Reg. No. KERENG/2010/35808

ISSN 2231-217 X

SCIENCE COMMUNICATOR

INTER-DISCIPLINARY JOURNAL FOR SCIENCE COMMUNICATION AND JOURNALISM

Vol. 04, Issue 01 & 02, January & June 2013

Directorate of Public Relations and Publications
Cochin University of Science and Technology
Kochi - 682 022, Kerala, India

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Yearly subscription: 200 INR (In India)
Price per copy 100 INR (In India)
E-mail: scicom@cusat.ac.in, dpr@cusat.ac.in Phone: +91 484 2577550
Edited, Printed and Published by Dr. S. Anil Kumar
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Cochin University of Science and Technology, Kochi - 682 022, India

Editorial

PRINT MEDIA AND SCIENCE NEWS

It is widely believed that science popularization can inculcate scientific temper so as to help citizens to be in the forefront of social development. Science communicators all over the world, who are the main force behind science popularization, are in an endless struggle to bring the latest developments in science to the common man.They leave no stone unturned in their effort to collect, compile and disseminate scientific knowledge. But the greatest challenge they face is when trying to get the message across.

Among the mass communication media,newspapers are the most favoured for science communication, since they offer the widest coverage.As an age-old medium which offers credibility and considerably long shelf-life, print media has reigned supreme as the first option in popularizing science. It has also enjoyed the role of opinion leader for any scientific issue related to society.On examining history, it can be seen that since the invention of the moving types by Johannes Gutenburg, social development, more specifically on the scientific front, has been greatly influenced by the communication media. The popularity of sanitation efforts, modern agricultural programmes and the green revolution is a shining proof of this influence. But as time passed, although science and technology have progressed in leaps and bounds, the print media has been perceptibly shying away from these areas.In other words, there is a marked lack of scientific news, views and articles in print media.The coverage of science in print media should in fact be directly proportional to the growth in science, but in reality, it is the reverse. Among the many reasons that can be attributed to this hesitancy on the part of the print media in giving the required coverage for science, there inevitably are certain commercial ones.

In this context I would like to invite the reader's attention to the results of a KSCSTE sponsored study conducted by the Centre for Science Communication, Cochin University of Science and Technology on Science coverage in print media and regional languages. The results were really shocking, especially when considering the

status of Malayalam, the regional language selected for the study, in a state which has attained 100% literacy. It proved beyond doubt that the space devoted for science coverage in Malayalam newspapers during 2010 was only 1.05% while their English counterparts in the state set aside only 0.7% news space for science. It also shows that Malayala Manorama, the largest circulated daily in Malayalam provides only 0.86% of news area for science coverage while Mathrubhumi, the second largest circulated daily provides 1.26%. The crux of the study was that all Malayalam newspapers shared a common lack of interest in providing space for news/views on science topics.

It is high time to study the reason for this apathy and the same should be evaluated, since no scientific study has been done in this area. An analysis of the three pillars of science communication, viz., a) scientists b) science communicators/journalists and c) readers is necessary to substantially establish the root cause of the issue. Some of the more obvious reasons are non-availability of sources for science news; inability of scientific community to translate scientific news to local languages; the compulsion faced by media persons to meet deadlines; and the competition with other news channels and the tendency to adopt soft news to fillup page space.

Scientific awareness and scientific temper can be instilled in the minds of the general public only through effective popularization of science in common man's language. But many a time, science communicators fail to synthesize the information they receive in their brains and communicate to the common man in the manner of sowing high yielding seeds in the fertile paddy fields. Science communicators should get more serious in their efforts. Of course the print and other media should play a supportive role. Scientists should also get more interested in popularizing their works rather than merely getting them reviewed by their peers. Scientific articles appearing in print media aimed at the general public should not be prepared like those for peer-review. The trick lies in the synthesis of the information and its transcription into legible and meaningful messages for the masses. The creation of scientific awareness among the public is as much the duty of media persons as that of science communicators.

Editor

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Authors who wish to contribute papers may kindly contact the editor through mail: anilvadavathoor@gmail.com / akv@cusat.ac.in or by post. Subscription queries may be addressed to the Directorate of Public Relations and Publications, CUSAT, Kochi-22 or scicom@cusat.ac.in

MEDIA RESEARCH IN INDIA THE GREAT MANY OBSTACLES

K.V. Nagaraj

Not much has been written about the status of media research in India. While most of us lament on the low quality of media research, especially the academic research, it is also imperative to understand the issues and obstacles involved in media research. There can be innumerable of them, but the present article attempts to list major problems confronted by Indian media researchers. Historically, media research is a post-Independence phenomenon. In fact, the first comprehensive attempt to record the status of Indian journalism was made by the first Press Commission of India, headed by Justice G. S. Rajadhyaksha. The report was the result of an extensive investigation across the country. However, the rigor of methodical enquiry was not there in the enquiry in absolute terms. The response from newspaper houses was not all that encouraging to the questionnaire sent.

