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CONTENTS

Research Paper	शोध पत्र
Science Communication in Manipur <i>H. Subadani Devi and K. Yugindro Singh</i>	3
Survey on Adolescence: Important Inputs for Improving Communication Strategy <i>Dr. V. M. Vaidya</i>	6
Article	लेख
Presenting Science to the Public: Role of Scientists <i>Abhay S. D. Rajput</i>	16
Science Communication and Electronic Media <i>Dr. V. L. Dharurkar</i>	19
Debate	बहस
Defining Science Fiction: Indian Perspective <i>Rukhsana Yasmeen and Swapnil Bhartiya</i>	21
Short Communication	संक्षिप्त लेख
सामान्यजन तक विज्ञान नाटकों की पहुँच: एक अध्ययन <i>इरफ़ान ह्यूमन</i>	25
Status and Problems of Science Communication Environmental Protection of Mines <i>Dr. A. K. Srivastava</i>	27
Communication of Science for Existence of Human Capital <i>Dr. Prabhu Thakre</i>	30
Column	स्तम्भ
Editorial	2
Scientoon	32
Information: Jefferson Fellowships	33
News	35
Forthcoming Events	38

Of Knowledge Revolution, Media Convergence and Science Awareness

The enormous pool of knowledge incidence from all around the world at one hand has largely widened the canvas and scope for development, on the other, plurality of mass media has opened up new vistas for creating a knowledge society. The ability of a nation to use and create knowledge capital determines its capacity to empower its people. This vast mass of scientific knowledge emerging thereby can be translated into wealth creation and well being of a nation. The knowledge orientation of development would be crucial in the decades to come as the phenomenon of convergence of mass media is on the verge of equipping the society with accessibility and quality of the all-round informed decision making.

No nation can even afford to miss the opportunity coming on its way as a result of democratisation of knowledge. Lapses on the front of harnessing of this opportunity in the age of knowledge revolution and globalisation can lead to irreversible consequences. The abundance of knowledge is more challenging as compared to that of deficit of knowledge. Media is considered the fourth estate of power especially in a democratic setup, but there exist countries that are not blessed with the power of democracy and media is not independent. In such cases, it is not only difficult to get science news but also to access them from outside the country. In case, someone succeeds in getting the censored or cooked-up news through unlawful sources, it leads to the next level of complicity, as the news may not be authentic.

The common man is in great dilemma as he is unable to decide as what is useful! We are now developing tendencies of formation of knowledge cocoons surrounding ourselves. One is left with no option other than to converge all media and sharpen edges to rupture the cocoon and let those trapped inside come out of it to see the world and respond to it appropriately; and that would mark the beginning of sustainable knowledge generation, delivery and utility system. Booming radio and TV channels, films and other media are flooded with lots of science information in their own way. Folk arts are still prevailing in rural areas causing remarkable changes in village life. Web media is becoming popular in general public; browsing centres are growing in nooks and corners of streets and even in villages for communication, entertainment and getting medical and marketing details. Innumerable books, journals, newspapers and other printed products are adding to revolutionise the way a common man gets information.

Convergence is not just about technology, it is also a concept of combining various systems, processes and actions for multiple objectives with impact of technology. It is also about taking a quantum leap towards mature knowledge society. The media while embracing grassroots-audience is bound to balance the dynamics between media producers and media consumers. It also induces changes within cultural, social, economical and industrial arena that necessitates the audience to seek more knowledge and therefore more emphasis on quality of contents, presentation and packaging. The proliferation of information resources is to be transformed into utility oriented marketable products that will promote knowledge economy.

These issues with lot of others, emerging out of this area of unpredictable possibilities are also important to be addressed, such as: the balance between knowledge abundance and knowledge deficit; knowledge creation vs. knowledge handling; open access of science research and knowledge marketing; quality of contents and quality of packaging; problems of getting desired information with solutions; studies on converging bilateral, trilateral or multilateral media for effective science and technology communication; the other side of media convergence; the problems and prospects of knowledge revolution; role of institutional convergence; converging networks, methods, processes, practices, professions for science and technology communication; and alike. The world has now entered into an era of convergence culture and we need to take steps to derive every advantage for developing a science oriented society. It is for the science communication academics to redefine scope of media convergence in the age of knowledge revolution for harnessing the immense potential offered for science and technology communication.

Science Communication in Manipur

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Abstract

Mass media plays a key role in science communication. Mother tongue being the best medium for imparting education in any society, use of Manipuri remains as the best medium for imparting knowledge and concepts of science in Manipur. In this paper, a general discussion about importance of science communication as well as its present status in Manipur has been presented. Possible methods and guidelines for science communication effectively in the state of Manipur have also been discussed.

सारांश

विज्ञान संचार में जन संचार माध्यमों की अहम भूमिका है। मातृभाषा चूंकि शिक्षण प्रक्रिया का सर्वोत्तम माध्यम होती है, मणिपुरी भाषा की विज्ञान के ज्ञान व अवधारणाओं के प्रतिपादन में मणिपुर के लोगों के लिए मुख्य भूमिका होनी चाहिए। इस पत्र में विज्ञान संचार व मणिपुर में इसकी स्थिति पर चर्चा प्रस्तुत की गई है। इन्हीं उद्देश्यों को लेकर मणिपुर में विज्ञान संचार को प्रभावी बनाने के लिए संभावित तरीकों व दिशा-निर्देशों पर भी विचार-विमर्श दिया गया है।

Key words: Science communication, Public communication of science, S&T popularisation

Introduction

The effective communication of science and technology is becoming an essential component of all aspects of social and economic development. In the last few decades, science has delivered dramatic changes globally in human services say, health, survival and life styles. In many cases, the pace of scientific change has accelerated beyond what public can keep up with, let alone comprehend and accept. As scientific research becomes even more specialised, it is becoming more and more difficult to exchange ideas across scientific disciplines. At the same time, scientists need to increasingly develop abilities to communicate their ideas and discoveries not only with each other but also with policy makers at all levels and with the public at large. Within the international scientific community there is an increasing awareness of the duty and responsibility of scientists to make their work more accessible to the public. For many scientists public communication does not come naturally, and even when they are willing to get involved, they need some help. Journalists, on the other hand, are often intimidated by science and do not know where to find credible science stories and media friendly scientists.

Within a democratic society where science must be answerable to the public, there is a real need to

find new and innovative ways of more effective mass communication about the benefits of science, but also the area of concern to the general public. The mass media is undeniably, the major role player in stimulating public debate and shaping public opinion on scientific questions and issues. Scientists have to accept that they must operate within the parameters and new values of the media. If scientists do not engage the media effectively, the pace of science communication to the public will be quite slow. Of course, communicating science to the public through the media is not a replacement for improving the educational level of the society; the media can only inform and create debate; real skills and operational knowledge still has to be acquired through the educational system. The motivation of young people to study and work with science and technology is highly influenced by the way science is presented in the media. Although young people may be more sensitive to new ideas, it is also important to increase the general public's interest in science, especially in lesser developed regions where openness to new knowledge based production skills is needed, as traditional jobs and skills become obsolete because of technical development. Today, worldwide science reporting is moving away from celebrity reports towards debate and issues around the impact of science on society.

Science communication in Manipur

Manipur lacks in science culture because of various social, geographical and economic constraints. Majority of the state populace are not keeping pace with fast changing scientific and technical global scenarios. A simple evidence is that most of the people of the state are not aware of the presence and importance of Internet services. The efforts of the state government for development of science communication in the state is quite minimal and far from being satisfactory. Of course, the state government takes up occasionally, programmes such as science exhibition at the school and college levels but involvement of the public in the programmes is almost negligible as this is quite discernible from the turnout of spectators at the programmes. Occasionally, a few educated professionals of the state write popular science articles in newspapers and get associated with programmes in television covering aspects of only a select burning science topic. These programmes, though useful for school and college students, fail to impart scientific knowledge to the general public. By taking regular surveys of public attitudes, understanding and awareness about science and technology one would may conclude clearly that the state of Manipur is not communicating science at a competitive level.

Improving the communications

There are 29 different ethnic groups in Manipur, Meitei being the majority community. Manipur language is the mother tongue of the Meitei and is known locally as Meiteilon; the name itself is a compound of Meitei and Lon languages. Manipuri, along with English, are the official languages of Manipur State. The language is spoken primarily in the valley region of Manipur and is also the lingua franca of other ethnic groups of the state. It is one of India's national languages in the Eight Schedule of the Constitution of India. Considering the wide range of ethnic groups with different languages/dialects and levels of science literacy and cultures, it is not an easy task to improve the level of science communication and science culture throughout the Manipur state. Though it is expected that science communication in Manipuri will be best effective for inculcation of scientific temper among the populace of Manipur, the state government has not yet taken up appropriate steps for the purpose. There are also hardly any non-governmental organisations (NGO) which takes up action programmes for popularisation of science

communication in the state. Science communication is to a high degree, dependent on national relevance, culture, history and development. The public interest and the impact of science stories are generally high when the content has a national angle or fits the national culture and traditions. That is why national research organisations have a particularly important role in communicating science to the public. A public culture of science in Manipur has to start with the state scientists themselves.

They should be more aware of the importance of communicating science to the public in a broader sense. Though it is difficult to prove that there is a direct effect of science communication on the popularity of sciences, it is clear that with poor communication, science will not exploit its potential for a dynamic interaction with society. Science has an important role to play in a modern society and this role can only be fulfilled if science gives priority to communicate its results, its visions and its culture to the public. The following measures may be recommended for improving science communication in the Manipur state:

1. Initiatives for popularisation of science communication in the state should be taken up by the state government by atleast a modest budget for science and society.
2. The stimulation of dialogue between the scientific community and the media at the state level is important and should be set up in collaboration with national organisations of science communication, journalists, science writers and science broadcasters.
3. Since the primary source of information for most citizens of Manipur is Television, adequate science communication programmes involving journalists and scientists and serials based on popular science topics should be taken up for transmission through television.
4. Targeted calls for proposals for creation, translation and dissemination of high quality communication products such as newspaper publications, books, science magazines, radio and television programmes internet websides and exhibitions with contents on science and technology encouraged by the state and central governments.
5. National science weeks and festivals need to be promoted with full support from public and governmental agencies.

6. The impact of activities for raising public awareness of science and innovation should be surveyed, benchmarked and analysed continuously, and it is important to provide well founded research programmes in the humanities and the social sciences to provide a deeper knowledge of the interaction between science and society.
7. All research institutions and funding organisations need to define a communication strategy as part of their aims and activities, targeting public as well as the politicians. A target of at least 1% of all research money be spent on communication and educational activities would provide a good basis for a coherent activity level. One way of linking research with communication could be to offer an option of a 1-10% overhead on research grants and make science communication part of the application and evaluation procedure. The rest of the funding could then be used for targeted actions.
8. Depending on their size, research institutions may need to set up communication units or professional help for communication of their activities.
9. Research institutions should consider how to be more proactive in the media; they should contact broadcast and printed media whenever there is a scientific debate going on. The mobilisation of researchers to participate in current debates will make the institutions and their research more visible to the public.
10. Basic communication and media training courses for scientists, and science courses for journalists on a regular basis is the right tool to improve the level of public communication. Scientists who are in the spotlight of an intense media debate may need professional help from their institutions.
11. Better links to the media is a key element for science communication. In some countries national broadcast companies have direct links to university communication units, and some have even established websites where they integrate the science programmes from radio and television into a website where the public can get answers to their questions by a network of (volunteer) scientists. In other countries there are plans to make all public research available to the layman via an Internet portal describing all national research activities, supported by foray for questions and answers.
12. An important way to increase the focus on current research is to have more professional media material available to journalists and broadcast companies. Research institutions may need to build their own picture archive and to hire professional film teams for television coverage. A good distribution system to channel material at the state and national levels can increase the exposure. A science press agency or an appropriate website may serve that purpose.

References

- 1 H Subadani Devi, Loanwords in Manipuri and their impact, *Linguistics of the Tibeto-Burman Area*, Vol. 27(1), pp 29-60 Spring 2004.
- 2 E Winter, Public communication of science and technology, *Science Communication*, Vol. 25, pp 288-229, March 2004.
- 3 MCA Van Der Sander & Frans J Meijman, Evidence based science communication, *Science Communication*, Vol. 25, pp 272-287, March 2004. ■

Survey on Adolescence: Important Inputs for Improving Communication Strategy

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Abstract

Indicators have emerged from a study on awareness on adolescence conducted in Maharashtra. This study assessed the knowledge of boys and girls on adolescence, through a survey conducted for this purpose. The results are far from satisfactory. Besides the importance of the results in planning exercises, it is also significant in chalking out any communication strategy on this subject for the target population and the study justifies this fact.

सारांश

किशोरावस्था संबंधी जागरूकता विषय पर किशोरों के बीच किए गए इस अध्ययन में कई संकेतक निकल कर आए हैं। इस अध्ययन में कैशोर्य को लेकर लड़कों व लड़कियों के ज्ञान को सर्वेक्षण प्रक्रिया से आंका गया है। परिणाम कतई संतोषजनक नहीं हैं। इन परिणामों का उपयोग नियोजन के अलावा स्वास्थ्य ज्ञान को लेकर संचार की कार्यनीति निर्धारित करने के लिए प्रभावी रहेगा। यह अध्ययन इस तथ्य को सही सिद्ध करता है।

Keywords: Survey indicators on adolescence, Awareness on adolescence, Communication strategy

Introduction

Marathi Vidnyan Parishad has been conducting audiovisual programmes for girls and women for nearly 20 years. The first set of audiovisual programmes were bought from ASTHA. Later on Marathi Vidnyan Parishad prepared its own programmes. These programme are being shown in many places. Programmes for boys were prepared in 1998. When the parishad approached ICICI Bank, they forwarded our application for funds to GIVE Foundation. GIVE Foundation asked that a survey be conducted to establish the need for showing these programmes. GIVE Foundation agreed to provide funds, if the need is established.

Marathi Vidnyan Parishad has chosen 5 of its chapters namely (names of district in parenthesis) Amravati and Gadhinglaj (Kolhapur), Kinwat (Nanded), Navargaon (Chandrapur) and Sakri (Dhule) for conducting audiovisual programmes for adolescent boys and girls (see Map ahead).

Methodology

With this objective, the Parishad conducted a workshop to train two women social workers and two men

social workers on 13th and 14th September 2003 in Vidnyan Bhavan, Mumbai. Social workers were trained in conducting the audiovisual programme and in carrying out survey of 720 boys and 720 girls from each chapter. This constitutes 16 percent of the boys and 16 percent of the girls of the total number of boys and girls for whom the audiovisual programme would be conducted under the sanctioned grant.

Analysis

A total of 3661 girls answered the questionnaires (25 questions each) and 3612 boys answered the questions (25 questions) during the survey conducted by the trained social workers. Needless to add that questionnaires were in Marathi. A listing of the questions with correct answers have been given in Table 1 and Table 3 for girls and boys respectively.

