable. These exhibitions

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Unleash the Spirit of Science Communication

What's New

ranging from stalls, book fairs, activity-cum thematic exhibitions to virtual or digital ones, are highly alluring but equally informative.

The use of cutting-edge technologies, such as digital exhibits, including virtual holographic displays, transparent display screens, augmented reality (AR), virtual reality (VR), and virtual display, has been growing in popularity recently and has contributed to substantial public participation. These technologies made it possible for visitors to visualise science effectively and efficiently.

In the recent past, cutting-edge technologies were demonstrated through an exhibition showcasing technology's integration with nature and the environment. This technological show, "Nature Embedded: a Design-Technology Experience", used novel technologies like interactive floor surface projection, abstractions of sight and sound to demonstrate the beauty of nature and sound to demonstrate the



origin of life, elements of nature, and point of view of nature via non-humans. Augmented Reality, surface and object detection, motion sensor Xbox, flipbook projection and holo fan technology are also being used in the exhibitions by Vigyan Prasar to make them as interactive and engaging as possible.

### Augmenting Writing Skills for Articulating Research (AWSAR): SCoPE in Research

The AWSAR scheme strives to improve the writing skills of researchers by

providing support and resources. The objective is to disseminate interesting Indian science research stories to a specific target audience, Indian research scholars doing PhD and Postdocs in the various laboratories of India. This noble initiative is designed to recognise scientific research hidden in laboratories or confined to a library. It is further emphasised that the common person should be able to understand it.

To engage with the researchers on a single platform, AWSAR conducts workshops in the form of webinars (online) and seminars (offline) to provide training regarding popular science writing/communication to all the young researchers of India. The webinars are informative and explain different ways to write down research stories in the simplest way possible. One of the examples includes using the pictographic format to explain the ongoing research work. "A Picture is Worth a Thousand Words". The webinar is an interactive one where a participatory approach is followed, and listeners are free to solve their queries in the question-answer round at the end. In the past three years, more than 10,000 scholars have been trained in popular science writing.

The response to AWSAR from young researchers was quite positive and encouraging. As of 2021, 16641 researchers have registered on the AWSAR portal for the opportunity under both categories (PhD and Post Doc Fellow). Out of the total number of registered researchers, 1741 are under the PDF category, and 14900 are from the PhD category. The 393 AWSAR Award has been bestowed to date.

Vigyan Prasar's logical framework provides a top-down, bottom-up and interactive approach towards reaching the masses with knowledge products/disseminating information. It covers four main activity areas - Information Support & Enabling Initiatives; Intervention, Establishing Delivery and Output. Each area is underpinned by targeted lessons learned and emerging opportunities to be aware of so that Vigyan Prasar can effectively execute its mandate per the organisation's vision and mission. Such devoted efforts by Vigyan Prasar to reach out to the maximum population in the best possible way are praiseworthy. The practices of bringing science to the public that we observe follow the scientific and social responsibility (SSR) guidelines.

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# Science Communication -Pursuing passion as Journey

Sachin C Narwadiya

When I joined Vigyan Prasar, I started enhancing my science communication skills for serving the nation. Vigyan Prasar is the leading institute in the Science Communication in India. Vigyan Prasar has objective of developing the knowledge of science, make decisions, asking questions and creating a curious tendency among public. I was part of team for production and telecast of video Serial on Maths-13-episode, Question of science-series of 26 episodes, Khudbudh-52 episode series Wise Spices-13 episodes and IT revolution in India-13. In these serials, I examined the rough cut for science content correctness and quality of shooting, Audio and video quality monitoring also checked up by me. I presented papers in various conferences and for the purpose I specifically studied scientific contents related to the papers which I presented. The produced program then telecasts, direct screen and screened through use of social media like youtube and other organizations web portals like READ-INDIA, Teachers Portal, NISCAIR-Tube, NROER-NCERT for wide viewership. The Vigyan Prasar started an OTT channel in name of India Science which is also available on android platform. The major program like Transit of Venus, Annular Solar Eclipse, Sci-connect was the always remembered one in life. The Sci-connect program was started in 2017 in the North-Eastern States of India. These include the states Assam, Manipur, Meghalaya, Nagaland, Mizoram, Arunachal Pradesh, Sikkim and Tripura in which students of 8-9



students can take part. This program is a different kind of program, in which quiz competitions are organized based on the popular science-based films of Vigyan Prasar. The program was conceptualized by Senior Scientist at Vigyan Prasar Shri.

