UNIT-2 : BEGINNING OF SCIENCE COMMUNICATION IN INDIA

UNIT STRUCTURE

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2.1 LEARNING OBJECTIVES

After going through this unit you will be able to

- explain how Science Communication began in India
- discuss the contribution of different medias in science communication
- explain the significance of science communication movement in India
- analyse the history of Science Journalism in India

2.2 INTRODUCTION

In this first unit of this course we have concentrated on the concept of Science Communication, its need and significance. This unit is going to cover such important topics as the beginning of science communication in India and the contribution of print and electronic media in carrying science to the masses. Besides science communication movement in India has been given particular emphasis since efforts to popularise science among

the masses have been undertaken at the level of the Government and non-governmental sector.

In this unit the history of science communication in India will be summarized. How science communication did began. The contribution of different medias like print, radio and television will also be further discussed in the unit.

2.3 BEGINNING OF SCIENCE COMMUNICATION IN INDIA

There have been many instances in the history of science when scientists gave particular attention to communicating their thoughts to the public. During the eighteenth century, for example, the phase now known as the Enlightenment produced a good number of scientific books, many of which sold very extensively. Science even became fashionable and public lecturers attracted audiences that included a large section of the society from society ladies to the working men.

But the lack of public understanding of science today inspite of the omnipresence of science in every sphere of life is a matter to be discussed. The "Public understanding of science" movement can be traced to the report of the Royal Society in England which drew the following conclusion-

- Science and technology play a major role in most aspects of our daily lives. Our national prosperity depends on them.
- There is scope for more science in the media and strong case for more science in general programmes and for improving the contact between scientists and journalists.
- Scientists must learn to communicate with the public.

The Royal Society seemed to be guided by the belief that more the people knew about science and technology, the more they would come to value and respect science.

India has an imposing scientific heritage. Scientific research in fields such as mathematics, astronomy, medicine and material science has been carried out in the Indian sub-continent since ancient times. However, a remarkable gap has persisted between this scientific knowledge and the 'common' man and woman and, until recently, almost no effort has been made to bridge this gap. Scientist and a class of people of different countries

have been trying to popularize science among the masses over the periods. In India popularization of science was visible very strongly after the British came. Scientists like Meghnad Saha, Satyandra Nath Bose, C.V. Raman, and D.S. Kothari, Mahendralal Shikdar, Jagdish Chandra Bose, Prafulla Chandra Roy, Ruchi Ram Sahani and others carried science to the common people and had done a lot in this context. This trend had been continued after independence also.

It was Pandit Jawaharlal Neheru, the first Prime Minister, who first introduced the concept of 'scientific temperament' and emphasized on its promotion in the society. In 1958, a proposal was taken in the Cabinet in this regard and to solve the problems of the country by using science for the upliftmen of the people. In fact, in our constitution, Article 51 (A) says that it is the duty of all citizens "to develop scientific temper, humanism and the sprit of enquiry and reform."

Now, let us discuss the contribution of print and electronic media in popularizing science in last few decades.

2.3.1 Contribution of Print Media

Vijnan Sanchar (Science Communication) a book by Dr. Manoj Kr Patairiya carries a historical account of science journalism and science communication in India. Some significant highlights are present here. Throughout history, there have been attempts to take science to the common people. For example, *Vigyan* (Science) — a monthly popular science magazine in Hindi — has been published by Vigyan Parishad (a learned society of scientists and academics) since 1915. News, views and features on scientific topics have been appearing , though sporadically, in Indian media since second half of the 19th century. Popular science writing was started in the year 1818 through bilingual (Hindi- English) '*Digdarshan*', published from Srirampur, West Bengal. In 1842, a Bengali magazine *'Vidyadarshan'* carried a series of science articles. In subsequent years magazines and newspapers like Marathi *'Dhyan Parcharak',* Tamil *'Chitamani'*, Assamese *'Arunudoi'* etc were the pioneers in publishing science features and news from time to time. Meghnad Saha a famous scientist