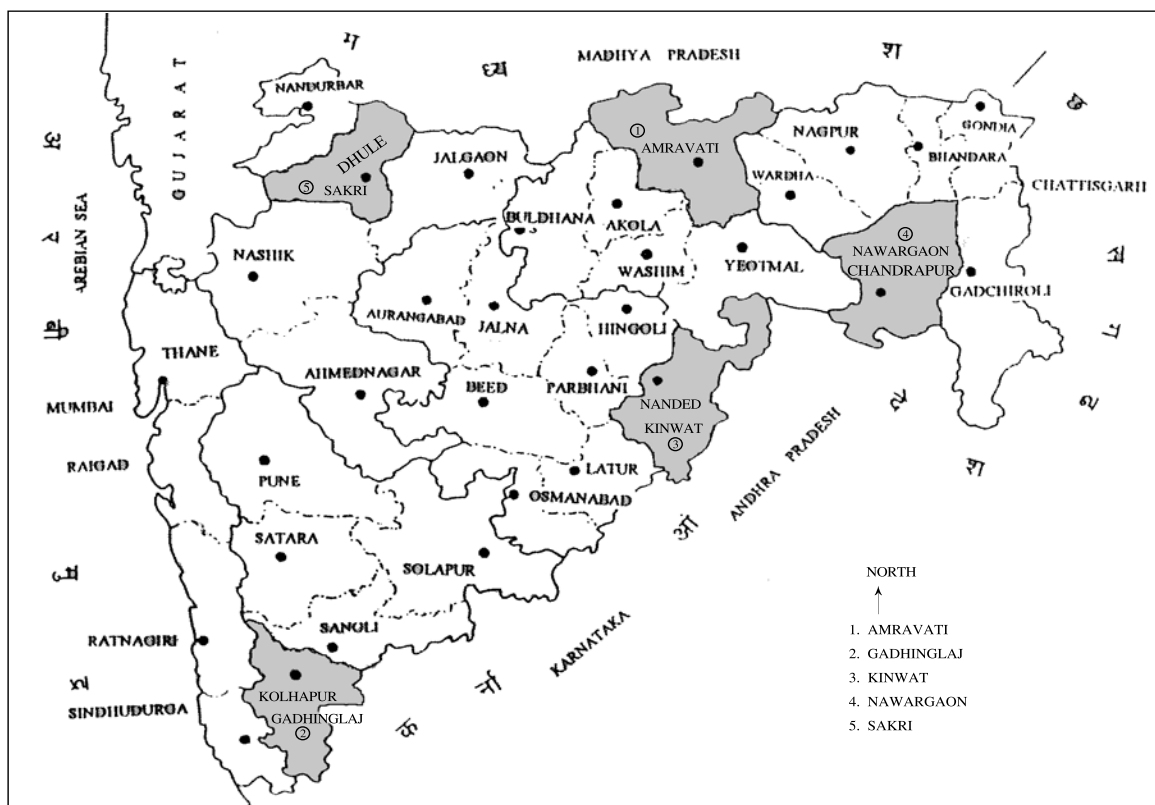
In the following paras, we begin by giving an analysis of questions and correct answers followed by graphs and comments and the obvious conclusion at the end.

About 22500 boys and 22500 girls are expected to benefit from these programmes in 5 districts of Maharashtra.

Table 1 : Questionnaire for girls (Correct answers have also been given in the last column which was not the part of questionnaire circulated) (Note : Please tick the correct answer and cancel the wrong answer)

S. No.	Survey Question	Select Answer	Correct Answer
1.	During puberty certain changes occur in our body. Is it necessary that this scientific information be given to you?	Y/N	Yes
2.	Is the subject of 'puberty growth changes' a) Discussed at home? b) Is gender education given at school?	Y/N Y/N	Yes Yes
3.	Do you know what is your height, weight, blood group and hemoglobin?	Y/N	Yes
4.	Menstruations cease during pregnancy?	Y/N	Yes
5.	Is premarital counselling essential?	Y/N	Yes
6.	Does unprotected sexual intercourse lead to any infection?	Y/N	Yes
7.	What is essential for conception of a baby? (a) Ovum (b) Sperm (c) Optimum Conditions for embryo growth (d) All the above	—	(d) All the above
8.	What determines the sex of the baby? (a) Destiny (b) Chromosomes (c) Mother (d) Father	—	(b) Chromosomes
9.	What will you do to look handsome and healthy? (a) Give importance to personal hygiene, exercise, hobbies and education (b) Wear trendy clothes and use cosmetics (c) Imitate actors and models (d) Continuously watch in mirror.	—	(a) Give importance to personal hygiene, exercise, hobbies and education
10.	How do you handle sexual tension? (a) Indulge in studies (b) Inculcate healthy hobbies (c) Sports + Physical exercise (d) All the above	—	(d) All the above
11.	What happens during puberty? (a) Development of secondary sexual characters (b) Hormonal changes (c) Reproductive maturation (d) All the above	—	(c) Reproductive Maturation
12.	Are you aware of changes which occur in Boys during puberty?	Y/N	Yes
13.	Will you feel bad if you give birth to daughters only?	Y/N	Yes
14.	Menstruation is inauspicious.	Y/N	No
15.	Menstruation is essential part of reproductive cycle?	Y/N	Yes
16.	During menstruation bad blood from the body is thrown out.	Y/N	No
17.	If you are having menstrual complaints whom will you approach? (a) Take home remedies (b) See family doctor (c) See Quacks (d) Do nothing	—	(b) See family doctor
18.	Where do you store sanitary pads / cloths? (a) Hide them in a dark desolate corner (b) Store them safely in a box away from dust and grime (c) Keep them in the bathroom	—	(b) Store them safely in a box away from dust and grime
19.	During puberty Physical and Emotional changes in girls are due to the hormones estrogen and progesterone.	Y/N	Yes
20.	The unutilised lining of the womb is thrown out of the body as menstrual blood.	Y/N	Yes
21.	Is it normal to bleed excessively during periods and to have periods very frequently?	Y/N	No
22.	Do you bleed and urinate from the same place?	Y/N	No
23.	Kissing a boy makes a girl pregnant?	Y/N	No
24.	Babies are born from Navel?	Y/N	No
25.	Do you know what care has to be taken during periods?	Y/N	Yes

Map of Maharashtra showing location of 5 Chapters of MVP



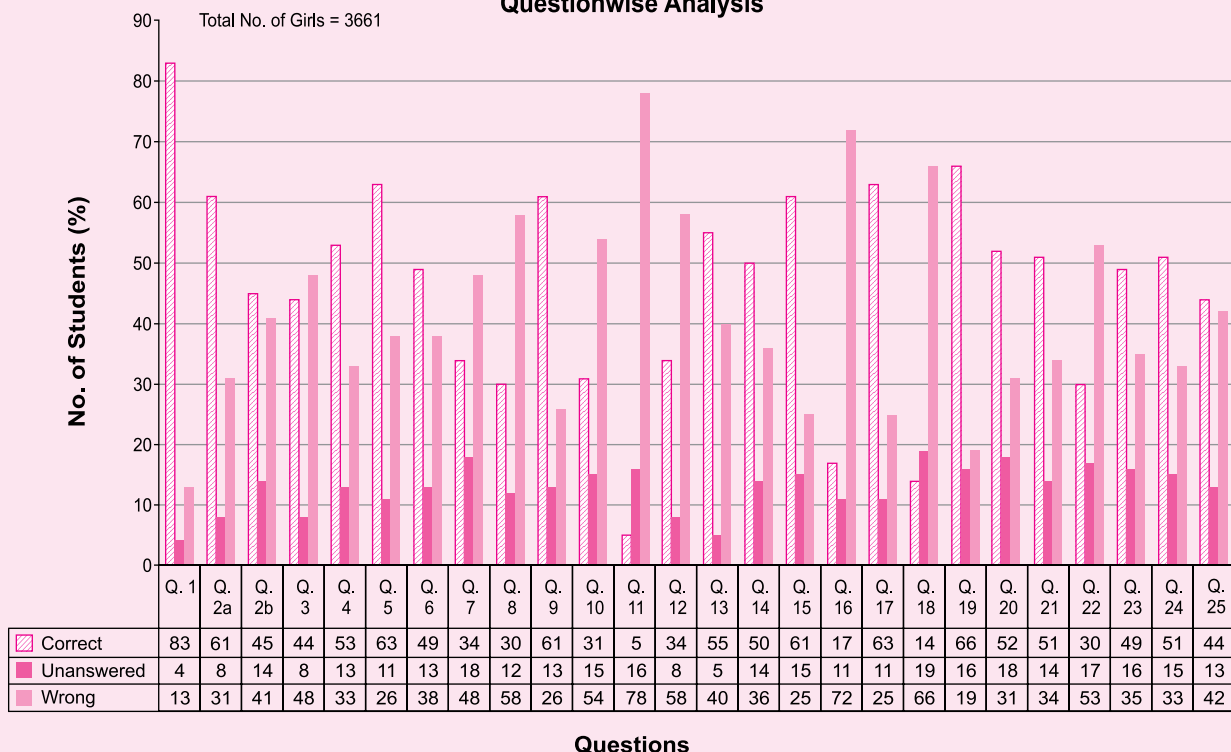
Questionwise analysis - Girls

Questionwise analysis given below has been summarised in Chart 1

- Q.1. It is gratifying to note that 83 percent of the girls believe that information about puberty ought to be imparted to girls; 4 percent of the girls did not answer the question and 13 percent did not think it is necessary.
- Q.2. (a) 61 percent of the girls discuss puberty at home; 8 percent have not answered this question and 31 percent do not discuss the subject at home.
(b) Only 45 percent of the girls receive any information on puberty in the school. 14 percent have not answered the question and 41 percent do not receive any information at school.
- Q.3. Only 44 percent of the girls know about their weight, height, hemoglobin and blood group, 8 percent have not answered the question and 48 percent do not know these things that means there are more girls not knowing about their hemoglobin, etc., than those who know.
- Q.4. 53 percent of the girls know that menstruation ceases during pregnancy, 13 percent have not answered the question and 33 percent do not know this fact.
- Q.5. 63 percent of the girls believe that premarital counselling should be sought, 11 percent have not answered the question and 26 percent do not believe it is necessary.
- Q.6. 49 percent of the girls know that unsafe sexual practice can lead to sexually transmitted diseases; 13 percent have not answered the question and 38 percent do not know this fact.
- Q.7. 34 percent of the girls know the factors essential for conceiving, 18 percent have not answered the question and 48 percent do not know these factors.
- Q.8. Only 30 percent of the girls know what determines the sex of the foetus. 12 percent have not answered the question and 58 percent do not know what determines the sex of the foetus.
- Q.9. 61 percent of the girls know what one should do to be healthy and handsome; 13 percent have not answered the question and 26 percent do not know.
- Q.10. Only 31 percent of the girls know how to handle sexual tension, 15 percent have not answered and 54 percent do not know.

- Q.11. Only 5 percent of the girls said they understand the meaning of puberty, 16 percent have not answered the question and 78 percent do not know.
- Q.12. 34 percent of the girls said they know what changes occur in the boys during puberty, 8 percent have not answered and 58 percent do not know.
- Q.13. 55 percent of the girls would not feel bad if they get only daughters, 5 percent have not answered and 40 percent would feel bad.
- Q.14. 50 percent of the girls do not consider menstruation as inauspicious, 14 percent have not answered the question and 36 percent do consider it inauspicious.
- Q.15. 61 percent of the girls know that menstruation is an essential part of the reproductive cycle, 15 percent have not answered and 25 percent do not know.
- Q.16. Only 17 percent of the girls know that during menstruation bad blood is not thrown out, 11 percent have not answered and 72 percent believe that bad blood is thrown out.
- Q.17. 63 percent of the girls know that a doctor ought to be consulted in case of problems about menstruation, 11 percent have not answered and 25 percent do not know.
- Q.18. Only 14 percent of the girls know where to store the sanitary cloth, 19 percent have not answered and 66 percent do not know.
- Q.19. 66 percent of the girls know which hormones cause the changes during puberty 16 percent did not answer and 19 percent do not know.
- Q.20. 52 percent of the girls know that during menstruation, lining of uterus is thrown out; 18 percent have not answered and 31 percent do not know.
- Q.21. 51 percent of the girls know that frequent menstruation and a lot of bleeding is abnormal, 14 percent have not answered and 34 percent do not know.
- Q.22. Only 30 percent of the girls know that there are separate openings for urination and menstruation, 17 percent have not answered and 53 percent do not know.
- Q.23. 49 percent of the girls know that kissing does not lead to pregnancy, 16 percent have not answered and 35 percent believe that kissing can lead to pregnancy.
- Q.24. 51 percent of the girls know that babies are not born from navel; 15 percent have not answered and 33 percent girls thought that babies are born from the navel.
- Q.25. Only 44 percent of the girls know what care to take during periods, 13 percent have not answered and 42 percent do not know.

**Chart 1 : All Girls
Questionwise Analysis**



Knowledgewise analysis bar graph (Girls)

Chart 2 summarises the analysis of the results. The percentage of correct answers (knowledge %) against the percentage of number of girls have been plotted in the chart. This graph shows that:

- Only 31 percent of the girls (1140 girls out of 3661 girls) have answered between 41-50 percent questions appropriately. Or 65 percent of the girls have answered upto 50 percent questions appropriately.
- Only 18 percent of the girls have answered between 51-60 percent questions appropriately.
- Only 12 percent of the girls have answered between 61-70 percent questions appropriately. A mere 4 percent of the girls have answered between 71-80 percent questions appropriately.
- 1 percent of the girls have answered between 81-90 percent questions appropriately. There is not a single girl answering 91 percent or above questions appropriately.

Chapterwise analysis

Chart 3 gives chapterwise comparison of knowledge among the girls surveyed. The results are compiled in Table 2.

Table 2: Chapterwise summary of knowledge

Upto 50% correct answers	Bet 51% 90% Correct answers	Chapter
49%	51%	Sakri
57%	43%	Amravati
59%	40%	Gadhinglaj
65%	34%	Kinwat
92%	9%	Navargaon

One can very easily notice that Sakri girls are most knowledgeable followed by those from Amravati, Gadhinglaj, Kinwat and Navargaon. Navargaon is located in district Chandrapur, a very backward district.

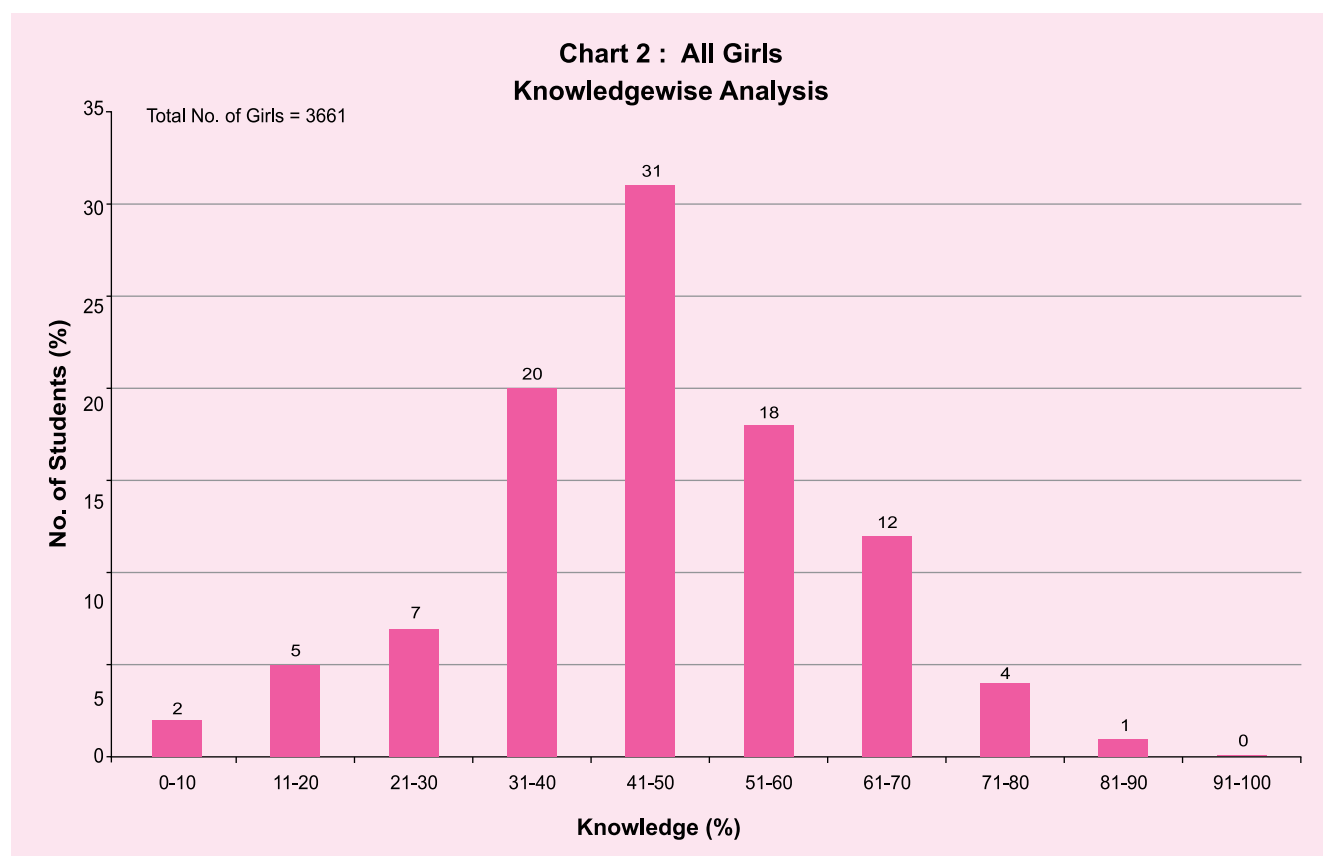


Table 3: Questionnaire for Boys with correct answers

(Note: Please tick the correct answer and cancel the incorrect one)