With more than hundred public and private sector universities and institutions offering different courses related directly or indirectly to Mass Communication, the expectation is to have quality research at least in patches, here and there. Unfortunately, the situation is not heartening. The basic problem is of investment in research at the first instance. The public sector agencies like the UGC, ICSSR and NCSTC offer monetary support regularly, but the opportunities are limited. There exists no organization like ICHR or ICPR exclusively for research in Mass Communication. The situation arises out of the non-recognition of media courses as professional, unlike engineering, medicine, law and even accountancy. The research agencies that are doing research for media houses focus more on marketing issues rather than meaningful psycho-social analysis. Not that it is wrong, but the priority is different as media industry now is completely market-driven.

In addition, both professional and academic research efforts have not been able to meet the quality parameters to compete internationally.

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The data quality is always questionable, given the conditions of research in the country. Media or communication research suffers from inherent weaknesses in the area of data collection. Data collection often becomes a Herculean task. People are reticent to provide personal information related to age and income in particular. In certain instances, it is difficult to approach female respondents for information. Religious and social reasons are ascribed for such a reticent behavior. Especially in rural areas men control the information supply. Often genuineness of the information supplied is doubtful. Someone else might have answered on their behalf. Thus the accuracy of information provided always remains susceptible to doubt. The social hierarchy often dictates the information, debasing the very purpose of research. The story, perhaps, is the same in all social sciences. The quality of research depends upon the quality of researchers. In social sciences, especially in mass communication, there exists a serious dearth of expert researchers. This issue calls for preparing at least a small core group of researchers who can, in turn, train others in media or Mass Communication research. We cannot straight away borrow the research format from other social sciences because communication research is different and demands constant innovation and up gradation. Of course, the fundamentals are the same, but imitation of the process and procedure lock, stock and barrel is not warranted. The quality of both qualitative and quantitative research in communication in India is abysmal. It is devoid of any set parameter or standard. In reality, the urgent need is for enunciating definitive parameters that reflect the countryís cultural ethos. While accepting the rigour of Western application of methods, we should attempt to contribute to the development of methodology in our own way. Innovations are not easily accepted and new methods are neither invented nor discussed. A poor imitation and replication of western research efforts have been the bane of media research in India.

Intruders

Multi-disciplinary research is welcome. Unfortunately, experts from other disciplines do not have any idea of the operational aspects of media and produce research papers that have no bearing on media practices. Some of them have sneaked into media education as they could not get recognition in their own original disciplines. Exceptions are there, but rare. Their contribution to media education is superficial and insignificant. It is a dangerous trend on Indian terrain unlike the

West where the whole system recognizes only the meritorious and produces quality results.The worst aspect is that the people who are unable to make their grade in their own disciplines sneak into Mass Communication either through bureaucratic or political patronage much to the detriment of the whole discipline. The issue is further compounded by the insolence of regular media teachers.

Yet another problem area is the relevance of communication research in India hinges on the selection of topics by researchers. Most researchers prefer the beaten path and there is nothing new in what they are doing. Mostly the topics are repetitive in every aspect. The academic institutions are the culprits in churning out such research which is relevant neither to academic pursuit nor to the market.The media research sector presents a picture of an unending litany of low quality submissions.They neither have theoretical value nor practical relevance. The reason is the ineptness as well as inefficiency of academicians involved in research. Not many in India can boast of high quality quantitative research.The utilitarian aspect of statistical tests is susceptible. Reckless application of statistical tests that do not correlate with research questions or hypotheses is common. Naturally it borders on meaninglessness.The indiscriminate use of quantitative techniques without valid reasons is the major bane of communication research. On the other hand, the qualitative research suffers from serious defects.The Indian contribution to communication theories is non-existent.Whatever is written is based on hearsay and there is no theoretical background in most research efforts. Nor are there communication theories in the Indian context. As a result, we are heavily dependent upon western theories to test the Indian data. Possibly it is the same case with all other disciplines, science or social sciences, a colonial legacy and a product of western education.

The question here is of originality in research. How much original research is done in India? The answer is difficult to get. It includes even the history of journalism which has been first dwelt upon by historians and the contribution of media educators is minimal in this regard. There does not exist any comprehensive history of journalism of any Indian language apart from English.What we have is a presentation of inaccurate cataloguing of publications and people. Today historical research has expanded its scope to include socio-cultural and politico-economic factors. In other words communication research goes beyond the earlier frontiers that were limited. Qualitative

research these days opts for triangulation by making liberal use of statistics and empirical evidence. New experiments are conducted to improve the quality of media research the world over. Qualitative research borders on story telling narrative to interest even the lay reader. Similarly, the case study method has acquired new dimensions. Case study is popular in Public Relations research. Unfortunately, this change has not been noticed in India.