used to write regularly on various scientific issues in the research journal "Science and Culture". Science writing in English started in India with the publication of *'Science Reporter'* in 1964 by CSIR. Prior to that *'Vigyan Bidhi'* in Hindi was launched in 1952. In 1966, Times of India started publishing *'Science Today'*. In 1971, NRDC also launched *'AVISKAR'* in Hindi. Another science magazine named 'Science Age' was published in 1983 by Nehru Center, Mumbai. *'Down to Earth'*- a magazine devoted to environmental issues was started in 1991 with the effort of Centre for Science and Environment. However, both *'Science Age'* and *' Science Today'* do not exist any more. But *'Science Reporter', 'Vigyan Pragati', 'Invention Intelligence'*, and *'Aviskar'* are still continuing. Some computer magazines like 'Computer Today' and 'Data Quest' have become popular. Meanwhile, science features, news, reports etc are regularly appearing in major English Newspapers through supplements or in Sunday issues. The Regional newspapers have also started emphasizing science coverage in order to promote scientific temperament among the people.

2.3.2 Contribution of Radio

Radio Broadcasting was started in India in 1927, with two privately owned transmitters in Bombay and Calcutta. The government took over the transmitters in 1930 and stared operating them under the name of Indian Broadcasting Service. It was changed to All India Radio (AIR) in 1936 and later it came to be called as 'Akashbani' from 1957. AIR is working as an effective medium to inform and educate the people besides providing healthy entertainment.

All India Radio (AIR) has been playing an important role in popularizing science among the Indian masses. Science programmes are being broadcast by AIR for a long time since its establishment in 1936. In an effort to give science communication a new dimension, Science Cells was established in some radio stations in 1975 with science trained executives. Some science officers like Dr. R Sreedhar, Dr. Krishnamurthy, Amit Chakravarty, Usha Bhasin, Aparna Vaish, Brij Mohan Gupta, Nilima Harjal, Jayanta Erande, Dr. Kishore Kulkarni, Dilip Mayangbam etc have made valuable contribution in science broadcasting. Some radio serials like *Manav*

ka Vikash (1991-93), *Vigyan Vidhi* (1987-88) etc proved extremely useful in popularizing science with a sizable portion of the audience remaining glued to the radio at the time of the broadcasting of these serials which were so popular that later they were broadcast in many regional languages. The regional language stations, promotion of science and took very successful steps. Among them, the phone-in programmes and radio-bridge programmes are very popular.

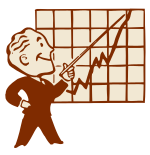
The, Radio Farm Forum was constituted in seven radio centers of the country. In the year 1966, keeping in view the importance of agriculture in our country, in some radio stations Agricultural Unit was opened and some Farm and Home Units were also started at various stations. Besides, the Broadcast also included programmes for rural women and rural children where the main thrust is on issues relating to the rights of the child, gender bias and child abuse. Science also got specific space in Akashbani. From 25th June 1989 to 24th September Akashbani in collaboration with National Council of Science and Technology Communication aired a series of programme named *'Bigyan Bidhi'*, comprising 13 episodes. Under this programme, through different regional Indian languages 1,40,000 children of age group between 10 to 14 in the country were registered as radio listeners. Another serial named *'Human Evolution'* was broadcast from all the stations of AIR, in respective regional languages. Central Production of AIR, New Delhi in collaboration with National Council of Science and Technology Communication (NCSTC), produced that programme. Another programme called 'Paryavaran', jointly produced by AIR and Vigyan Prasar, was broadcast from January 1998 to December 1998. In the same year, another serial named 'Chhoo–Mantar' was broadcast on AIR, Delhi from 3rd October. AIR and 'Vigyan Prasar' jointly produced this 52 episode serial. Other than AIR, various Private FM radio and Community radio stations are also broadcasting science related programmes. The Ministry of Information and Broadcasting has given emphasis to airing science programmes, so that different aspects of science can easily reach the masses.