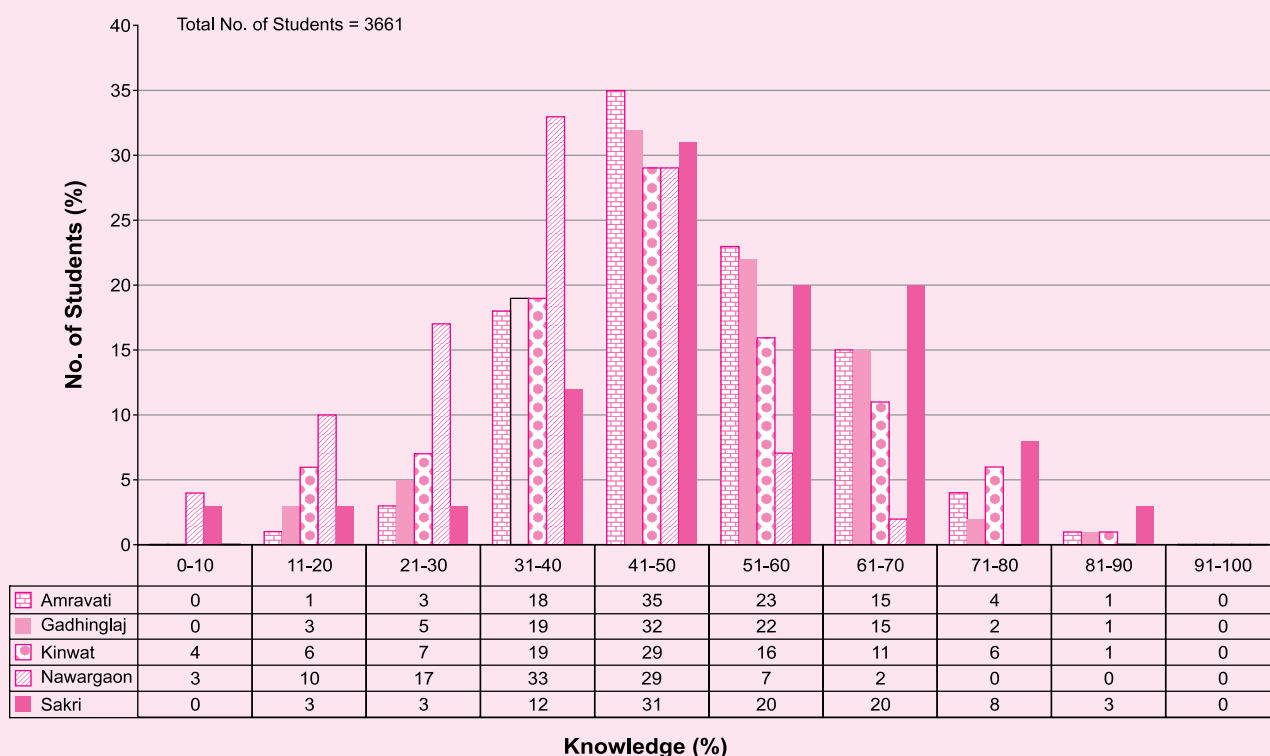
S. No.	Survey Question	Select Answer	Correct Answer
1.	During puberty certain changes occur in our body. Is it necessary that this scientific information be given to you?	Y/N	
2.	Is the subject of 'puberty growth changes' (a) Discussed at home? (b) Is gender education given at school?	Y/N Y/N	Yes
3.	Do you know what is your height, weight, blood group and hemoglobin?	Y/N	
4.	Menstruations cease during pregnancy?	Y/N	Yes
5.	Is premarital counselling essential?	Y/N	Yes
6.	Does unprotected sexual intercourse lead to any infection?	Y/N	Yes
7.	What is essential for conception of a baby? (a) Ovum (b) Sperm (c) Optimum Conditions for embryo growth (d) All the above		(d) All the above
8.	What determines the sex of the baby? (a) Destiny (b) Chromosomes (c) Mother (d) father		(b) Chromosomes
9.	How do you handle sexual tension? (a) Indulge in studies (b) Inculcate healthy hobbies (c) Sports + Physical exercise (d) all the above		(d) All the above
10.	Is nightfall a disease?	Y/N	No
11.	Waste of semen is like death.	Y/N	No
12.	White discharge in urine is a disease.	Y/N	No
13.	The horoscopes of spouses should match for the marriage to be successful.	Y/N	No
14.	For marriage, the blood groups of spouses should be compatible.	Y/N	No
15.	Celibacy makes a man ethereal.	Y/N	No
16.	Use of public urinals causes sexually transmitted diseases.	Y/N	No
17.	Both the testes are at the same level.	Y/N	No
18.	Why are the testes outside the body? (a) There is no place inside the body (b) It changes its size frequently (c) To maintain its temperature below the body temperature (d) To maintain its temperature above the body temperature		(c) To maintain its temperature below the body temperature
19.	Sperms are produced inside (a) Penis (b) Testes (c) Bladder (d) Intestines		(b) Testes
20.	What hormone is required for production of sperms? (a) Progesterone (b) Testosterone (c) Estrogen (d) Thyroxin		(b) Testosterone
21.	What causes pimples? (a) Lack of discharge of semen (b) Storage of oily substances in skin (c) Hormonal imbalance		(b) Storage of oily substances in skin
22.	What is hydrocele? (a) Accumulation of blood in scrotum (b) Accumulation of semen in scrotum (c) Collection of fluid in scrotum (d) Accumulation of sperms in scrotum		(c) Collection of fluid in scrotum
23.	Do you know what changes occur in a girl's body during puberty?	Y/N	Yes
24.	Does vasectomy cause any problem for men?	Y/N	No
25.	During the first intercourse, should rupture of hymen in the female not result in bleeding, does it mean that the woman is not a virgin?	Y/N	No

Questionwise analysis - Boys

Following paras present questionnaire analysis. This has also been summarised in Chart 4

- Q. 1 It is gratifying to note that 82 percent of the boys believe that information about puberty ought to be imparted to adolescent boys. 2 percent of the boys did not answer the question. 16 percent of the boys do not think it is necessary.
- Q. 2 (a) Only 57 percent of the boys discuss 'puberty' at home, 4 percent did not answer the question while 39 percent did not discuss the subject at home.
- Q. 2 (b) Only 49 percent of the boys receive any information about puberty in school. 8 percent did not answer the question, while 43 percent do not receive any information in the school.
- Q. 3. Only 54 percent of the boys know about their hemoglobin, weight, height and blood group; 4 percent did not answer the question and 42 percent do not know about their haemoglobin weight, height and blood group.
- Q. 4 48 percent of the boys know that menstruation ceases during pregnancy, 11 percent did not answer the question and 42 percent do not know this fact.
- Q. 5 67 percent of the boys think that premarital counselling should be sought, 4 percent did not answer the question and 29 percent do not believe it is necessary.
- Q. 6 58 percent of the boys know that unprotected sexual practices can lead to sexually transmitted diseases, 6 percent have not answered the question and 36 percent do not know this fact.
- Q. 7 Only 39 percent of the boys know the factors essential for conception of a baby, 10 percent have not answered the question and 50 percent do not know these factors.
- Q. 8 Only 38 percent of the boys know what determines the sex of the baby and 9 percent have not answered the question. 53 percent do not know what determines the sex of the baby.
- Q. 9 Only 34 percent of the boys know how to handle sexual tension, 10 percent have not answered the question and 55 percent do not know.
- Q. 10 Only 42 percent of the boys know that there is nothing wrong with nightfall (*Swapna Dosh*), 6 percent did not answer the question and 51 percent believe it is a problem.
- Q. 11 Only 43 percent of the boys know that there is nothing wrong with waste of semen, 8 percent did not answer the question and 49 percent believe loss of the semen brings you nearer death or is death-like.

Chart 3: Chapterwise Comparison of Knowledge (Girls)

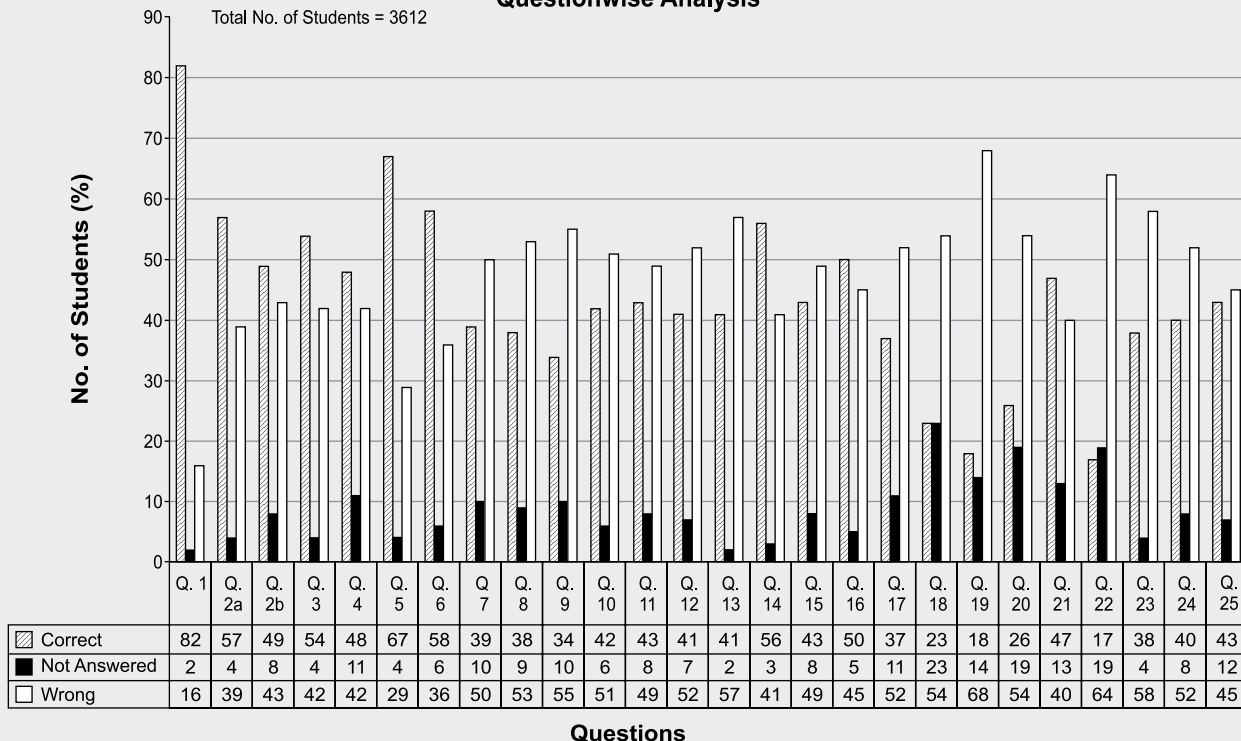


- Q. 12 Only 41 percent of the boys know that loss of semen through urine is not illness, 7 percent did not answer the question and 52 percent do not know.
- Q. 13 Only 41 percent of the boys know that for a successful married life it is not necessary to have matching horoscopes, 2 percent did not answer the question and 57 percent believe it is necessary that horoscopes of husband and wife have to match for a successful married life.
- Q. 14 56 percent of the boys know that the blood groups of husband and wife need not be compatible, 3 percent did not answer and 41 percent believe that the blood groups of husband and wife must be compatible for marriage.
- Q. 15 43 percent of the boys do not believe that celibacy makes a man ethereal, 8 percent did not answer and 49 percent of the boys believe celibacy makes a man ethereal.
- Q. 16 Only 50 percent of the boys know that use of public urinals does not result in sexually transmitted diseases, 5 percent did not answer the question while 45 percent do not know that.
- Q. 17 Only 37 percent of the boys know that the testes are not at the same level, 11 percent did not answer the question and 52 percent do not know.
- Q. 18 Only 23 percent know why the testes are outside the body, 23 percent did not answer the

question and 54 percent do not know why they are outside.

- Q. 19 Only 18 percent of the boys know that sperms are produced in testes, 14 percent did not answer the question and 68 percent do not know.
- Q. 20 Only 26 percent of the boys know that testosterone is responsible to produce sperms, 19 percent did not answer the question and 54 percent do not know.
- Q. 21 Only 47 percent of the boys know that pimples are caused by storage of oily substances in the skin, 13 percent did not answer the question and 40 percent do not know.
- Q. 22 Only 17 percent of the boys know that hydrocele is caused by collection of fluid in scrotum, 19 percent did not answer the question, while 64 percent do not know.
- Q. 23 Only 38 percent of the boys know what changes occur in a Girl's body during puberty, 4 percent did not answer the question and 58 percent do not know.
- Q. 24 Only 40 percent of the boys know that vasectomy does not cause any problem, 8 percent did not answer the question and 52 percent do not know that vasectomy does not cause any problem.
- Q. 25 Only 43 percent of the boys know that if there is no bleeding on the first night of the marriage it does not mean that a girl is not a virgin, 12 percent did not answer and 45 percent do not know this fact.