**The students  
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on Science where  
6000 students  
participated**

Kapil Tripathi. The students selected after the district level examination are given a chance to participate in the workshop of “Hands on Science”. In this program, 6000 students participated in 2017, whereas in year 2018 about 9000 children have participated. In this program, rolling trophy was awarded to the state getting first place. Tripura was first, Mizoram second and Sikkim stood third in the year 2017, whereas in the year 2018, Assam stood first in Mizoram II and Tripura in third place. Nearly 50 subject experts, 200 teacher teachers and 15000 students have been added to the program. Films of science propagation have been accessed and seen in remote places of North-Eastern States by this program. Social media such as Face book and YouTube were also used to promote the films. The movies were covered on the viganprasaryt and sciconnect2017 YouTube page, which participants watched and participated in the program. I visited all 8 states of North-East India.

The beauty of nature here was amazing and anybody will love the beautiful green forests and mountains. The program had 3 components i.e first screening of selected films of Vigyan Prasar, second one offline examination, third one selection of students for Hands on Science workshops, fourth organization of Quiz among selected students 8 state level rounds, 2 semi-finals and one final round. I remember a story from Sci-connect when we decided to organize Hands on Science of 4 states students at Gangtok, Sikkim there were 240 students from different states need to be gathered. The Sci-connect was a very good program of its kind as it was a tool to nurture students towards career in science.

Science communication is my passion from early days of career itself, whenever I look back to visualize my past I saw myself as Science Communicator. The communication is strengthen when it's about Science. We explore newer things in Science and Technology. The proper use of science will make countries as Advanced or Developing. Thus, Science Communication is current need of India for becoming a superpower, power for welfare and not for destruction. Power for prosperity and not for being self-centredness. When I looked up in my



past, I remember that my grandmother has Scientific approach in many small things she did, and I learned from her the tactics of Science Communication from her too. In Vigyan Prasar I conducted workshops on Transit of Venus-TOV, Teachers training workshops, EduSAT network workshops, Hands on Science workshops. Being a biochemistry person, I worked in Physics, Astronomy and allied subjects which is an example to cater the interdisciplinary sciences. Once

when I was on tour to Nanded for TOV workshop I linked the astronomy and biology in my lecture presentation. The Transit of Venus is a unique phenomenon.

On 6 June 2012, a transit of Venus occurred. This rare astronomical event, when Venus passes directly in front of the Sun, and appears as a large black dot on its surface slowly moving from one side to the other in about 3 hours. The prior transit took place on 8 June 2004. The previous pair of transits were in December 1874 and December 1882. The next transits of Venus will take place on 10–11 December 2117 and 8 December 2125.

### Vidyarthi Vigyan Manthan

I am so lucky that I got an opportunity to work in Vidyarthi Vigyan Manthan-VVM, an online Science

Talent Search App-based examination organized by Vijnana Bharati, Vigyan Prasar & NCERT across India. This exam is available in 10 major regional languages alongside Hindi & English. The uniqueness of the exam is that its first national-level exam has been totally in online mode for the last 7 years, much before anyone even thought of it, maybe the first in the world. The VVM team comprises highly intellectual renowned scientists of the country. The knowledge Indian Contribution towards Science is the current need to be acknowledged and imparted to the younger generation, and with this in mind, this concept gave birth in the name of VVM. VVM can be checked from its website [www.vvm.org.in](http://www.vvm.org.in) wherein the complete information is available. This exam is conducted in 3 levels; first level nationwide of MCQs, then state level exam on a Hands-on Science basis, then National Level Camp for final selection of Himalayans.



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# Science Communication Through Technology: Information, Engagement and Influence

Gaurav Jain

“Technology is best when it brings people together.”

- Matt Mullenweg

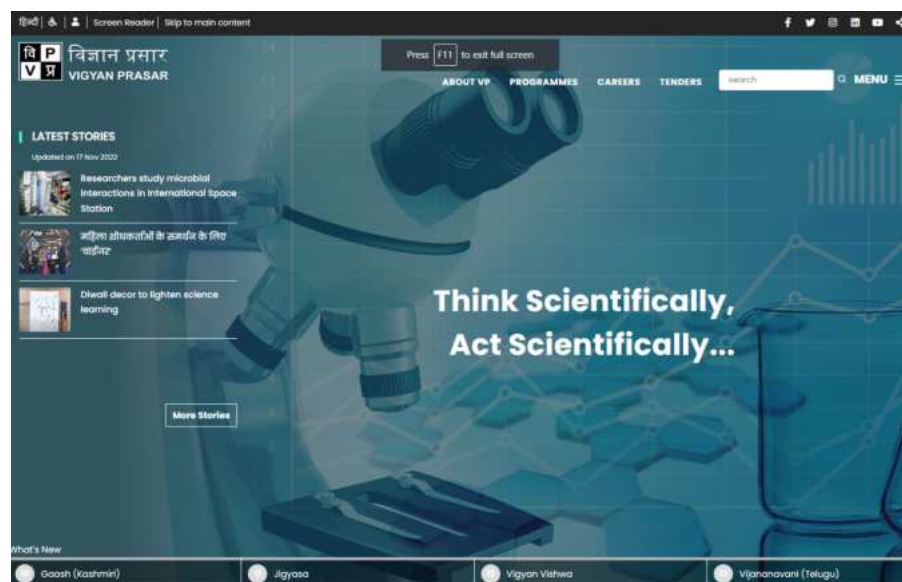
Information technology (IT) is essential for science communication, as it allows individuals to share their content more easily with the public. Digital media, as a part of the IT system, has revolutionized the way that science is communicated. It helps to bridge the gap between scientists and the general public, providing a more accessible means of accessing scientific information. Additionally, digital media allows for closer collaboration between scientists and other experts in related fields, facilitating faster dissemination of research findings. IT tools, when it comes to communicating science effectively, it is important to create engaging content that people will want to read or share.