2.3.3 Contribution of Television

The use of broadcast and digital media has opened a new vista of science communication in India. Doordarshan, the national television service of India devoted to public service broadcasting is one of the largest television networks in the world. Since its inception in 1957, Doordarshan has been telecasting science programmes for students. The first popular science programme telecast by it was *'Vigyan Partrik'* during 1971 to 1975. In the year 1966, agriculture based programmes began to be telecast. The year 1982, when colour television came to India brought a new phase in television service in India. During 1984-92, a popular science programme named *'Quest'* produced by Calcutta, *Doordarshan,* ran for eight years. A programme on the growth of science in India was produced by NCSTC and it was called *' Bharat Ki Chap'*, *'Bigyan ki Baate'.* It had been broadcast in every Saturday. Then *'Turning Point'* was landmark programme started in 1991 which had been telecast in some regional languages also. Doordarshan also telecasts some western Television programmes. Many private TV channels such as National Geography, Animal Planet , Discovery etc have been producing science programmes on number of issues and after the emergence of these private channels , science and technology have become much more interesting for everybody.

In both Print and Electronic media science awareness is being promoted through advertisement. A good number of government departments, both Central and State, have been using commercial broadcasting to disseminate important information on science to the people. In this regard, we can mention the efforts of creating awareness about bird flu, AIDS, family planning, pluspolio, immunization, energy conservation, pollution, environmental problem and other important issues.

Besides the print and electronic media, Folk media also play an important role in this context. Through street plays, puppet shows, theatre, folk songs, folk dance etc folk media have contributed a lot in popularizing science, especially among the rural masses. In fact, at present Internet also plays a vital role through various upto-date scientific information.



CHECK YOUR PROGRESS

Q.1.: Doordarshan started its services in the year.....
Q.2: ..... a Popular science writing started in the year 1818.
Q.3: All India Radio (AIR) came to be known as .....

2.4 THE SCIENCE COMMUNICATION MOVEMENT IN INDIA

For the past two decades, science communication activities have gained momentum in India. Efforts have been made from both governmental and non-governmental platforms to enhance the public understanding of science. The idea is to help science and a scientific culture penetrate India's socio-culturally diverse society, and to transform it into a nation of scientifically thinking and scientifically aware people. After Independence, a number of government agencies and non-governmental organisations (NGOs) took their cue from the constitution and became involved in science popularisation. In this way, science communication was taken up at various levels, institutional as well as individual. Nehru was a major force behind this advancement of science in independent India.

The National Institute of Science Communication and Information Resources (NISCAIR) — previously the Publications and Information Directorate (PID) and subsequently NISCAIR began the publishing of the Hindi popular science journal *Vigyan Pragati* (Progress in Science) in 1952. The Science Reporter (an English monthly) and *Science Ki Dunia* (an Urdu quarterly) followed soon after. Today, NISCAIR also brings out 11 professional scientific journals and publishes various popular science books (often in Indian languages).

In 1980, science communication was given prominence in India's sixth Five Year Plan, and two years later the National Council for Science and Technology Communication (NCSTC) was established. The Council has a mandate to integrate, coordinate, catalyse and support science communication and popularisation, at the micro as well as macro level. NCSTC's programmes include training in science and technology communication, software development, research, field-based projects, and creating information networks and databases.

Other Indian government initiatives include Vigyan Prasar, an autonomous organisation of the Department of Science and Technology set up in 1989, which plays an important role in coordinating the efforts among various

scientific institutions, educational and academic bodies, laboratories, museums, industry and other organisations for the effective exchange and dissemination of scientific information. Vigyan Prasar also develops and disseminates software materials and organises popular science events including workshops, debates and lectures.

The National Council of Science Museums, based in Calcutta, is the coordinating body of 26 science museums and science centres across the country. Science City in Calcutta has more than 1,000 exhibits and attracts around 500,000 visitors a year. Based on the experiences and popularity of Science City, other such projects are being developed across the country.

Several NGOs have also pursued science communication programmes. The Indian Science Writers' Association (ISWA), for example, was founded in 1985 with a view to developing and nurturing the science writing profession in India. The association has around 200 members and undertakes a broad spectrum of activities including training courses, lectures and fellowships. ISWA also works with government agencies and NGOs in promoting science communication activities.