**Chart 4 : All Boys
Questionwise Analysis**



**Chart 5 : All Boys
Knowledgewise Analysis**

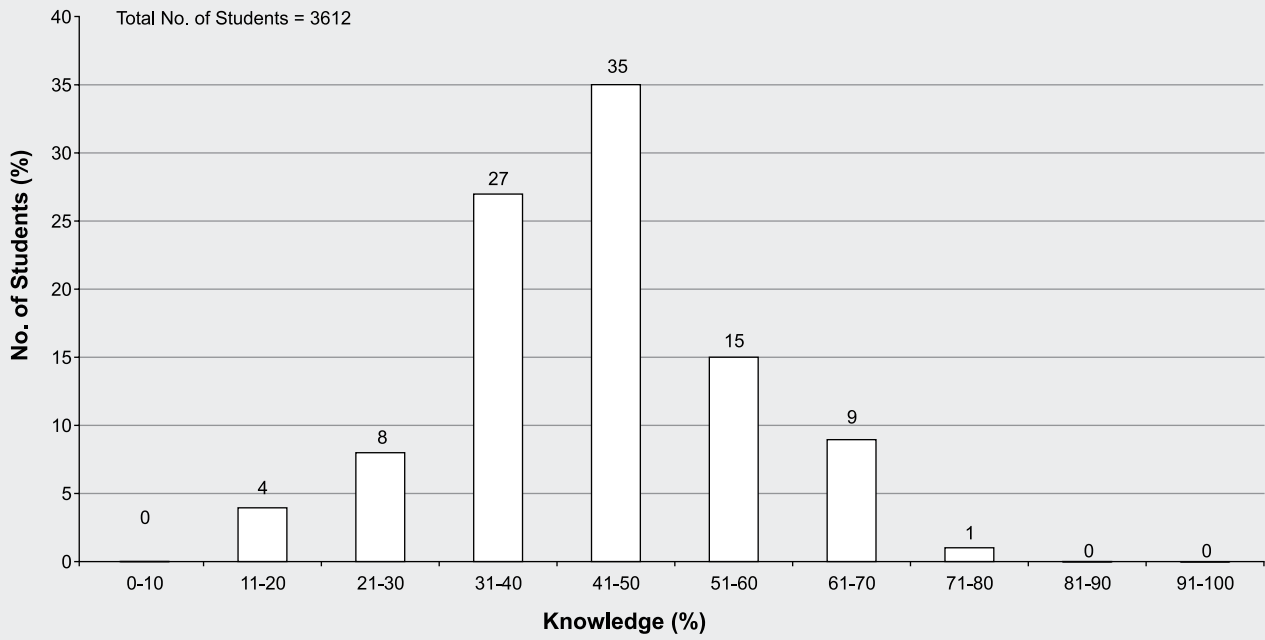
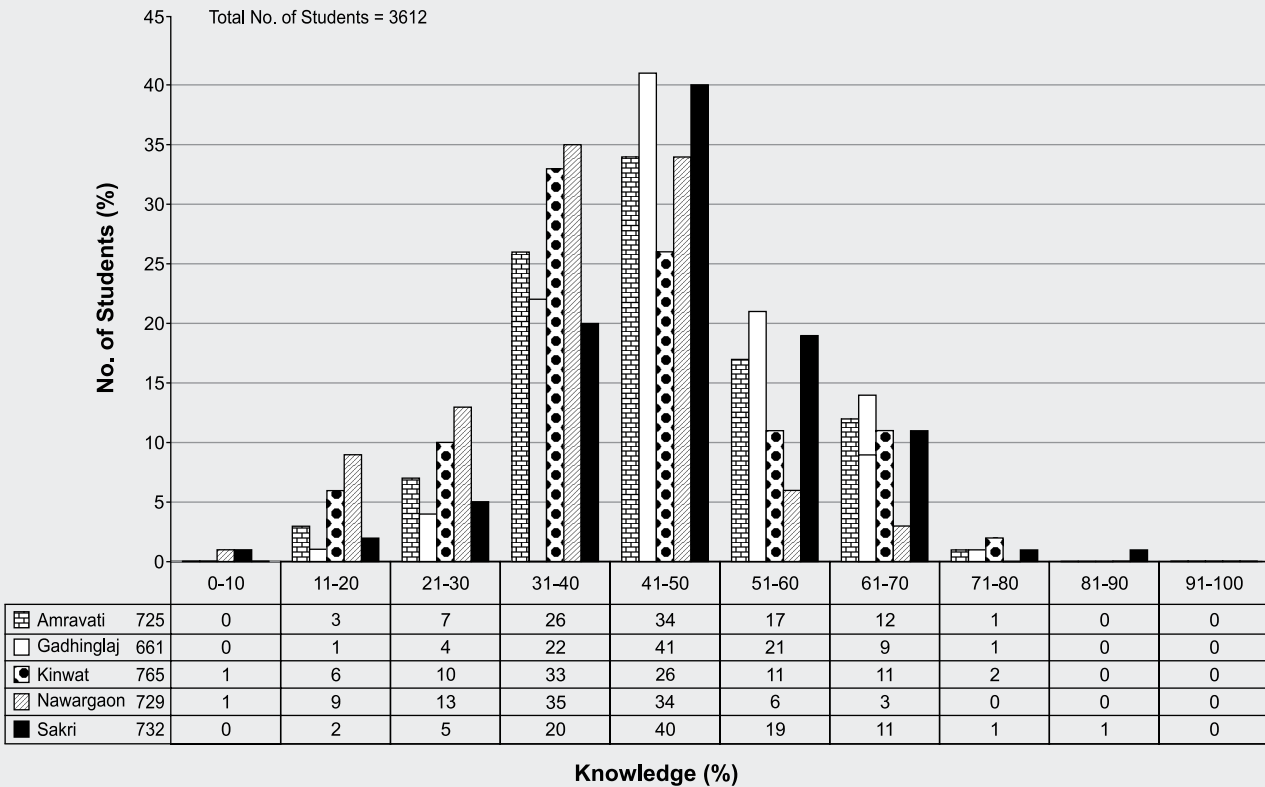


Chart 6 : Chapterwise Comparison of Knowledge (Boys)



Knowledge wise analysis (Boys)

Chart 5 presents the knowledge level of students. This graph shows that only 35 percent of the boys (so that 1264 boys out of 3612) have answered between 41-50 percent questions appropriately or 74 percent (2672 boys out of 3612) of the boys have answered upto 50 percent questions appropriately.

- Only 15 percent of the boys have answered between 51-60 percent questions appropriately.
- Only 9 percent of the boys have answered between 61-70 percent questions appropriately.
- Only 1 percent of the boys have answered between 71-80 percent questions appropriately. Substantially small number of boys have answered between 81 percent 90 percent questions appropriately.

Chapterwise comparison

The analysis for various chapters has been given in chart 6. The summary of results is given in Table 4.

One can easily notice that boys in Sakri, Gadhinglaj and Amravati have comparatively shown better knowledge level than those of Kinwat and Navargaon (Dist. Chandrapur – the most backward district of Maharashtra)

Table 4: Chapterwise summary of knowledg (Boys)

Upto 50% correct answers	Between 51 & 90% correct answers	Chapter name
67%	32%	Sakri
68%	31%	Gadhinglaj
70%	30%	Amravati
76%	24%	Kinwat
92%	9%	Navargaon

Conclusion

Girls: Alarming levels of ignorance are discerned in the pre-survey, especially, if one looks at the unanswered along with wrong answers for question numbers 7, 8, 11, 18, 22 and 24.

Boys: Similarly if one looks at comments during analysis for wrong answers + unanswered, i.e., questions number 7, 8, 10, 16, 20 and 24, one can notice the level of ignorance.

Questions regarding body, physiology and anatomy are not answered properly. In our opinion 'Need' for conducting these programmes is clearly established.

Generally observing, all the social workers who carried out the pre-survey programmes describe the eagerness of students and teachers alike to see the audiovisuals as early as possible. Many of them asked the answers to the questions from the questionnaire.

Acknowledgements

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Presenting Science to the Public: Role of Scientists

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Since the start of the Public Understanding of Science (PUS) movement in the west in 1985, the need for the same has been realised worldwide. There is a global insurgence for the public communication of science and scientific research. Different groups across the globe are advocating the need for a greater understanding of science by the public. The genuine reason for this advocacy is the fact that the public is the ultimate consumer of scientific research and further, most of such research is funded by the public money.

Therefore, it is logical that public should be informed about what research is being done by using their money. Another reason is survival. In this hi-tech world of S&T, a science illiterate and technologically unaware person can not survive or at least enjoy life to the fullest. (In the following text, the terms scientists and researchers, journalists and reporters have been used interchangeably.)

Many benefits to the public

According to a MORI survey¹ of 1600 scientists in the UK, most scientists (97%) can see benefits to the non specialist public having a greater understanding of science. They believe that greater understanding of science is beneficial to the public. With greater understanding of science, they can make more informed decisions about their lives and can understand what scientists do.

But the specialised knowledge of S&T trapped in the technical language of science remains locked in the research libraries and laboratories. It needs to be opened up for use by the general public for their benefits. Because “the communication of research results can have significant impact on members of the public, leading to changes in their views, attitudes and behaviour,” says the Royal Society’s report ‘Science and the Public Interest’².

Responsibilities for communication

However, the public itself can not understand science in the technical language. S&T advances have a direct bearing on the public. These have their own implications – social and ethical. The public need someone else to simply science for them and communicate its implications to them. But who will do this? Who is responsible for communicating scientific research and its social and ethical implications to the public? Only the media and the professional science communicators or scientists themselves?

Here, the media and the professional science communicators have a professional responsibility for communicating science to the public. Scientists too have a moral responsibility to communicate their research to the public. Moreover, the media/communicators are no experts but scientists are. The former act as a mediator between scientists and the public. Being experts on the subject, no one else than scientists themselves can communicate it better to the public. They better know what their research is meant for and what its social and ethical implications are.

The Royal Society’s report² highlights two main responsibilities of scientists or researchers towards the public: (1) to assess accurately the potential implications of research for the public, and (2) to communicate timely and appropriately such things to the public. The report further recommends that these two responsibilities should be assimilated within the culture of science or research.

Many challenges

When the media reports science, scientists are often seen complaining of misreporting, distortions or misrepresentations. Journalists are no scientists but act as a messenger transferring the scientific information from scientists to the public. If the source message

was not communicated clearly by scientists, then miscommunication or misreporting in a journalist's report is likely to be there. Therefore, such a bad thing can be avoided if scientists stop talking to journalists in the way they do to their peers. Scientists should try to make their interactions with journalists more interesting and help them to understand the research better by communicating clearly in simple terms.

Journalists face many challenges in getting the appropriate and timely information from scientists. In this regard, the Science Communication Survey³ conducted by the EurekaAlert! and the American Association for the Advancement of Science (AAAS) in 2006 has identified top ten challenges to science reporters. Among these ten, four are:

1. Finding researchers who can explain science so it's understandable.
2. Judging the trustworthiness of research or researchers.
3. Convincing researchers to talk to the media.
4. Getting institutional permission to talk to researchers.

Active role

Until and unless these challenges are overcome, research can not reach to the general public. That is, scientists need to play an active role in the science communication process. Scientists may have their own limitations preventing them from talking straight to the public. Through the media, they can take their message to a wider public. This demands scientists to be more open to the media for interactions. But such interactions are not always very productive. Journalists face many challenges as mentioned above. To overcome these challenges and to make science communication more effective, most of the journalists [in the survey³] advise that:

1. Too many scientists need media training to communicate clearly.
2. They should respond promptly to a journalist's query.
3. They should understand a reporter's story interests, deadlines or the nature of news.

Confidence in scientists

Further, the public has a fair amount of confidence in scientists¹. They trust scientists more than the mediators/science communicators as authentic and

reliable sources of S&T information, because scientists are the ones who actually do the research. For this reason, journalists need quotes from scientists for their stories. Therefore, if scientists are not open to the media and are not playing their role sincerely, then they should not blame the media for misreporting science.

Scientist's belief in public communication

According to the MORI study¹, a vast majority of scientists in the UK believe that it is their duty to communicate their research and its social and ethical implications to policy makers, and to the nonspecialist public. Most scientists feel that scientists themselves should have the main responsibility for communicating the social and ethical implications of scientific research to the public¹. But only a few feel that scientists are the people best equipped to do this¹. Therefore, as stated earlier, scientists need to learn to do this job.

No personal benefits

Many scientists do not see any personal benefits/advantages in communicating research to the public, reveals the MORI study. But there are many such benefits in communicating research to the peers (scientific community). Therefore, to increase the role of scientists in presenting science to the public, governments and other funding agencies should offer personal benefits to scientists for communicating science to the public.

Communication of research and its implications to the public should be made a vital part of any research project/activity and should be supported by a budget. In fact, like the communication of research to the peers, it should also be made a mandatory thing.

Scientists should be encouraged to communicate to the media, write popular articles, appear in popular science talk shows on TV/radio, deliver public lectures, etc. Participation of scientists in such activities should also be considered for promotions, salary increments and other personal benefits to them.

However, not caring much for personal benefits; scientists, in general, should sincerely play their role in science communication and should consider the following points seriously:

1. Misreporting of research by journalists may result from miscommunication of research by scientists to them. So communicate clearly and in a simple way to the media and do so to inform and not to impress.

2. Respond effectively and immediately to a reporter's queries.
3. Try to find out what a reporter wants from you.
4. Check out a reporter's background and knowledge about the subject of query. If needed, supply the reporter with appropriate background information or relevant explanation. This helps to avoid misunderstanding and misinterpretations by the media and so misreporting.
5. Respect journalists and their professional constraints. They have deadlines. Furnish them with the required information within the deadline.
6. Present your research/information in a way that can be directly communicating to the general public.
7. Repeat important points for clarity.
8. Check that a reporter has got the communicated information clearly by cross questioning.
9. Provide reporters with the relevant material in writing (if possible, available or needed).
10. Be concise and focused on the main points that you want to communicate. Reporters have constraints of time/space too and they have to report you in sound bytes or in a limited space in a paper.
11. Ask yourself – Am I well qualified to answer a reporter's queries?
12. If you are not well-qualified in the concerned subject of a reporter's query, then don't comment and simply decline the interview. Because it is much better not to communicate than to mis-communicate.
13. If possible, refer the reporter to the most appropriate sources/experts.
14. Receive reporters or their calls open mindedly.
15. Give yours contact numbers and e-mail to reporters and invite them for any queries or doubts arising later. This can save science from being misreported.

These points way help scientists to meet their responsibilities for communication of research and its implications to the public and to play an active role in helping the media for presenting science to the public more effectively and accurately.

References

- 1 The Role of Scientists in Public Debate, A study conducted by MORI for the Wellcome Trust in U.K., 2000.
- 2 Science and the public interest: communicating the results of new scientific research to the public, Royal Society's Report, 2006.
- 3 Science Communication Survey, Euroscience 2006, conducted by the EurekAlert! ■

Science Communication and Electronic Media

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Introduction

Communicating Science to people through mass media is significant challenge in the new millennium. There are four basic objectives of mass communication media which have been described as to inform, to interpret, to educate and to entertain (Bond Fraser 1971, p-8). However to advertise is not included in these objectives. Science communication has to sharply focus on information education role. The electronic media in science communication has to follow I.E.C. model, which means information education and communication. The role of electronic media becomes more effective than print media in this area because people's education is an important task in science communication.

CONOR in his book editing scientific journals, has rightly observed that while editing such journals accuracy is minutely observe because accuracy is a factor which leads closely to objectivity (CONOR Scientific Journals, Oxford, 1972, p-3). It has been observed that there exists an enduring concern that the media, especially television and film, often distorts science, leading to negative consequences for public understanding and decision making. (Science and the media, CSICOP, page 1-2). We have to examine the role of electronic media for correctly understanding science communication. In this paper tools, techniques and methods of science communication have been carefully studied.

Here we have to make a case study regarding manufacture of science news on television which can help us to overcome barriers in science communication. There is an increasing debit on role of television media in building scientific temper. We have to make a follow up study that how the television can build public opinion towards science communication. There is a need to understand the multiple meanings of public understanding. There must be clarity in definition of science communication.

Definition of science communication:

Sciences communication is the newly developed horizon of knowledge, which is emerging in the new millennium. Scholars have observed the following facts:

- The low level of information to public underscores importance of communication strategy.
- Communication efforts triumphs moral values of the societies
- The use of media can generate massive public support for bringing scientific temper.
- Media can save and improve public understanding regarding science on right lines.
- Media can play its new role as an engine of social change
- The proper coverage of science through electronic media can change public attitude on positive lines.
- Effective science communication in an era of globalisation depends on proper use of media.

On these lines we can define science communication as an effective source of moulding public opinion for positive change. In Indian context, science communication must be in the process of simplification which is described by Bharatmuni as 'sadhanikaran' — process of simplification. Lord Buddha described it as 'Bahujan Hitaya' and 'Bahujan Sukhaya' which means its must be in tune with the welfare of masses.

Science television and electronic media

Efforts have been made by scholars and media experts to develop independent science radio & television channels. The experiments during past and present show that following three aspects are very much significant. However such efforts have not been in India except Technology Eklavya Channel. The UGC-CEC higher education channel known as 'Vyas' is also the novel example having science as one of the components in this channel.

India has began experiments regarding e-content generation for educational communication. However there is a need to develop database useful for science communication. The different channels have to develop new series for popularising science in Indian society. We have to collect reaction from scientist as well as common people. Some early experiments made by Dr. Jayant Narlikar and others were significant this regard. However, there are no continuous efforts on Indian science communication arena.

There is both primary and secondary impact of science serials on public mind which can change psychology of masses for removal of superstitions.