Vigyan Prasar has been using different IT-enabled tools to communicate science and technology to a wide audience since its inception, which includes web-based technologies, social media platforms, computer software applications, multimedia simulation, and many more. Vigyan Prasar, in addition, uses dynamic techniques and facilities designed to enable the knowledge-sharing environment to have increased audience engagement. Science Communication Popularization and its Extension through digital media at Vigyan Prasar established a framework

for the effective distribution of scientific knowledge in the late 90's by creating digital repositories called “VIPRIS-Vigyan Prasar Information System”. Vigyan Prasar Information System (VIPRIS) was an indigenous platform created to communicate science using information technology, especially the Internet, multimedia CD ROMs, newspaper clipping services, VIPRIS Clipset database, and repository of S&T information. Moreover, numerous CD ROMs on topics such as Atomic Energy in India, India in Space, Indian Scientists,

innovative experiments in science, Dream 2047, etc. developed. Digital Library has also been made available, which contains the digitized version of all the significant knowledge products developed by Vigyan Prasar, and most of the resources are being made freely available to spread the knowledge.

Vigyan Prasar also serves as a resource and facilitation center for science communication. This includes the institutional website, www.vigyanprasar.com, which is a dynamic website for science communication and provides comprehensive S&T information. It has its database and web repository of S&T information. Another example of a digital repository developed by Vigyan Prasar is India Science, Technology and Innovation Portal (ISTI Portal). ISTI Portal is a user-friendly and



centralized destination with repositories of content related to science, technology, and innovation within the Indian STI ecosystem and was made available to the public in August 2018.

Information technology's uses are not limited to the internet and web-based applications. Vigyan Prasar has been implementing this advanced technology to popularize science through interactive digital platforms. Vigyan Rail; a science exhibition on wheels, a prestigious project of Vigyan Prasar undertaken in the year 2003 with the active participation of 18 Scientific Departments/Ministries/Councils of the Government of India and concluded its journey on 20th August 2004. Vigyan Prasar established a touchscreen-based interactive science quiz programme for Vigyan Rail Visitors, and an interactive DVD, "Vigyan Rail–Science Exhibition on Wheels," with easy navigation, search, and the sitemap was also developed, which included all the exhibits of Vigyan Rail, coach wise panoramic view, video gallery, photographs and newspaper clips at all the stations that Vigyan Rail visited.

Digital technologies are constantly evolving, and so is the way we use them. Vigyan Prasar, in this context, uses the latest digital and IT systems which provide information through engagement and Influence. The popularity of augmented reality (AR) and interactive displays is skyrocketing right now. It allows users to interact with physical objects in a virtual environment, which can be used for a variety of purposes and make science–fun and engaging. With the advent of new-age technologies, Vigyan Prasar has been developing products using emerging technologies. For example, to commemorate the 150th Birth Anniversary of Mahatma Gandhi in 2019, the institute set up a Digital Exhibition on Mahatma Gandhi at 17 centers across the Country. The key objectives were to develop an interactive virtual reality of Gandhiji's life through technologies and to carry the legacy of Gandhiji with technologies in the virtual world. And to accomplish this, cutting-edge technologies were used, such as smart interfaces for providing multi-



user interactive smart surface tables and walls to groups of users or individuals for discussions and intuitive interaction to make effective and collaborative group communication. The intuitive multi-touch interactive surface made the communication more engaging, effective, and inclusive.

The Cutting-edge technologies were further represented at The New Age

**Information technology's uses are not limited to the internet and web-based applications. Vigyan Prasar has been implementing this advanced technology to popularize science through interactive digital platforms.**

Technology Show during the India International Science Festival 2019. This event gave a glimpse of new-age India, showcasing our natural habitat through the filters of cultural connotations and humane ways to connect technology with people. This experience related to the Origin of Life, Elements of Nature, Point of View of Nature through non-humans, and Narratives on Nature using cutting-edge technologies such as interactive floor surface projection, abstractions of light and Sound, interactive wall projection, and Augmented Reality. There was also an interactive experience zone where visitors could try out some magical augmented reality cards, Virtual Reality, Surface and Object Detection, Motion Sensor Xbox, Flipbook projection, and Holofan technology.