2.5 : HISTORY OF SCIENCE JOURNALISM IN INDIA

Whenever we talk about science, the first thing that comes to our mind is formulae, experiments relating to different fields like physics , chemistry and biology. We used to dread these subjects thinking about trying to memorise all the theories and calculations and passing the ultimate litmus test- the exams. No matter how much we dread those areas of science, it still managed to have a profound grip on us for its ability to focus and look at certain things from a scientific point of view. In India, the government has undertaken various science popularization techniques or schemes for the development of scientific temperament in the minds of the people. Development of science journalism is one such area whereby people are kept abreast of the science based news by way of reports and features.

Science journalism is a branch of journalism that uses the art of reporting to convey information about science topics to a public forum. A science 2)

Bengal . It was published in Hindi, Bengali and English carrying a few articles on science and technology .Some of the articles dealt with topics like flying in a balloon, steam boat etc. Subsequently there were publications in Hindi like 'Saral Vigyan Vitap' (1860), Sulabh Beej Ganit" (1875) and 'Gati Vigyan' (1885) . In 1842, a Bengali magazine 'Vidyadashan' carried a series of science articles. In subsequent years, magazines and newspapers like Marathi 'Dhyan Parchanak', Tamil'Chitamani', Assamese 'Arunodoi' etc. Were some of the pioneers in the fpublication of science features and articles. Efforts were also made to translate notable works of English scientific publications into Hindi language during that period. *Vigyan* (Science) — a monthly popular science magazine in Hindi — has been published by Vigyan Parishad (a learned society of scientists and academic) since 1915.

Towards the turn of the nineteenth century, science communication was mainly limited to publication of books and scientific journals. In the beginning of the twentieth century, new trends emerged. Science congresses, scientific and industrial exhibitions, seminars, industrial and technological museums, public lectures, popular science magazines, etc. were few among the newer developments towards science communication.

After Independence, a number of government agencies and non-governmental organisations (NGOs) took their cue from the constitution and became involved in science popularisation. In this way, science communication was taken up at various levels, institutional as well as individual. The Scientific Policy Resolution of March 4, 1958 can be said to be a guiding factor for development of science and technology in the country. India's first Prime Minister, Jawaharlal Nehru was a major force behind this advancement of science in independent India. He initiated reforms to promote higher education in the field of science and technology. In order to imbibe scientific temperament in the minds of the individuals and also to promote technical education in the country, the first ever Indian Institute of Technology (IIT) was established in August 1951 at Kharagpur in West Bengal. Some of the eminent scientists of that time also contributed in the form of writings in various research journals. One of them was Meghnad Saha, a famous scientist who used to write regularly on various scientific issues in the research journal 'Science and Culture'.

The National Institute of Science communication (NISCOM), previously known as the Publication and Information Directorate also began publishing

the monthly Hindi magazine Vigyan Pragat in 1952. It was a newsletter disseminating information on scientific research activities before being converted into a popular science magazine in order to inculcate a scientific temper in the minds of the common masses. This was followed by *The Science Reporter* (an English monthly) and *Science Ki Dunia* (an Urdu quarterly). In 1966, Times of India started publishing 'Science Today' and in 1971, NRDC also launched 'AVISKAR' in Hindi. Another science magazine by the name of 'Science Age' was published in 1983 by Nehru Centre, Mumbai. One of the most popular magazines of that time , 'Down to Earth' was started in 1991 which was completely devoted to environmental based news.