The proper use of electronic media can change outlook for improving trends in inter disciplinary coverage of science. Hence experts in the different fields of specialisation must joint hands for excellent science programme production.

The essential ingredients of communications of science are:

- Science and Technology
- Languages
- Mass Communication

These all must join their head, heart and hands together for brining positive change in the society through science programmes.

Tools and techniques

Towards use of electronic media, appropriate tools and techniques are required to be developed for production of quality science programmes. According to Dr. Schramm, excellence must be the highest social responsibility in science programme productions on electronic media. The following stages can be described as important steps in science programme production:

1. Selection of proper theme and subject
2. Use of right clippings
3. Mass participation to improve feedback
4. Technical effects during editing for the purpose of visual impact
5. Proper presentation

All these steps can lead towards production of fine science serials. When there are no sponsors on commercial level, public bodies must take lead to support these programmes.

The corporate houses must also support creative science groups for production of CDs and VCDs for school and college campus students. Every year, the best science serials must be given awards on National level by Prasar Bharati, India's public broadcasting corporation. There is a need to develop and strengthen a science cell both in All India Radio and Doordarshan for building scientific temper through electronic media.

Barriers in Science communication

There are are different types of barriers in the development of science communication programmes in Indian languages. Prasar Bharati and many more Indian channels are facing are these problems which can be classified below:

1. Lack of planning
2. Lack of creativity
3. Lack of proper presentation methods
4. Poor feedback

In Indian context we have to make cultural by cohesive science communication. The purpose of science communication must focus on developing professional skills to ensure accurate reporting and dialogue between journalist and scientists and the effective use of the interns by science programme creators. The job can be much easier if there is proper link between scientists and media experts. The proper use of Internet and I.C.T. is essential for bringing positive future change.

Conclusion

A new outlook is require for effective use of media for science communication on the following lines:

- A neat programme planning is required for successful use of electronic media.
- RACE i.e., research, action, communication and evaluation, formula must be used for keeping science communication on the top of new media.
- ACT means act, communicate; and transform; must be the future of science communication

There is a need to develop a more serious approaches towards science communication by chalking out result oriented policies in tune with the new necessities and realities for effective science communication in Indian context, which can bring age of awakening in the horizon of mass communication. It is interesting to observe that though there are many difficulties, yet there are some positive aspects. Science communication in India through electronic media has a long way to go. ■

Defining Science Fiction: Indian Perspective

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Introduction

Indian science fiction writers have initiated debating some significant issues pertaining to the genre that have been pending for a long time. With the genre having established itself in western countries, has still not achieved the status in Indian literati which it really deserves. To most of the Indian publishers it's surprisingly still a child fiction. Now the fraternity is coming together with the aim to initiate a perception building about the genre and make it popular among the masses. Here is a compilation of a lively discussion which took place on a Yahoo! group of Indian science fiction – *indiansciencefiction@yahoo.co.in* where some of the reputed names in Indian science fiction and popular science domain deliberated at length on the issue in question. Here follows the witty comments, in-depth insight and strong grip on the genre as expressed by the notables of Indian science fiction writers.

How it all started?

Dr Arvind Mishra, moderator of the group, spear-headed the discussion with a call to Indian science fiction lovers to come together and discuss what is the actual definition of science fiction. He pointed at the outset at very hybrid nature of the genre and lamented, "It's interesting to take note of this hybrid nature of science fiction — the marriage of science and fantasy, the unison of seemingly two opposite humane attributes. But how do we define science fiction? We are already familiar with many literary forms of social fictions, i.e., stories, novels, novellas, novelettes, etc., which depict several shades of our society in a lucid and interesting manner. The themes and plots of such social fictions are based only on past or present happenings related to man and his society. That is why the often repeated adage, "literature is the mirror of society".

Science fiction on other hand is the portrayal of man's future. And here lies the difference between social and science fictions, notwithstanding the many similarities of both the genres as they entail identical ways of story telling, selection of themes and structuring a plot around it and above all engaging the readers with a continuous and sustained flow of suspense leading ultimately to the climax of the story. But the million dollar question still remains unanswered, 'How to honour this genre in India by giving it a proper and intelligible academic definition?'

Finally, an issue resolved

Here is the compilation of the threads of the discussion which ensued spontaneously after the above discussion.

Dr Arvind Dubey: Take this simplest one from me. A fiction which can not or should not sustain itself without its scientific contents is sf.

"A good science-fiction story is a story about human beings, with a human problem, and a human solution, which would not have happened at all without its science content (as quoted in Atheling, *More Issues*, 12)". Theodore Sturgeon, a science fiction author

Arvind Mirsha: Dr.Arvind Dubey has contributed some science fiction definitions given by certain messiahs of the genre. I think you would have tried yours one also by now. It's such an interesting game! But to make it more intelligible and easily understandable even by a lay man we have to make some more efforts defining the genre. The science and technology in science fiction is usually of imaginary kind and the background settings in science fiction stories belong to our future and has nothing to do with our present world. This is at least a viewpoint largely supported and accepted by science fiction giants' world over.

Stories with a plot of contemporary world though may be full of science and technology is not considered science fiction. That is perhaps why many thrillers of Robin Cook are not categorised as science fiction.

Arvind Dubey : How many of our respected members agree that science fiction should necessarily be future oriented. Science fiction which is not futuristic should not be considered science fiction any more. Do you agree?

Arvind Mishra : Dr. Dubey is genuinely interested in perusing the debate on science fiction's definition. I myself have always been in dilemma why contemporary S&T could not be inculcated in science fiction stories? But most of the western science fiction writers differ on the point and insist that science fiction should invoke S&T elements of future world only. What is your opinion?

Swapnil Bhartiya : What I follow is the simplest definition of science fiction as Analog magazine puts it, "pick a science fiction story and remove science from it, if the story still stands erect, it's not science fiction." The bottom line is science has to be an integral part of the story, but it should also deal with human emotions.

Science fiction a genre that deals with the stories which are set either in future or in space, or they have a very strong speculative element. The only problem is unless there is hard science behind it I won't call it science fiction, it would be just another fantasy — for that example, we can't call 'Spiderman' science fiction.

Arvind Mishra : Well, two divergent views have so far emerged on the nature of sf. One, sf should depict only and other; it may contain realities of contemporary world too.

Zakir 'Rajnish' : Is do not completely agree with the definition presented by Dr Arvind Mishra. If we base all our stories only on future, then it will loose its social significance and relevance:

Swapnil Bhartiya : Rajnish, I beg to differ, if you want to deal with social issues then there is no need to have the tag of science fiction along with a story, that is completely unnecessary. Science means dealing with facts and science fiction means how science and technology is going to shape our world and 'not how it has shaped our world'. Every genre has its own purpose; we can experiment but with keeping in mind the possible advantages or effects that it creates.

Mixing everything in one bottle will end up with nothing. We need to draw a line, if we can't, then we are missing the entire understanding.

A.P. Deshpande : A good science fiction has to be basically a good fiction dealing with social issues. For that matter how social issues get complicated or simplified with new science coming into being can certainly be a part of the science fiction.

Arvind Dubey : Its not only me but number of people avoid futuristic orientation for example what Robert A. Heinlein says in "Science Fiction: its nature, faults and virtues, in The Science fiction Novel, Advent, Chicago: 1969"

To make this definition cover all science fiction (instead of 'almost all') it is necessary only to strike out the word 'future'

K S Purushothaman : Hi, good to see many definitions posted. Present or future, or even the past, science fiction should be about the way science and technology effects changes in our lives – individually or socially. Mere settings alone will not be science fiction, change is the key and consequent transformation—of body/ mind/world/cosmos—is the door to a new vision of man and his world.

Vishwa Mohan Tiwari (VMT) : What is the purpose of science fiction?

"To creatively express in the form of stories, novels, etc. is to create impact of S&T on the society in a convincing manner." I need not have added the word convincing, because if a story is not convincing it would be rejected by the readers on first reading, and that author may lose his readers for future. Science fiction should not go against the laws of physics unless scientifically shown, although speculatively.

Now appears in front of us the question of past present and future. Just because a story deals with past or future does not mean it is irrelevant to present. The creative writer does make it relevant, of course, that is why great works of art and fiction are always relevant.

Science fiction gives greater freedom and facility to the writer to deal with future. Jurassic Park is set in present, future and past. He could not have done it without S&T. An science fiction story can of course be written such that it has no impact on present (and therefore on future) then it is, at best, pure entertainment, but not good literature. I believe that science fiction must also aspire to be good literature.

Swapnil Bhartiya: Here I agree with you, even if we look at *Minority Report* by Philip K Dick, it is the most hard hitting. Next by Michael Crichton deals with the issue of fate, Asimov's *Profession* deals with the issue of eugenics. Well's *Time Machine* deals with the Marxist approach of labour and producer relation and *Frankenstein* is another such example and there are many examples.

But these stories deal with the repercussion of technology on society. They don't try to solve social issues through science — something most writers try to preach. And when a writer forgets to establish connection between science and social issues, it creates problems. Having said, that I maintain my stand that there are different genres in writing to address different problems.

VMT: Let us analyse Asimov's statement of science fiction, viz., 'If a story is based on contemporary world, it will not be science fiction, however, large S&T it may contain.

What does he mean by 'based on contemporary world'? There is nothing scientifically significant of future in the story, as S&T is also contemporary. It belongs to social fiction.

However if the story has mutual interaction between science and society, i.e., S&T has not been used merely as a tool or for routine matters, then it becomes science fiction, though it is based on contemporary world. Its 'scientific content' would affect future of the society.

Let us look at the other statement : science fiction which is not futuristic should not be considered science fiction. The word futuristic in this context has two distinct meanings: 1. science fiction using, involving or dealing with science of future, however speculative it may be, e.g., use of 'time warp'. 2. It has an impact on future or contains something of future, e.g., logical content or population explosion, etc. Then it is science fiction, not otherwise. There is one touchstone for judging science fiction. Does it use science creatively to affect us?

Swapnil Bhartiya: I agree to some extent, but should we consider the view of Asimov final? Where should we place Michael Crichton's *Andromeda Strain*, *Jurassic park*, *State of Fear* and *Terminal Man*, or even for that matter *Sphere*? These are not futuristic novel. We may call them techno-thrillers, but they are sciencefiction, at least *Sphere* is.

To some extent too much of futuristic element makes a story incomprehensible for ordinary public and it becomes nonpopular. Most of Philip K Dick's stories suffered the same fate, though he is now considered a genius.

VMT: I do not think that Asimov's definition is the final, nor did I say or imply in my statement. In his time scienc fiction was still evolving, and so was definition of science fiction.

Futuristic element can at times make a story incomprehensible for some readers. An author has to choose the segment of his readers. If one chooses common men, then he should write accordingly, and if one choose an elite section, then one should write accordingly. Some great authors have a very large segment of readers, Asimov was one

As I have said futuristic element is by and large always there in literature; in science fiction it is most of the time not only obvious, but the base of the fiction. But again this is not the necessary condition for science fiction. Through Science or Technology, whether of past or present or future, if one creates a fiction of human concern or interest, well that is science fiction. Science fiction can also be pure entertainment, but then it may not be great for long time.

Swapnil Bhartiya: You have been very correct when you said, "identification of target audience' as it is very important for a writer. I think by bringing this point forth, you have opened doors to writer for better understanding of the genre.

Science fiction itself is for niche audience. If I think that an ordinary reader would understand my story around 3D scaffold, it would be a big mistake. So, that is a very valuable piece of advice that you have shared with us.

A.P. Deshpand: I want to give three definitions for science fiction. 1) science fiction is that branch of literature which describes the consequences of S&T on human being. 2) It is a creative piece of art describing human relations and their existence on the background of S&T known today and likely to develop tomorrow based on today's S&T. 3) Story of people facing the problems created by S&T.

Arvind Mishra: Now I cannot resist quoting Asimov again. According to him realistic or social fiction deals with events played against social backgrounds not significantly different from those that are thought to exist now or have existed at some time in

the past. Science fiction and fantasy on the other hand deal with events played against social backgrounds that do not exist today and have not existed in the past. Further, background of the science fiction could be derived from our own but only by making appropriate changes in the level of existing S&T. Bottom line—science fiction is the perception of change through technology.

L D Kala: Futuristic elements in terms of literature is termed as creatively imaginative elements and this is what the word fiction encompasses. Fiction if has to be eligible for the category of literature, then has to be creative, educative, didactic, indicative, analytical and what not, in fact every aspect of human socio-psycho-physiological-spiritual, in fact the sum total of all the faces that the society involves.

A good fiction is how good a perfect balance is maintained therein vis-a-vis the bare structure created for the purpose.

In science fiction, some opine that conveying one good issue in totality, involving all the realistically possible circumstances should at least be done. And that is a good science fiction. Involving all the hard understanding is not what the fiction is all about. It is devoid of any other connotation but only the one that each one of the reader understands.

VMT: Dear Anant, think about it. All the three definitions permit science fiction but also permit social

fiction which need not be science fiction. Describing effects is different from dealing with S&T as an entity which may be spoken of as a character, so to say, which is a must for science fiction. In science fiction S&T has to play active role.

Word fiction encompasses past, present and future, not necessarily futuristic alone. Perfect balance does not need an adjective whether good or bad. Perfect balance would convey the idea that there is only one perfect balance, but it need not be so. Balance also depends upon the author's intentions or aims, etc.

A.P. Deshpande: I agree with you, but do you mean that any other story in the literature is barred from using S & T concepts? How do we differentiate between S F and other social stories, if both are using S & T concepts?

VMT: My definition of science fiction is that it is that segment of literature that uses S&T effectively, imaginatively and definitively to create a plot for a story for the play of society, even cosmos. Literature as per my understanding is that fiction which has good of the Humanity at its heart.

Arvind Mishra: As a humble beginner of the discussion, I have already expressed my views in quite unambiguous way. To recapitulate again, my concern was mainly to differentiate, for our own sake, in between science fiction and other forms of fiction. The issue seems now resolved. ■

सामान्यजन तक विज्ञान नाटकों की पहुंच: एक अध्ययन

इरफ़ान ह्यूमन

रिसेप्टिव एसेंशियल साइंटिफ़िक एजुकेशन एड्वांसमेंट रिसर्च कमेटी फॉर ह्यूमनिटी (रिसर्च)

67, अन्टा, निकट मोहनी स्कूल, शाहजहाँपुर-242001 (उत्तर प्रदेश)

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मानव विकास के साथ ही अभिव्यक्ति और भाव सम्प्रेषण का विकास भी होता रहा है, जिसने समय-समय पर संचार के नए-नए साधनों का विकास किया है। विज्ञान नाटक भी उनमें से एक है। समकालीन सामाजिक, वैज्ञानिक और मानवीय गतिविधियों एवं विचारधाराओं को प्रतिबिम्बित और अभिव्यक्त करने की कला और वैज्ञानिक दृष्टिकोण के विकास का बल विज्ञान नाटकों में समाहित रहता है।

विज्ञान-प्रौद्योगिकी, स्वास्थ्य, स्वच्छता, पर्यावरण जैसे अनेक विषयों पर विभिन्न समूहों को लक्ष्य बनाकर समय-समय पर जागरूकता हेतु विज्ञान नाटकों का आयोजन किया जाता रहा है। देश में वर्ष 1992 में भारत जन विज्ञान जत्था के आयोजन के समय विज्ञान नाटकों के आयोजनों ने जोर पकड़ा था जो आज तक बखूबी जारी है।

सामान्य जनमानस तक विज्ञान नाटकों की कितनी पहुंच है किस विषय से जुड़े नाटक को अधिक बल दिया जाता रहा है और नाटकों द्वारा विज्ञान संचार कहां तक सफल हुआ है, इस शोध पत्र में इसी को अध्ययन का आधार बनाया गया है।

परिचय

गुलामी के लम्बे दौर के बाद आज़ाद हुए भारत के निर्माण के लिए जहां सामाजिक एवं आर्थिक उत्थान के लिए प्रयास प्रारम्भ हुए वहीं देश में वैज्ञानिक दृष्टिकोण पर के विकास पर बल देने के लिए प्रयासों में भी तेज़ी आई। हमारे प्रथम प्रधानमंत्री पं. जवाहर लाल नेहरू का दृढ़ विश्वास था कि देश के सर्वांगीण विकास के लिए विज्ञान एवं प्रौद्योगिकी अनिवार्य है और इसके उपयोग के बिना देश प्रगति नहीं कर सकता। इसके लिए वे सदैव वैज्ञानिक दृष्टिकोट पर विशेष बल देते थे और इस दिशा में सदैव प्रयत्नशील रहते थे।

आज़ादी पूर्व भी हमारे देश के चिन्तक और मनीषी वैज्ञानिक दृष्टिकोण के विकास पर बल देते रहे हैं। “किसी चीज़ पर सिर्फ इसलिये विश्वास न करो कि तुम उसका सम्मान करते हो, किन्तु जिस चीज़ को तुम उचित परीक्षण या विश्लेषण के बाद सभी के लिए हितकर और कल्याणकारी पाओ, उस सिद्धान्त पर दृढ़ रहो और उसे अपना मार्गदर्शन बनाओ।” गौतम बुद्ध के ये विचार हमें वैज्ञानिक दृष्टिकोण अपनाने के लिए सदा से प्रेरित करते हैं।

Based on paper presented at the National Seminar on Science Communication through Creative Genres, Feb. 20-23, 2008; Dehradun (Uttarakhand).