Science Communication can be considered one of the valuable ways of understanding and navigating the modern world. Therefore, the organization has been utilizing advanced technology for a long for the popularization and communication of science and technology.

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# NOBEL PRIZES 2022

## The Nobel Prize in Physics

Nobel Prize 2022 in Physics is awarded to three scientists Alain Aspect, John F. Clauser, and Anton Zeilinger "for experiments with entangled photons, establishing the violation of Bell inequalities and pioneering quantum information science".



Alain Aspect



John F. Clauser



Anton Zeilinger

## The Nobel Prize in Chemistry

Nobel Prize 2022 in Chemistry is awarded to three scientists Carolyn R. Bertozzi, Morten Meldal, and K. Barry Sharpless "for the development of click chemistry and bioorthogonal chemistry".



Carolyn R. Bertozzi



Morten Meldal



K. Barry Sharpless

## The Nobel Prize in Physiology or Medicine

Nobel Prize 2022 in Physiology or Medicine is awarded to Svante Pääbo "for his discoveries concerning the genomes of extinct hominins and human evolution".



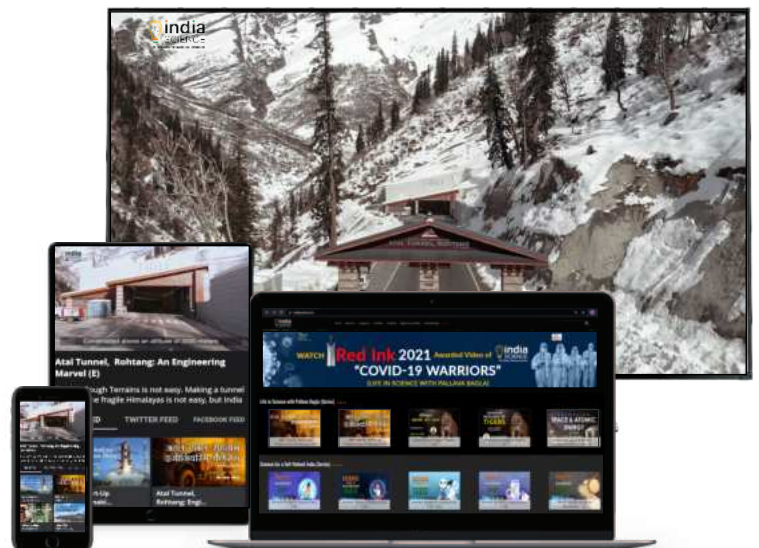
Svante Pääbo



# INDIA'S OWN 24X7 SCIENCE & TECHNOLOGY CHANNEL

India Science is an OTT Science channel. This 24X7 video platform is dedicated to science and technology knowledge dissemination, with a strong commitment to spreading scientific awareness with focus on Indian perspectives, ethos and cultural milieu.

[www.indiascience.in](http://www.indiascience.in)



# Can 5G Damage DNA?

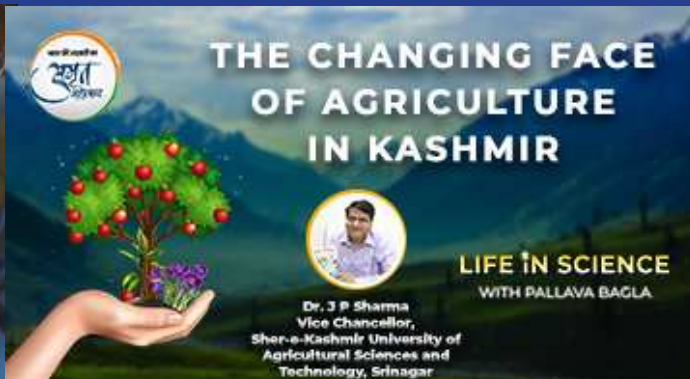


## THE CHANGING FACE OF AGRICULTURE IN KASHMIR



Dr. J P Sharma  
Vice Chancellor,  
Sher-e-Kashmir University of  
Agricultural Sciences and  
Technology, Srinagar

LIFE IN SCIENCE  
WITH PALLAVA BAGLA



## Atal Tunnel

LIFE IN SCIENCE



An Engineering Marvel

## UNRAVELLING THE SCIENCE BEHIND AYURVED

LIFE IN SCIENCE  
WITH PALLAVA BAGLA



# Electrical Brain Implant

COSMIC QUEST  
**Vedic Astronomy**

## SCIENCE FOR A SELF-RELIANT INDIA

FARMING THE FISH:  
COLD WATER FISHERY IN KASHMIR

# Ocean

Cauldrons of Life

## No Friends No Enemies



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