As an effect of the sudden accessibility of scientific knowledge to all social classes, small local groups of science writers and people who were involved in activities pertaining to the diffusion of scientific culture and knowledge began to form. Kerala Sastra Sahitya Parishad (KSSP) was the first such group to be established which over the years went on to become one of the largest and most active associations in this particular area. The People's Science Movement (later changing its name to All India People's Science Network) was founded in the 1980s . It consisted mainly of a committee for the coordination of the numerous local and regional non-governmental organisations. The Kerala Sastra Sahitya Parishad wanted to bring the common masses in its fold by way of *Science Jahtas* (Mazzonetto, 2005). The Jahtas are basically small groups of artists, scientists, teachers, students and unemployed youths, travelling from one village to another village in a kind of procession. They stage shows at every stop which are generally accompanied by songs and puppet shows and well supplemented by the distribution of explanatory leaflets. The People's Science Movement spearheaded a massive movement on 2nd October, 1987 . The movement consisted of five different processions comprising thousands of volunteers and covering 5000 kilometres in 37 days. The shows lasted for several hours in the village of some of the major Indian districts and culminated in the city of Bhopal on the occasion of the anniversary of the Bhopal Gas Tragedy. It was estimated that about one third of India's population attended various shows based on environment based themes like climatic catastrophes, biodiversity etc.

As far as the electronic media is concerned, radio and television have also played a crucial role in the popularization of science communication. In an

effort to give science communication a new dimension , Science Cells were established in some radio stations in 1975 by executives who were given scientific training. Some radio serials like Manav ka Vikash (1991-93) and Vigyan Vidhi (1987-88) proved extremely useful in popularizing science. Since its inception in 1957, Doordarshan has been telecasting science programmes for students. Some of the popular science based programmes telecast by Doordarshan are Vigyan Partrik (1971-75), Quest (1984-92), Turning Point, Bharat Ki Chap, Vigyan ki Baatein etc. Apart from these programmes, channels like National Geographic, Discovery Channel, Discovery Science and Discovery Turbo also show cases certain programmes that are related to the area of science and technology. For example, some of the popular programmes of National Geographic are Cosmos : A spacetime Odyssey, Live from Space, Mad Scientists , Known Universe, etc.

With a view to integrate, coordinate, catalyse and support the cause of science communication, various organisations and associations like National Council for Science and Technology Communication (NCSTC), National Centre for Science Communicators (NCSC), Vigyan Prasar, Indian Science Writer's Association (ISWA) have been instituted.

Apart from the above mentioned science related journals and magazines, there are also other SCI (Science Citation Index) publications which are totally devoted to the field of pure sciences. These are described as the world's leading journals of science and technology, because the papers are selected after a rigorous selection process. As per the 'Evidence for Changing Trends' report of the Department of Science and Technology, Government of India, July 2012 , the relative performance of various sub sectors and disciplines of science with respect to SCI publications has been studies for 21 disciplines (for example- Clinical medicine, Microbiology, Social Sciences, Plant and Animal Sciences, Agricultural Sciences, Environment and Ecology etc.) . The study has revealed that the total number of publications from India has increased from 106,456 during 2001-05 to 177,208 in 2006-10. This amounts to an increase of about 66% during the five year period.

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The **Science Citation Index** (**SCI**) is a citation index originally produced by the Institute for Scientific Information (ISI) and created by Eugene Garfield. It was officially launched in 1964 and is now owned by Thomson Reuters. The larger version of it (Science Citation Index Expanded) covers more than 6,500 notable and significant journals, across 150 disciplines, from 1900 to the present. These are alternately described as the world's leading journals of science and technology, because of a rigorous selection process.

Now let us discuss some of the dimensions of the state of science journalism in India which have highlighted by Dr. Manoj Kumar Patairiya, Director , National Council for Science and Technology Communication (NCSTC), New Delhi.

I. **Science Journalism and the role of Mass Media**

Science journalism is a special branch of journalism which mainly conveys reporting about science to the public. The field typically involves interactions between scientists, journalists and the public. Media's role is particularly important for the dissemination of scientific knowledge and information. Different forms of media like print media, electronic media, new media, folk media, interactive media and digital media have been playing a sterling role in the popularization of science communication. Among the different forms of media, electronic media has a profound effect because it is an audio-visual medium. Moreover, dissemination of scientific information requires the demonstration of moving images, models , charts etc. which will not be very much effective if it is propagated through print medium.

Folk media is another form of media which has a wider reach and appeal. Puppet shows , street plays, stage performances, folk songs and dances are some of the examples of traditional means of communication. People find it easy to relate to such forms of media because of the fact that the medium of instruction is usually the local languages. It is also cost-effective, entertaining and offers two-way form of communication.