आज हमने विज्ञान एवं प्रौद्योगिकी के क्षेत्र में बहुत सफलताएं हासिल की हैं लेकिन इन उपलब्धियों में वैज्ञानिक दृष्टिकोण की उपयोगिता को भी कम नहीं आंकना चाहिए। कोई भी देश प्रौद्योगिकी दृष्टि से कितना भी शक्तिशाली क्यों न हो जाए लेकिन अगर वहां के लोग वैज्ञानिक दृष्टि से पिछड़े हैं तो वह सदैव समस्याओं से घिरा रहेगा और वहां का वास्तविक विकास सम्भव नहीं होगा। अतः वैज्ञानिक दृष्टिकोण विकास की आधारशिला है। इसे परिपक्व बनाने में समय-समय पर संचार माध्यम अपनी महत्वपूर्ण भूमिका निभाते आए हैं, और ये सिलसिला चलते रहना चाहिए।

यदि देखा जाए तो समय के साथ-साथ अभिव्यक्ति और भाव सम्प्रेषण का विकास भी होता रहा है, जिसने संचार के नए-नए साधनों का विकास किया है। विज्ञान नाटक भी उनमें से एक हैं। नाटक, साहित्य की वह दृश्य विधा है जिसमें अभिनय, नृत्य, संवाद, आकृति, वेशभूषा और संगीत के माध्यम से अलौकिक आनन्द की अनुभूति की जाती है और विषय वस्तु को प्रभावी रूप से संप्रेषित किया जाता है। समकालीन सामाजिक, वैज्ञानिक और मानवीय गतिविधियों, समस्याओं और विचारधाराओं को प्रतिबिम्बित और अभिव्यक्त करने की कला के साथ-साथ समाज में वैज्ञानिक दृष्टिकोण के विकास पर बल विज्ञान नाटकों में समाहित रहता है।

उद्देश्य

भारत में जिस तेज़ी से वैज्ञानिक विकास प्रारम्भ हुआ उसी के साथ विज्ञान लोकप्रियकरण के प्रयासों में भी तेज़ी आई जिसमें मुद्रित माध्यमों की आधार भूमिका रही। तत्पश्चात्, प्रसारण माध्यमों में रेडियो ने अपनी महत्वपूर्ण भूमिका अदा की और लोक माध्यमों में नाटक-नौटंकी ने विशेषतः ग्रामीण क्षेत्रों में अपनी पकड़ मज़बूत की है जहां कि असली भारत बसता है।

विज्ञान-प्रौद्योगिकी, स्वास्थ्य-स्वच्छता और पर्यावरण जैसे कई मुद्दों पर आधारित विभिन्न समूह वर्गों को लक्ष्य बनाकर समय-समय पर विभिन्न जागरूकता नाटकों का आयोजन किया जाता रहा है। देश में वर्ष 1992 में भारत जन विज्ञान जत्था के आयोजनों के साथ विज्ञान नाटकों ने जोर पकड़ा जो आज एड्स जागरूकता के लिए चलाई जा रही “रेड रिबन एक्सप्रेस” तक बखूबी जारी है।

ऐसी जागरूकता हेतु नाटकों की पहुंच सामान्य जनमानस तक कितनी है और किस विषय से जुड़े नाटकों के आयोजन को अधिक बल दिया जाता है, इस शोध पत्र में इसी का अध्ययन प्रस्तुत किया गया है।

कार्यविधि

उद्देश्यों के अन्तर्गत शाहजहाँपुर के शहरी और ग्रामीण क्षेत्र के लोगों के बीच दो वर्गों में पूर्व निर्धारित प्रश्नों पर आधारित सर्वेक्षण किया गया और उनके उत्तरों का विश्लेषण किया गया।

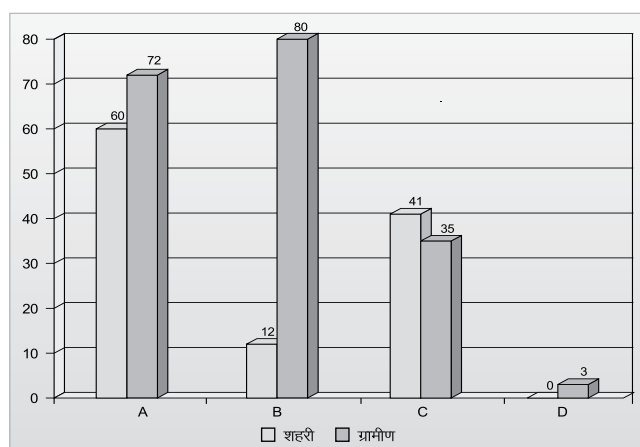
सर्वेक्षण दो विषयों पर आधारित था, पहला नाटकों की पहुंच और दूसरा, नाटकों की विषय-वस्तु। उक्त दोनों वर्गों से 100-100 लोगों को सम्मिलित किया गया। अन्त में इन दोनों वर्गों की तुलना कर विश्लेषण किया गया।

विश्लेषण

सर्वेक्षण के पहले विषय, सामान्य जनमानस तक नाटकों की पहुंच पर नज़र डालें तो पाएंगे कि शहरी क्षेत्र में नुककड़ नाटकों की पहुंच 60 प्रतिशत है जबकि ग्रामीण क्षेत्र में 72 प्रतिशत है (देखें चित्र 1)। रेडियो को सुनने वाले शहरों में मात्र 12 प्रतिशत है जबकि गांव में ये संख्या सबसे अधिक 80 प्रतिशत है। रंगमंच आधारित नाटकों का प्रतिशत शहरी क्षेत्र में 41 है जबकि ग्रामीण क्षेत्र में 35 प्रतिशत है। वही नौटंकी शहरी क्षेत्र में शून्य पर हो तो ग्रामीण क्षेत्र में 3 प्रतिशत है।

चित्र 1: शहरी और ग्रामीणजनों तक नाटकों की पहुंच

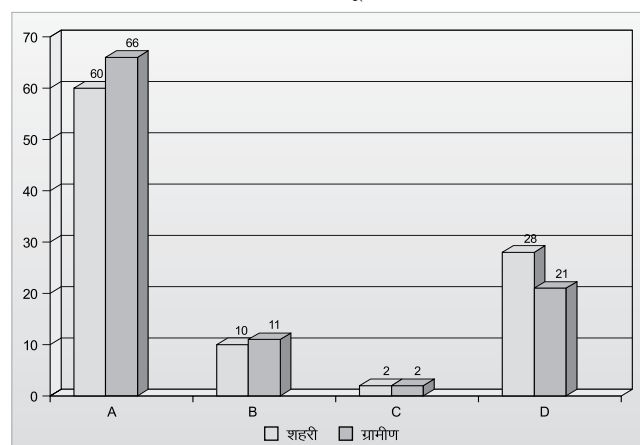
A-नुककड़ B-रेडियो नाटक C-रंगमंच D-नौटंकी



यदि नाटकों की विषय वस्तु आधारित प्रस्तुतिकरण पर दृष्टि डालें तो पाएंगे कि स्वास्थ्य एवं स्वच्छता विषय पर शहरी क्षेत्र में 60 व ग्रामीण क्षेत्र में 66 प्रतिशत, पर्यावरण विषय पर शहरी क्षेत्र में 10 व ग्रामीण क्षेत्र में 11 प्रतिशत है, अंधविश्वास उन्मूलन पर शहरी क्षेत्र में 2 और ग्रामीण क्षेत्र में भी 2 प्रतिशत विषयों पर बल दिया जाता है (चित्र 2 देखें)।

चित्र 2: विषय वस्तु का प्रस्तुतिकरण

A-स्वास्थ्य एवं स्वच्छता B-पर्यावरण
C-अंधविश्वास उन्मूलन D-अन्य



निष्कर्ष

यदि आंकड़ों पर नज़र डालें तो पाएंगे कि सामान्य जनमानस तक विशेषतः ग्रामीण वर्ग में रेडियो नाटकों की पहुंच सर्वाधिक है और नुककड़ नाटकों की पहुंच दोनों, ग्रामीण एवं शहरी वर्गों में है जबकि रंगमंच तक पहुंच बहुत कम लोगों की है। आंकड़ों से लगता है कि नौटंकी की अस्तित्व खतरे में हैं यह शहरी क्षेत्र से तो लगभग लुप्त हो चुकी है लेकिन ग्रामीण क्षेत्रों में भी इसकी पहुंच नाम मात्र की है।

नाटकों में किस विषय को सर्वाधिक प्राथमिकता दी जा रही है, यदि इसके विश्लेषण के लिए आंकड़ों पर नज़र डालें तो पाएंगे कि ग्रामीण एवं शहरी दोनों क्षेत्रों में स्वास्थ्य एवं स्वच्छता विषय पर अधिक बल दिया जाता रहा है। इसमें पर्यावरण विषय दूसरे स्थान पर है और अंधविश्वास का उन्मूलन कर वैज्ञानिक दृष्टिकोण पर बल देने वाले विषयों का प्रतिशत सबसे कम है। अतः इस विषय पर नाटकों के लेखन और प्रस्तुतिकरण की बड़ी आवश्यकता है।

यदि देखा जाए तो वर्ष 1992 और इसके बाद आयोजित 'भारत जन विज्ञान जत्था' के समय विज्ञान नाटकों के आयोजनों पर प्रमुखता से बल दिया गया था, लेकिन 1999 के बाद जत्था गतिविधियां बंद होने से विज्ञान नाटकों के आयोजन भी कम होने लगे। हालांकि वर्ष 1994 को वैज्ञानिक जागरूकता वर्ष घोषित किया गया था लेकिन विज्ञान नाटकों को उतना बल नहीं मिल पाया जितना कि विज्ञान जत्थे के दौरान मिला था।

आजकल एड्स जागरूकता के लिए चलाई जा रही 'रेड रिबन एक्सप्रेस' में एड्स जागरूकता हेतु नाटकों के कई दल रहे हैं। इसी तरह विज्ञान रेल, विज्ञान मेल और आजकल विज्ञान जागरूकता के लिए चलाई जा रही 'साइंस एक्सप्रेस' जैसे कार्यक्रमों में भी नाटकों को कार्यक्रम का अभिन्न हिस्सा बनाने की आवश्यकता है। इस विधा को विज्ञान के प्रचार प्रसार व समाज में वैज्ञानिक दृष्टिकोण के विकास में जितनी जल्दी हम उचित महत्व दें उतना अच्छा होगा। ■

Status and Problems of Science Communication for Environmental Protection of Mines

Dr. A. K. Srivastava

CPWD Bungalow 12/1, Seminary Hills, Nagpur (Maharashtra)

Mineral exploitation in the country is inevitable to balance export trade, supply crucial mineral raw material to core sector mineral based industries; create job opportunities and ensuring regional development of remote rugged areas for socio economic upliftment of masses. Therefore, before and after Indian independence, large scale mining for fuel minerals (coal, lignite, petroleum and CBM) metallic, non metallic industrial, atomic and minor minerals has been taken up in India to ensure industrial development of the country and realise the socio economic aspirations of nearly 110 million Indians.

Large scale mining of minerals is interwoven with impacts on regional environment and ecology which can be both in negative and positive directions. With practices of scientific mining and simultaneous rehabilitation of affected land surfaces, its negative impact on environment can indeed be minimised, both at macro and micro levels. Yet organising an effective optimal and two way scientific communication process and dialogue between planners and administrators of mining projects on one hand and local and affected community on the other is crucial and necessary.

Environmental protection of mines and phases of operation

A typical mining project develops through following phases of operation.

1. Mineral exploration and baseline studies – Under this phase the mineral resources/reserves are established in specified areas in terms of nature, type of mineralisation, grade, characterisation and feasibility of mining and status of environment existing in pre mining phase. These operations

are carried out through preliminary and detailed exploration processes.

2. Mine leasing and mine development – This operation is undertaken after pre mining feasibility, Environment Impact Assessment (EIA) and preparation of Environment Management Plan (EM). The process involves obtaining mining lease and developmental opening of an open cast or under ground mine by drilling, blasting and other mechanised operations so that the mine is rendered ready to produce minerals scientifically.
3. Scientific mining operations – This phase involves carrying out scientific mining in the mineralised property from one end of mining lease to the other thus inflicting least damage to the environment and ecology. The scientific mining also involves developing an eco-friendly process of ore handling, ore beneficiation, smelting or end use of the mineral.
4. Post mining reclamation and rehabilitation of mined out areas – This final phase of mine closure involves developing and implementing an eco-friendly reclamation and rehabilitation package. The post mining area requires to be handed over to the community in near original and natural habitat which can be diverted to original or better and improved land use.

Scenario of environmental protection in India

In India through the sincere efforts made by statutory government departments like Indian Bureau of Mines (IBM) (Ministry of Mines), Directorate of Mines Safety (DGMS) (Ministry of Labour), Ministry of Environment & Forest (MOEF), etc., a network of organisation have been created in India in the field of environmental monitoring and protection. This has

matching involvement of various state Directorates of Mining and Geology and various associations of mine owners like Federation of Indian Mine Owners (FIMI), etc. On regional basis environment monitoring committees and mineral conservation and environmental week celebration committees have been formed in all important mining belts of the country by organisations like IBM by involving corporate infrastructure of mining companies and local community.

Environment weeks celebrations are organised at important mining belts as a regular annual event in which expert committee members inspect mines for evaluating various environmental protection measures undertaken by them during the year. Outstanding corporate performers are awarded prizes, shields and certificate. The activity culminates into a final day function in which participation of local community, opinion leaders and corporate planners is ensured amid cultural fun fare. During these environment week celebrations all out efforts are made to involve local community, opinion leaders, children, students and women-folk through various cultural and intellectual programme organised the mining belt. The concept of eco friendly mining and optimal socio economic development of the mining belt is popularised through these activities. These activities have to a large extent helped the mine management and the government agencies to dilute their negative attitude and resistance of local community towards mine developments. The community has to understand that through eco friendly mining methods, socio economic development of their area can be effectively undertaken. These events and activities therefore are essential ingredients of interactive process amongst all the stake holders of the systems.

Issues and aspects for communication

In the field of environmental protection of mines the following issues and aspects need to be addressed to the local community which is directly or indirectly affected by the environmental degradation and indeed is an issue which carries enough importance. These issues need to be addressed through an effective two way dialogue process.