Science exhibitions, science fairs, seminars and workshops are some forms of interactive media which provides a platform for the science communicators/instructors to disseminate knowledge related to scientific thoughts and processes. It also enables them to demonstrate the different areas of science based subjects with the help of models, audio-visual aids etc. Digital media in the form of internet, CD-ROM, multimedia etc. have also lend a helping hand in delineating the various issues related to the field of science and technology. Various forms of presentation are used for making science communication more interesting and enjoyable such as news report, article, story, interview, discussion, documentary, docu-drama etc.

Thus, the use of broadcast and digital media has opened up new vistas of science communication. Development of the IT sector has made it possible to get access to different forms of scientific information at the click of a mouse.

II. Trends in Science Writing / Reporting

As far as the print media is concerned, a lot depends on the way information is presented in the form of news reports, articles and features. This is because, unlike electronic media, reports have to be written in a clear and simple language devoid of any specific technical jargon. Science writing is a skill that every science communicator or journalist is required to develop and hone it with experience. It is often seen that most of the articles in Indian languages are translated from the original English ones. While doing so , the authors may not be able to bring out the complete meaning of the original work. So, it is necessary to encourage the writers for original science writing in Indian languages.

Now the question that arises is how should one write a science article? Usually readers prefer those articles that are informative, analytical , critical and having a continuous flow. In order to write an article on any particular issue or topic related to science , one needs to undergo extensive literature review and discuss the relevant topic with experts. This is because scientific knowledge is based on facts and figures and if that is not found to be authentic, then it might create confusion in the minds of the readers. It is pertinent to bear in mind that an integrated and balanced view of the topic/ issue needs to be presented in a language easily intelligible to the common

public.

It has been seen that a writer uses the popular article of another writer as a source for his writing and subsequently a third writer uses his/her article leading to a chain of substandard articles. This may ultimately lead to formation of distorted news which must be avoided. As far as the coverage of news is concerned, it has not been able to achieve the desired mark. This is because, barring a few channels and newspapers, the coverage of science based news and issues is quite poor. Rarely do we come across a science reporter or an editor who is associated with any media organisation. So, it is desirable to have science correspondents with most of the media houses. This would, in due course, help evolve a policy on editing and reporting of contemporary topics on science and technology in different modes of presentation in the media.

III. Reporting on local issues of scientific importance

While reporting on different scientific issues it is necessary to bring under its fold local and regional issues. Only then the reader or the viewer will be able to get a complete picture of the prevailing problems and be able to look at it from a different angle. This is because very often , most of the major dailies and the media houses give ample amount of coverage on the world issues thereby ignoring those which would otherwise have widened the knowledge base of the general public.

IV. Investigative science journalism

There is a need for investigative journalism in the field of science communication. Contributors of scientific writings are basically from the public sector and as such it is difficult to expect them to be analytical or self-critical. Moreover most of the research and development activities in the country are carried out within the confines of government laboratories and there is hardly any means for the common people to know what scientists are doing. In order to generate awareness in the field of research amongst the people, there is a need for investigative journalism in this field. In fact, transparency in reporting the various activities pertaining to research and development must be maintained keeping in mind the greater interest of the society. People must be made aware of the good effects as well as the harmful effects of science on the society.

Thus, the basic purpose of scientific writing is not the mere presentation of information and thought, but rather its actual communication. It does not matter how pleased an author might be to convert all the right data into sentences and paragraphs; it matters only whether a large majority of the reading audience accurately perceive what the author had in mind.

V. Science Journalism and Scientific Literacy

Science journalism is an important branch of journalism as it helps people to keep abreast of the latest developments that take place in the field of science and technology. A person must also have the scientific bent of mind in order to comprehend as to what is being written or broadcast. This is what is known as scientific literacy. It is the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs and economic productivity. Scientific literacy is necessary for the overall well being of the people and for the exercise of participatory democracy. The last two decades have witnessed a rapid expansion in the field of science and technology with newer gadgets being invented every year. In the field of healthcare too, better amenities have been developed which have drastically reduced the mortality rate of human beings. People , especially those living in the far flung areas are not aware of such newer developments which in turn have a negative impact on their overall well being. Herein comes the role of science journalism which can go a long way in enhancing public awareness about the different facets of scientific knowledge and communication.