1. Sustainable mine development (production process) and community participation in it.
2. Expected environmental despoliation (Environment Impact assessment) and abatement measures thereof, including management of mine wastes.

3. Optimal use of non renewable mineral commodity produced in the region (mineral conservation practices).
4. Environmental education, training and communication programmes for employees of corporate and local community.
5. Educating citizens and informing national and international authorities about processes and emission levels involved.
6. Environmental research to develop cleaner technologies.
7. Educating the community about environmental health and hygiene and procedures to reduce potential risks and liabilities from occupational health hazards, industrial toxins and industrial diseases.

Target audience for scientific communication

In such a horizon the following target audience needs to be addressed and communicated for propagating scientific message on environmental protection.

1. Planners, managers and administrators – Educating and training them on the techniques of eco development and environmental management at micro and macro levels.
2. Mines supervisors, extension workers and opinion leaders – Educating and training them to ensure dissemination of scientific knowledge among the community on environmental protection so that community does not develop any sense of having being ignored.
3. Affected population of core and buffer zones – Educating, motivating and facilitating them to utilise the available technology and resources in the most eco friendly way.
4. Common public and community at large – School children, adolescent, youth, housewives, etc., need to be educated to improve their awareness levels to utilise the eco friendly technology at its optimum to build general awareness and appreciation of modern science and technology.

Media types and tools for science communication

In the field of environmental protection of mines the following media types and corresponding tools have been effectively developed and utilised with a view to popularise concept of sustainable and eco friendly mining.

1. Press/print media—Press campaigns have been launched and special environment oriented publications like guide books, pamphlets, brochures, souvenirs, banners and slogans, etc., have been released by various project authorities.
2. Audio visual media and Electronic media – Radio and T.V. have been effectively used for propagating environmental message.
3. Information technology and Internet communication— Through special websites developed by user ministries and mining corporates, the environmental knowledge is effectively disseminated.
4. Traditional media— This media have been optimally harnessed for developing a dialogue mainly with the rural community. The tools used for this purpose include folks songs and folk theatre based presentations for popularising the concept of sustainable eco development, painting competitions for children and youth on themes like environmental protection, forest and wild life conservation, etc., slogan competitions between the corporate work force and local community and organising environmental seminars, panel

discussions and shows, etc. taking rural and colloquial themes.

Problems of mine related science communication

In the field of environmental protection of mines, the need to develop science communication does not require to be over emphasised. However, following problems are identified which delimit and retard the campaigns of eco development.

- 1._Problem and shortage of resources and funds particularly for developing and extending eco friendly techniques and promoting educational campaigns in the community.
2. Problem and shortage of skilled and trained full time manpower in communicating mining science.
- 3._Problem of co-coordinating body at national / state level.

The concept of science communication can be promoted and propagated to its optimal level in the field of environmental protection of mines if the above aspects are effectively promoted and harnessed to its maximum. ■

Commissioned Studies/Papers

Indian Journal of Science Communication encourages potential scholars to undertake short term studies/ research/surveys on specific area/topic/sector concerning S&T communication. It is expected that such studies will also lead to writing of a paper/article and can subsequently be published in *IJSC*, if found suitable. A committee of experts will evaluate and recommend carrying out of such studies. A nominal amount towards honorarium may be granted for undertaking such studies.

Proposals, including information pertaining to title of the study, scope and objectives, methodology, expected outcome, budget estimates and time schedule, etc., may be sent to the Editor, *IJSC*.

Communication of Science for Existence of Human Capital

Dr. Prabhu Thakre

According to universal acceptance it is said that Science is derived from the study of natural objects, occurrences phenomena and the event, etc. The basic approach to know about all these natural events, occurrences, phenomena, etc., was by observation and keeping the records by the then scientists and thinkers. The process of search and reasoning was in practice in that period. Therefore for all scientific and technological developments which we now practice, the main source was nature coupled with human inquisitions. The term SCIENCE can also be defined as deductions from self-evident truths. Science accepts material phenomena based on (a) observation (b) experiments (c) study and inductions.

Nature and Science

The concept of Nature and Science can be well illustrated by the following figures:

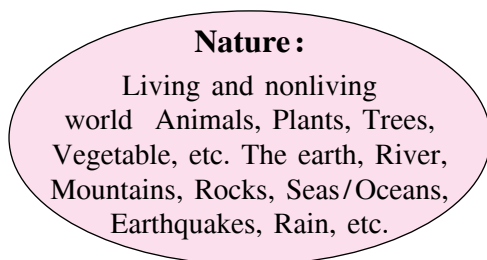


Figure 1

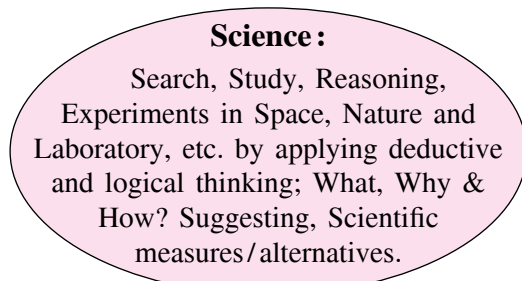


Figure 2

Having a closer look to the above figures it appears that there is an established relationship between the natural events, occurrences, etc., and the

scientific efforts devoted for the cause of knowing mysteries and hidden principles in the process and phenomena of nature. This has been observed and proved by Hutton in 1726, a scientist, who observed the movement and spread of sea water for many years and its effect on the objects and surface of the earth. This scientific search was known as principle of uniformitarianism, i.e., present is key to the past.

India has very rich cultural heritage with respect to nature, its factors and services to the society. The woods and vegetables as well as the greenery were given due importance vis-a-vis human life. The great saints and kings also understood the importance of nature vis-a-vis the people. They educated the masses in protecting and preserving the nature, to enrich the physical conditions around them.

Communication

Communication is one of those human activities that every one recognises. Communication is talking to one another, spreading information, it can also be a style of living. It may be written or spoken, verbal or non verbal, pictorial or graphic. The essential ingredient in a dynamic society is communication. A society can be defined as people in communication. In simple words communication can be defined as the act of transmitting information, ideas, attitudes and views from one person to another. We are all involved in communication in daily life for one or another reason.

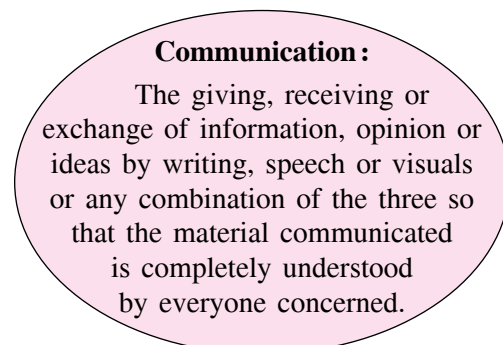


Figure 3

The process of communication requires source/ sender, message, transmitter, the channel and the receiver at another end. It is expected that to have a clear and meaningful communication all the factors involved in communication process be without any noise or obstacle.

Communicating science

The aim of the present paper is to understand the messages of natural occurrences, events, etc., in the form of scientific information and to communicate the same to the society to develop searching mind, observation, thinking, reasoning, etc. in scientific manner and practice it in daily life. The lack of scientific attitude among the masses, becomes the hurdle in the way of developing consciousness among the citizens of the Indian society. This may place the society in danger as they tend to ruin the natural wealth of the nation.

The study of science develops habit of observation, search and scientific reasoning with a practical benefit to the concerned in his daily life. It will help to control people from spoiling and ruining the rich natural wealth in India. The heritage of natural wealth has to be preserved by every member of the Society. It will be worth to remember the message of Rousseau a lover

of natural and educationist – “Every thing is good as it comes from the author of the nature, but everything degenerates in the hands of man.”

In the light of the above discussion the paper wishes to widely spread following messages of science communication.

1. Man is the creation of nature.
2. Without rich natural wealth human life cannot prosper.
3. The citizens of countries having rich natural wealth and resources are enjoying healthy and prosperous life.
4. The protection and preservation of natural wealth help scientific and technological developments.
5. The scientific development does desire good returns in every aspect of human life with respect to scientific, technological, educational and economic sectors.
6. Nature demands: 1. Protect me 2. Preserve me 3. Enrich me 4. I am for your good.
7. Science desire: 1. Fully developed human capital 2. Careful observation of everything 3. Well developed habit of reasoning 4. Use for the welfare of human beings. ■

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Please keep us informed of your latest mailing address, in case you have moved or planning to move from your present address, so that you do not miss even a single issue of *IJSC*. Write to ‘Coordinator *IJSC*’.

SCIENTOON



"He is a unique frog. Now I got the secret of his unnatural and unusual sound. Look! He is sitting on the Taxus tree, which gives a very effective anticancer drug."

ECOFRIENDLY SUSTAINABLE TECHNOLOGY FOR TAXOTERE: ANTICANCER DRUG

Taxol (paclitaxel), a potent anticancer drug for ovarian and breast cancer is obtained by the extraction of stem bark of the tree *Taxus wallichiana* found in the upper reaches of Himalayas, Kashmir, Sikkim Himachal and Arunachal Pradesh.

Taxotere is water soluble and twice active than taxol. It is obtained through semi synthesis from 10-decaetylbaccatin-III(DAB) from the needles of taxus.

Taxus needles are the renewable source which will save the slow growing endangered taxus tree.

Jefferson Fellowships

The Jefferson Fellowships provide print and broadcast journalists from the United States, Asia and the Pacific Islands with the unique opportunity to gain on-the-ground perspectives and build a professional network through a one week dialogue seminar at the East-West Center in Honolulu followed by two weeks of study tour travel in the Asia Pacific-U.S. region.

The East-West Center, which awards the fellowships contributes to a peaceful, prosperous and just Asia Pacific community by serving as a vigorous hub for cooperative research, education and dialogue on critical issues of common concern to the Asia Pacific region and the United States. The Center serves as a national and regional resource for information and analysis on Asia and the Pacific. It provides a meeting ground where people with a wide range of perspectives exchange views on topics of regional concern. Since the Center's founding in 1960, close to 50,000 people have participated in its programs. Many of these participants now occupy key positions in government, business, journalism and education in the region.

The East-West Center is a public, non-profit national and regional research and education institution with an international board of governors. About half of the Center's funding comes from a U.S. government appropriation and the rest from private foundations and agencies, media organizations, individuals, corporations, and a number of Asian and Pacific governments.

Purpose and content

The Jefferson Fellowships program was launched in 1967 to enhance public understanding through the news media of cultures, issues and trends in the Asia Pacific region, broadly defined as Asia, the Pacific Islands and the United States. The long range goal is to help news organizations build staff expertise about regional concerns and trends, so that their readers, viewers and listeners may be better informed.

The Fellowships provide the participating journalists with a wide range of perspectives through dialogue with professional colleagues, participation in seminars and meetings with business and government decision-

makers, scholars and students, social activists, cultural analysts and others. These contacts, and a network of more than 500 former Jefferson Fellows, provide participants with resources on whom to call when they plan, assign, edit and produce news coverage involving or affecting the region.

The first week of the program consists of dialogue among the fellows, including a short seminar led by each fellow; lecture discussions with East-West Center researchers and other experts; and field visits. This will be followed by a study tour to cities in Asia and/or the United States.

Professional exchange

One essential element of this professional experience is the journalist-to-journalist exchange. Central to this is a presentation that each Fellow will give to his or her fellow participants. Each Fellow is required to prepare and submit four weeks before arriving at the Center a short paper (1,000–1,500 words). The paper should address a significant issue in the participant's country that is relevant to the theme of the program and discuss how the country—at the government, private sector and/or sociocultural level—is responding to the issue. The Jefferson Fellowships coordinator will work with invited fellows to develop a series of presentations relevant to the theme.

Each Fellow also will make an oral presentation (approximately 15 minutes) based on the previously submitted paper and participate in discussion of his or her topic.

The purpose of the presentations is to tap the education and experience of participating journalists in ways that will be professionally useful to fellow participants as they study, assess, and report in their media on the themes of the program and the Asia Pacific region.

Study tour travel

After one week in Honolulu, all of the Fellows will travel together to Monterey and Palo Alto, CA; Boulder, CO and Washington, DC for a 15-day program of meetings and visits. The East-West Center will coordinate the

travel segment of the program, working with on-the-ground partners in each city as well as its network of alumni, including former Jefferson fellows, who often volunteer to host, guide and advise traveling fellows, and to arrange appointments and interviews.

The Fall 2009 Jefferson Fellowships program

Subject : The Right Climate for Confronting Climate Change?

Date : October 25 – November 14, 2009

Location : Monterey and Palo Alto, CA; Boulder, CO; Washington, DC

The new United States presidential administration has increased attention to climate change in advance of the upcoming United Nations Climate Change Conference to be held in December 2009. With this backdrop, the Fall 2009 Jefferson Fellowships program will explore the ability of U.S. domestic and foreign policy to confront the important economic challenges and opportunities involved in addressing climate change and its consequences. While near-term costs may affect the livelihoods of Americans already struggling in the current U.S. recession, addressing climate change also presents opportunities to strengthen important parts of the economy and create jobs. In addition, the Fall 2009 program will examine how the issue of climate change may serve as a way for the United States to rebuild partnerships and alliances around the world and to bolster national security.

The program will begin in Honolulu with one week of discussions, field visits and participant presentations that explore the challenge of climate change throughout the Asia Pacific-U.S. region. Participants will share impacts, responses and policy challenges from the

perspectives of their own countries. The study tour will focus on policy challenges and opportunities for the United States through visits to key destinations on the U.S. mainland.

Working print, broadcast, and online journalists in the United States, the Pacific Islands, and Asia are eligible to apply. A minimum five years of professional experience is preferred. Applicants must have the ability to communicate in English in a professional, multi-cultural environment.

In addition to the application form, applicants must also include the following:

- A letter outlining your issues of interest, a brief description of your news organization, and what you expect to accomplish if an award is granted. Please suggest topics you propose to address in your paper and presentation at the East-West Center (maximum three pages, double-spaced, please).
- Names, addresses, phone/ fax numbers and e-mail of three people who may be contacted by the Center as references. Two of these references should be people outside your news organization.
- A letter of recommendation on official letterhead from your supervisor describing your suitability for the Fellowship and the benefit the organization hopes to derive from your participation in the program.
- The “Employer’s Statement of Support” form completed by your employer (third page of application form).

Details can be obtained from the website:
<http://www.EastWestCenter.org/jefferson>. ■

To Our Readers

Indian Journal of Science Communication invites readers’ views and critical comments on any of the aspects of the journal. Suggestions for further improvement in presentation of the journal and its contents are also welcome. Selected letters would be considered for publication under the column ‘*Letters to the Editor*’.

News

9th National Science Fiction Congress held at Puducherry

Indian Association for Science Fiction Studies (IASFS) with the support of Vigyan Prasar organised its 9th National Science Fiction Conference at Puducherry on 8-9 December, 2007. It is to be recalled that 8th National Conference was held at Aurangabad (Maharashtra) last year. Viewing the importance of the job of the IASFS, poised and dedicated to the cause of proliferation of scientific temper especially among young generation, Vigyan Prasar extended its support to IASFS from last year.

Since the IASFS has adopted the science fiction as a medium to create an awareness for science, it deserves a special note of appreciation.

Prof. L. Kannan, Vice Chancellor of Thiruvalluvar University, Vellore inaugurated the conference. In his address, he emphasised that science fiction story is not meant for scientists alone, as it is commonly presumed. It should be read by all. This genre is formed after an intrinsic bond between science and literature. He said no other literary form has given so much importance to science as science fiction. Science fiction would help attract young minds and encourage them to opt for scientific studies. Science fiction is useful in the inculcation of scientific attitude in the society, he added.

Prof. P. Balaswamy, ex Head of English Department, Pondyicherry University while delivering the key note address at this conference said that sci-fi is the marriage of the science and literature. He quoted a line from the poetry of John Keats 'Beauty is truth, truth is beauty'. He said that this beautiful line is relevant to the case of sci-fi also. In this, truth stands for science and beauty for humanities.