VI. Creating the Creators

In order to create awareness about the latest developments in the field of science and technology , trained science communicators are necessary who in turn will be able to properly disseminate scientific knowledge and communication. It is necessary to develop trained manpower in the area of science journalism, writing, communication and training. These days most of the educational institutions and other government organisation offer short term courses (3-7 days duration), medium term courses (2- 4 months duration)and long term courses (1-2 years duration) in the field of science communication.

Apart from the above mentioned courses, training programmes and

workshops are organised for the regional writers, journalists and illustrators. The main idea behind organising such courses is to develop grass root science writers and journalists who can serve as contributors in the field of scientific writing with the help of locally available resources.

Challenges in the field of science journalism :

Science journalism is an upcoming and special branch of journalism. It holds the key to the real treasure of the scientific knowledge, by virtue of which scientific knowledge and concepts can be carried to the common man. In spite of a number of efforts for developing science journalism in India, there are certain challenges which must be met in order to fully develop it as a specialised area of journalism.

a. *Growth trajectory of science communication is limited*

   India's science promotion activities are mostly concentrated at the institutional levels while some need-based programmes are organised randomly. Even though there has been a phenomenal growth in the field of mass communication and journalism, yet the growth trajectory of India's science communication is very much limited and do not look very promising. As has been seen , science writing is concentrated among the scientific community and academic institutions. Moreover, the number of qualified science journalists and writers is alarmingly low and hardly sufficient to cater to the large target audience.

b. *Media coverage on issues related to science and technology is poor*

   Another factor which might impede the development of science journalism in India is the poor coverage of science based news and information. Except for a few papers and magazines, mainstream media coverage on issues related to the field of science and technology is quite low and limited. Most of the front page news are usually dedicated to non-scientific issues like politics, economics, entertainment based news , issues related to the society etc.

Whereas some serious issues pertaining to India's economy, poverty, health, medicine, agriculture, environment or science and technology are either ignored or given a little media space and time. One of the reasons why issues related to science and technology is ignored is basically due to the fact that science writing is relatively a new area and it requires proper training and skill in the preparation of such reports.

c. *Science journalism as a profession is still in the nascent stage*

Unlike other countries, science journalism is yet to materialise as a lucrative career opportunity in India. Only a few institutes have sprung up in the country to offer basic training on science communication and journalism. This is because in order to be recognised as a qualified science communicator, one needs to have proper skill and knowledge in the field of science and technology. A 'science communicator' encompasses a range of profession such as scientists, public relations practitioners, journalists, science centre workers, education officer etc. The type of science they communicate can be specialized or diversified, across any scientific fields such as physics, forestry, robotics, biology, astronomy or geography.

d. *Conflict between scientists and journalist over the issue of transparency*

Of late we have seen a rise in the conflict between scientists and journalists which can act as a big stumbling block towards the progress of science journalism in India. This can however be resolved by way of organising scientists-journalists meet on regular basis. Popular science writing in India is still shackled by complacency and over-dependence on foreign sources. The issue which can be attributed to the growing conflict between the scientists and the journalists is that of transparency in the way news is transmitted to the society. Sometimes, it is quite difficult to elicit authentic information from a scientific laboratory. This can lead to misleading scientific information, distortion in translation, lapses in the use of languages and so on. Moreover, the scientists in some organisations are not allowed to leak out specific information to the

media. Thus, it is necessary to have a science media centre, including a centralised website in order to facilitate easy accessibility to scientific information by the media persons.

a. Scientific language has never been the language of the masses

One of the debatable issues in the academic circle is that of the use of scientific language which has never been the language of the masses. By 'language of the masses' we mean to state that it is not the common language of interpretation and communication among the masses. Rather, scientific language is utilised only while engaging in public debates, preparing for examination purposes and also while writing on topics related to science and technology. This can be the reason as to why it is difficult for the public to ascribe value to the importance of scientific knowledge. Large sections of the population are not even aware of the latest technological advancements in the field of science and technology even though they make use of the technologies in their day to day activities.

Thus, after examining all the above mentioned factors, we can say that a multi-prolonged strategy is necessary to make science communication more effective and interesting. The need of the hour is to popularize science communication among the masses through different mass media. As far as the electronic media is concerned, soap operas occupy most of the prime time slot in the India television. So, efforts must be made to develop more science based programmes keeping in mind the needs and preferences of the people. In India, organisations like National Council for Science and Technology Communication, National Centre for Science Communicators and Vigyan Prasar can be lauded for their efforts in popularizing science communication right to the grass root level. In order to generate interest in the minds of the masses, there must be creativity in the field of science writing and journalism. The text must be written in such a way so that the people can comprehend its meaning without having to resort to other reference materials. More importantly, planned agenda and policies for science communication in a truly transparent manner are a pre-requisite to engage and speed up science communication.



CHECK YOUR PROGRESS

Q.4 : When was the science magazine 'Science Age' first published?

_____

Q.5 : Can folk media be used as an important media for

_____

_____

Q.6 : Is it necessary to focus on only national issues while reporting for science communication?

_____

_____

Q.7 : What is science journalism?

_____

_____

Q.8 : When was SCI launched?

_____

_____

2.6 LET US SUM UP

- Pandit Jawaharlal Neheru, for the very firtst time introduced the concept of 'scientific temperament' and emphasized on its promotion in the society.
- *Vijnan Sanchar* (Science Communication) a book by Dr. Manoj Kr Patairiya carries a historical account of science journalism and science communication in India.
- *Down to Earth'*- a magazine devoted to environmental issues was started in 1991 with the effort of Centre for Science and Environment.
- Radio Broadcasting was started in India in 1927, with two privately owned transmitters in Bombay and Calcutta.

- The National Council of Science Museums, based in Calcutta, is the coordinating body of 26 science museums and science centres across the country.
- Science journalism is a branch of journalism that uses the art of reporting to convey information about science topics to a public forum.
- A science journalist (or science writer) is a journalist who specializes in writing about science topics, and thus practices science journalism, or popular science.
- The People's Science Movement (later changing its name to All India People's Science Network) was founded in the 1980s
- ISWA was founded in 1985 with a view to developing and nurturing the science writing profession in India



2.7 FURTHER READING

1) Bucchi, Massimiano & Brian Trench (2008), *Handbook of Public Communication of Science and Technology,* Routledge

2) Narlikar, Jayant V.,(2003) ,*The scientific Edge,* Penguin Books



2.8 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q.No 1 : 1957
Ans to Q.No 2 : Digdarshan
Ans to Q.No 3 : Akashbani
Ans to Q.No 4 : 1983
Ans to Q.No 5 : Folk media can definitely be used as an important media for popularization of science communication because it has a wider reach and appeal. Puppet shows , street plays, stage performances, folk songs and dances are some of the examples of traditional means of

communication. People find it easy to relate to such forms of media because of the fact that the medium of instruction is usually the local languages. It is also cost-effective, entertaining and offers two-way form of communication.

Ans to Q.No 6 : One must focus both on national and local issues while reporting for science communication. Only then the reader or the viewer will be able to get a complete picture of the prevailing problems and be able to look at it from a different angle.

Ans to Q.No 7 : Science journalism is a branch of journalism that uses the art of reporting to convey information about science topics to a public forum.

Ans to Q.No 8 : 1964



2.9 POSSIBLE QUESTIONS

A. Short Question (Answer each question in about 150 words)

Q.1 : Write a note on the beginning of science communication in India.

Q.2 : Describe how different science based organisation have contributed towards the science communication movement in India?

B. Long questions (Answer each question in about 300-500 words)

Q.1 : Do you think the print media needs to cover more science based issues in order to generate awareness among the masses?

Q.2 : Explain how media contributed towards the onset of science communication in India.