Quoting the writer C. P. Snow, he said the mark of a cultural and educated person in ancient times was inseparably linked-up with his ability to be able

to read novels and know science and mathematics as well. The master of Greek philosophy Plato had a famous line inscribed on the gate of his Academy 'Let no one who is not a geometer enter'. Sci-fi attempted to blend science with literature, he said, adding that sci-fi was how one explained concepts from science using language and style taken from common man's life and society.

A book entitled 'Understanding Science Fiction' authored by Dr. M. H. Srinarhari and Dr. K. S. Purushothaman was released on this occasion. Origin, history, various principles, concepts and revolutions of this genre are documented in this book.

In the first session (Science in sci-fi) Manish Mohan Gore, Dr. H. Kalpana and Dr. Binu Zakaria presented their papers. The session was chaired by Dr. Sujatha Vijayaraghavan.

Second session named 'Science Fiction Today' was chaired by Prof. Palanivel R. Dr. P. K. Mukherjee, Miss Zahira Bano and Miss Zuligah presented their papers.

On 9th December in third session (Story Reading), three science fiction stories were read. Dr. Yashwant Deshpande, Dr. R. S. Bhoosnurmath and Dr. Paneerselvam read their sci-fi stories. The session was chaired by Dr. N. Natrajan, head of English Department, Pondyicherry University.

"Science cannot provide inner solace but after blending with literature it can do so. Sci-fi gives wings to the imaginations of invention. It works as a precursor to the future. So, this genre should be encouraged everywhere", Prof. J. A. K. Tareen, Vice Chancellor of Pondyicherry university said in his address. After his speech, he switched on the video conference replay with Prof. James Gunn, an authority of sci-fi from USA (session IV). In the fifth session covering 'Science Today', six papers were

presented. Paper presenters were S. N. Banerjee, Manoj C. R., Mrs.V. Prashant Kumari, Dr. Paneerselvam, Dr. Michael Vishwamitra and S. Umashankar. Dr. Y. Deshpande, renowned Marathi sci-fi writer chaired this session.

Session VI focused on Tamil sci-fi was chaired by Dr. Babu Abraham, Dean, Humanity Studies, Pondyicherry University. Four participants namely P. Shanmugavel, Dr. Arivuna mbi, Miss T. R. Muneera and C. Arun presented their papers.

Session VII covered three papers presented by (Manish Mohan Gore) Raju Parghi, Miss Lily Sharmila and Vishnu Patil respectively. Dr. Subodh Mahanti chaired this session.

The conference saw all the leading lights of science fiction writing sharing their views and perceptions with each other. Such events surely and steadily help in the progress of the subject which is so unique and involving. ■

(Manish Mohan Gore)

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* Overseas subscribers can send subscription through Bank Transfer (Account Number 5008, State Bank of Travancore, Aliganj Branch, Lucknow - 226024, India) or through International Money Order to ISCOS at the address given above.

Forthcoming Events

Scicom 09 – Education, dialogue or event? Challenges for a target group oriented science communication

*November 16-17, 2009, Vienna Institute of
Technology, Vienna*

Scicom 09 is the second international and transdisciplinary conference on the topic of science communication in Austria, initiated and realised by science 2 public (www.science2public.at) in cooperation with the Institute of Science Communication and Higher Education Research (University of Klagenfurt, www.uni-klu.ac.at/wiho) and the Vienna University of Technology (www.tuwien.ac.at).

Objectives

1. Interprofessional and transdisciplinary reflection among the various players in science communication: scientists, media representative, communicator, scholars and policy makers.
2. Analysis of communication processes and knowledge transfer among the mentioned players in science communication.
3. Illustration and examination of activities and formats in science communication with regard to their differing target groups.
4. Development of concrete recommendations for efficient, target group-orientated activities in science communication.

Main issues

SciCom09 addresses to the various players and differing target groups in science communication and seeks for successful activities and formats. Submission on current issues concerning science communication are appreciated as well.

In particular SciCom–09 deals with:

1. Activities and concepts in science communication: Which ways of knowledge transfer will be taken nationally and internationally in the future? Which activities and formats performed well (bad) in which contexts? Which setting can be established to value the success or failure of communication strategies? Which conceptions of responsibility and trust undergo the several practises of communication?

2. Target groups in science communication focusing children and adolescents: Which recipients receive which messages in which way? Who seeks for which topics?

Which way of knowledge transfer is successful and reasonable?

How can we deal with differing target groups: educational, experience-driven, participative, conversational, gender-specific?

3. Players in science communication and their interests: How are which players acting and in whose interest? Which rules, inherent to the system, are linked to these interests and enable or disable which communication process among which persons?

Target groups

The call for papers addresses to scientists as well as to media representatives, communicators, scholars, policy makers, students, and every other person who operates between science, media, education and cultural work.

Contributions

Please submit your contribution in form of speeches, discussion rounds, workshops, or in any other form of demonstration. Interactive and dialog orientated formats are highly appreciated. Furthermore, there is the possibility to present a whole panel. In that case you have to organise a two-hour program in course of the conference. Please outline a first draft in your submission.

Contact

E-mail: kohlbauer@science2public.at

**International Conference on Development
Communication in the Era of Globalisation**
*July 9 -11, 2009, The School of Media Studies
Loyola College, Chennai*

The Global Communication Research Association (GCRA) the organise of the conference is an international communication research association, founded around the turn of the millennium to cater to the global south. It has conducted conferences in Sydney (Australia), varanasi (India), Guangzhou (Cina) and Bangkok (Thailand) in the past.

Sub-themes

- Media and MDGs
- Science Communication
- Media and Environment
- Media and Gender
- Media, Democracy and Human Rights
- Alternative and Community Media
- Asian Perspectives on Communication
- Agricultural Communication
- Expert Systems in Extension science
- Diffusion and Adoption
- ICT for Information Support
- Communication Support for Market-led Extension

GCRA brings out a journal, *Journal of Global Communication* twice a year. Selected papers of the conference will be published in the journal.

Host Loyola College is a 75-year-old institution of higher education. It has strong School of Media Studies. The school offers BSc (Visual Communication), MSc (Visual Communication), MA (Media Arts) and PHD (Communication). Another wing of the college, the Culture and Communication Centre, takes to grassroots activism in communication. The college also has a campus community radio.

Contact

The registration fee with a hard copy of the registration form and the abstract shall be posted to:

Henry Victor
Head, Department of Visual Communication
School of Media Studies
Loyola College, Numgambakkam
Chennai 600034 (India)

6th World Conference of Science Journalists

July 2, 2009, London (UK)

WCSJ2009 is the only conference organised by science journalists for science journalists and other communicators from all over the world. The programme includes networking, plenaries, debates, workshops and new briefings.

Key objectives

- Raise the quality and impact of science journalism worldwide
- Share excellence in independent journalism
- Compare experiences with counterparts from developed and developing countries

- Promote professional development
- Encourage new partnership
- Report on the latest advances in science and technology

Further details about registration can be had from:
<http://www.wcsj2009.org/delegates.php>

Australian and New Zealand Communication Association (ANZCA) Conference 2009

Theme: Communication, Creativity and Global Citizenship

July 8-10, 2009; Queensland University of Technology, Creative Industries Precinct Kelvin Grove, Brisbane (Australia)

Introduction

Communication exists as an everyday social practice, as a skill or art applied in a range of context (business, politics, entertainment, etc.), as an application of media technologies to reach audiences and communities, and as an interdisciplinary field for teaching, research and scholarship, and community engagement. As creativity is increasingly sought as a socio-cultural practice whose application extends beyond the arts to all aspects of economic and social life, new challenges are being presented for the application of communication in a range of contexts.

Digital media technologies enable new modes of social networking and participation that challenge the sender-receiver, producer-consumer orthodoxies of 20th century mass media and mass communication. Meanwhile, the challenges of globalisation and multicultural societies are presenting both the need and the opportunity for new form of citizenship that cross national boundaries. These challenges raise questions of global citizenship and public communication space that require new attention to be given to questions of global media ethics and intercultural communicative capacities.

About ANZCA

The Australian and New Zealand Communication Associations (ANZCA) is a professional association for teachers and researchers in the diverse disciplines of communication.

The purpose of the Australian & New Zealand Communication Association is to provide a means by which people with interest in communication may share their knowledge and experience for the advancement of communication as a significant area of study in contemporary society. The ANZCA conference is an

annual event held in July in different cities in Australia and New Zealand.

The 2009 ANZCA Conference (ANZCA09) will be held from 8-10 July at the Creative Industries Precinct, Kelvin Grove campus at Queensland University of Technology in Brisbane. The conference theme will be Communication, Creativity and Global Citizenship.

Themes

ANZCA09 welcomes papers from across a range of academic disciplines, including-but not exclusive to-advertising; business and marketing communication; communication studies; digital media and Internet studies; film, media, radio, and television studies; journalism; organisational and interpersonal communication; public relation; and the creative, visual, and performing art. We particularly welcome the contribution of creative and professional practitioners, as well as those involved in leading-edge research in relevant academic fields.

The ANZCA09 Conference is particularly seeking papers and panels that:

- Engage international and comparative research perspectives;
- Address questions of intercultural communications media and professional practice, including teaching and pedagogical practice;
- Challenge and work across disciplinary boundaries and established methodologies;
- Critically address the role of communication in creative problem-solving;
- Consider the implications of social networking media and participatory media cultures in challenging the dominance of the 20th century mass communications.

For more information visit
www.anzca.net

New Media Technologies and Freedom of Expression

May 3-4, 2009; Kathmandu (Nepal)

The 'freedom of expression' as safeguarded by the Universal Declaration of Human Right, Article 19 has consistently been subject to intimidation by various social, political and economic actions in the sub-continent of South Asian democracies in the past few years. Lately in South Asian countries like Nepal,

Sri Lanka and Pakistan the press has been attacked, journalists assassinated, threatened and intimidated in their endeavour to uphold the principles and ethos of freedom of press and freedom of expression.

Though dismal the situation maybe with press freedom and freedom of expression in South Asian countries, the new media technologies such as the internet, hand-held devices (cell phones, PDAs) and wireless devices, and their applications like citizen journalism, blogs, Youtube and so on have provided promising opportunities to uphold freedom of press and freedom of expression in the sub-continent and elsewhere.

In this context of opportunities provided by new media technologies, to commemorate the World Press Freedom Day (3 May, 2009), Panos South Asia (PSA) is organising a two day sub-regional conference 'South Asia Conference on New Media Technologies and Freedom of Expression' in Kathmandu. The conference aims to provide a forum for practitioners of new media technologies and freedom of expression for knowledge sharing and fostering a regional solidarity.

Interested individual and institutional practitioners, researchers, academicians and related others from South Asian countries and elsewhere, in this regard are requested to submit an abstract (not more than 500 words) on three categories of:

- New Media Technologies and Mainstream Media;
- New Media Technologies and Citizen Journalism;
- New Media Technologies and Freedom of Expression/information.

In the first category the papers should address the issues of how new media technologies have been applied in the context of upholding press freedom in mainstream media practices. In the second category, submitted papers should address the issues of new media and citizen journalism and how it upholds freedom of expression/ information. And the last but not the least category, the papers should discourse the overall issues of new media technologies and freedom of expression/ information.

Papers submitted shall be selected on the basis of the accuracy to address and discourse the themes categorised in the preceding paragraph.

For details contact:

E-mail: prsa@panoxsouthasia.org ■

Indian Journal of Science Communication

Instructions to Contributors

Indian Journal of Science Communication accepts original papers in the area of science communication for publication. Besides, articles on related issues; write-ups on science communication skills, innovative ideas to communicate science, cartoons (scientoons) are also published.

Books, monographs, copies of TV and radio programmes are accepted for review. News, views, opinions, letters to the editor and suggestions on various aspects of communicating science are welcome for inclusion.

All above communications can be either in Hindi or in English language. Manuscript preparation is described below :

General: Manuscripts should be submitted in hard copy as well as electronic form. Good quality printouts (two copies) with a font size of 12 pt. are required. The pages should be numbered. Print outs must be double spaced with margin on one side of the white paper. The corresponding author should be identified by an asterisk (include Email address). Electronic form of the manuscript should be submitted in a floppy (3.5 inches, 1.44 MB). Text should be entered using word processing softwares such as MS Word (IBM compatible). For illustrations, Corel Draw, Harward Graphics or any compatible format software (BMP, GIF, JPG, PCX, TIF) may be used. Label the floppy disk with the author(s) name(s), the word processing package used, software for illustrations and the type of computer. In case of any discrepancy between the electronic form, and hard copy, the latter will be taken as the authentic version.

Order of Text : The matter should be arranged in the following order : Title, Name(s) of author(s), Affiliation, Abstract (in English and in Hindi), Keywords, Main text, Acknowledgements, Appendics, and then References. The abstract, tables, figures and captions for figures should be typed on a separate page. In electronic form, figures or tables may not be imported into your text.

Units : The use of SI units in papers is mandatory. Commonly used units may also be given in parentheses following SI units.

Abstracts : Should not usually exceed 200 words in each language.

Key words : Five or six in alphabetical order should be provided.

Acknowledgements : Include only special nature of assistance. No routine 'permissions' to be mentioned.

References : References for literature cited in the text should be given at the end of text, numbered consecutively. In the text, the reference should be indicated by a number placed above the line (superscript). If done so, the reference should be listed in that order. References should be given in the following form :

Vilaniyam J V, Science Communication and Development, Sage Publications, New Delhi, 1993.

Kotler Philip and Zaltman Gerald, Social Marketing - An approach to planned social changes, *Journal of Marketing*, 35 (4), pp 3-12, 1971.

Even if a reference contains more than two authors, the names of all the authors should be given.

Unpublished papers and personal communications should not be listed in the references but should be indicated in the text, e.g. (Vijayan C K, Unpublished work), (Das Anamika, Personal Communication).

Tables : Each table should be typed on a separate sheet of paper not containing any text. Tables should be numbered consecutively and given suitable captions.

Illustrations : All illustrations should preferably be provided in camera ready form on white drawing paper suitable for reproduction without retouching and about twice the printed size to facilitate reduction.

All photographs charts and diagrams to be referred as figures(s), should be properly numbered and the captions should be provided on a separate sheet. The figure numbers should be marked on the back of the illustration along with the author's name.

In case of photographs, only originals should be provided, photocopies are not acceptable.

Manuscripts sent for publication should necessarily conform to the above guidelines.

Address : All contributions may be sent to :

The Editor

Indian Journal of Science Communication
National Council for Science and Technology Communication (NCSTC),
Deptt. of Science and Technology, Technology Bhawan,
New Mehrauli Road, New Delhi - 110 016, India.

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The 6th International Conference on Hands-on Science (HSCI 2009)

October 27-31, 2009, Science City, Ahmedabad 380360 (Gujarat) India
<www.hsci2009.org>

Focal Theme :

Science for All : Quest for Excellence

Sub Themes :

- 🍀 Science, Innovation and Hands-on Science
- 🍀 Science Communication through Hands-on Activities
- 🍀 Experiences in Science Fun Learning
- 🍀 Hands-on Science and Evolution of Modern Knowledge
- 🍀 Promotion of Scientific and Technological Temper

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- 🍀 Post-conference Event : Hands-on Training on Science Communication through Visuals
- 🍀 A Special Discussion on Science Communication in Developing World
- 🍀 A Special Workshop on Hands-on Science for Women
- 🍀 Interactive Hands-on Activities, Kits, Sky Watching, etc.
- 🍀 Programme to Commemorate “International Year of Astronomy 2009”
- 🍀 Showcasing India's Cultural Heritage; Folk Performances
- 🍀 Enjoy Indian Spicy Food Recipes; Heritage Walk
- 🍀 Local Visits/Excursions/Additional visits : Golden Triangle, Geer Forest, Mount Abu, Khajuraho, Shimla.

Secretariat (HSCI 2009)

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