The shop talk of inter-disciplinary or multi-disciplinary research keeps on popping up now and again. However, efforts to promote such research have not yielded fruitful research. Media researchers so far were heavily dependent upon sociology, psychology and political science for guidance. Not much has been drawn from literature, linguistics and economics. The last one can be of immense use for quantitative studies the former two, literature and linguistics can provide a new dimension to communication research, particularly the qualitative research. Textual and discourse analyses have emanated from such attempts.

Another area that needs to be explored for research in India is of films. Though India is the largest producer of movies, very little quality research has been done. In contrast, the West has made a tremendous achievement in this field. We borrow their concepts and theories wholesale but unable to have our own theories. In fact each region in India excels in film production and has its own cultural ethos. The scope for research in film medium is vast. Those who have done research in cinema so far have not gone beyond literary aspects. The communication dimension has not been dealt with in a proper manner, as these scholars lack proper understanding of the medium. Use of technology for data collection is still an issue in India. The sight of a recorder makes the interviewee repulsive. The respondents prefer person to person talk. India being an oral society, opts for personal discussion. The human element dominates that is why the e-mails, telephone interviews and mail questionnaire do not get maximum response. The trend is changing but it is slow. The digital divide is more pronounced as people in rural areas prefer personal interaction than their urban counterparts, urbanites are technology survey and the digital universe is expanding. More than accessibility, the problem is of mindset in rural areas.

Language is another barrier in communication research in India. Since the country has more than 15 constitutionally recognised

languages, it is difficult to adopt the methods and concepts of the English language by them. This necessitates both translation and transliteration, a tough task indeed. The cultural differences in expression and language also contribute to the complex situation. Media research in Indian languages is yet to come of age, though certain stray efforts are being carried out.These efforts do not satisfy the quality parameters normally prescribed to achieve national or international standards.Whether it is English or any regional language the major issue in media research is the institutional mechanism for its promotion. In India, there exist only a few organizations for this purpose. A few of them have gone for western collaboration and some foreign research agencies like AC Nielsen have set up shops in India because of the proliferation of satellite television channels. However, a mere focus on rating would not complete the cycle of research. However, these agencies are into professional marketing area for research, not exactly the academic type although a few academicians venture into audience research.

Plagiarism

Another major issue haunting communication research is of plagiarism. Unfortunately, most social sciences in India have a very high degree of academic deception with a sizeable number of researchers indulging in duplicating the research works of others often in toto.The plague of plagiarism is spreading like a wild fire. Unethical practices have become the order of the day.There are instances of universities withdrawing doctoral degrees awarded to candidates. Doctoral research has become a sham in many universities. Material considerations have become a blot on the university research system. A strict code of conduct is needed to check such malpractices. The University Grant Commission, the apex body of higher education in India has attempted to prescribe rigid rules and regulations including course work for prospective researchers to increase the quality of research and check easy manipulation of research efforts.. How far this initiative can boost up quality research in Mass Communication is yet to be seen.

Added to the list of problems is the publication of only few research journals devoted to Mass Communication. Of them, only a couple of them are peer-reviewed. It is rather difficult to club them with international journals in terms of quality of research articles.

Probably, it will take a few more decades to achieve the standards of those journals. Even professional organisations of media persons do not encourage high quality research journalists. Most of their publications look like in-house circulars, devoid of any serious research output. The absence of linkage between academics and professional practitioners has been a major factor in creating such an unseemly situation. The need of the hour is for a collective initiative for the improvement of research standards in India. A good number of non-resident Indian scholars staying in different countries can contribute their mite to achieve the international class. Not only that, instead of blindly imitating the Western practices, efforts should be made to promote an Indian research tradition in Mass Communication, reflecting the cultural ethos of the country in addition to satisfying the needs of media houses.

The media houses that have their own training institutes, most of them unrecognized, concentrate only on production skills, neither on research nor theoretical aspects. In other words, these training courses do not conform to any academic standards. The reverse is also true. The prominent media houses like Manorama, The Indian Express, Times and others have resorted to a format suitable for polytechnic courses where intellectual inputs are given less importance. The research component is negligible, like many other courses. If Mass Communication offers project or research-based instruction, the course will get wider recognition like medicine and engineering. What we require is a meaningful blend of different research traditions to make Mass Communication research in India qualitatively reflecting higher standards. It is neither too late nor too early for suitable action from the Government as well as other agencies.

SCIENTIFIC COMMUNICATION THROUGH SOCIAL NETWORKING SITES

B. Mini Devi

1. Introduction

Social media has enabled our scientists to communicate their research findings quickly and effectively to every nook and corner of the world. Scientists are using different social media platforms depending on disciplines.The general social networking sites do not provide an environment to spread research productivity.The social networking sites meant for scientists creates an environment to attract diverse set of researchers and scientists for the sole purpose of increasing communication and collaboration in the sciences.Through these special ëboutiquesí not only scientists and researchers but teachers and students also can connect through group- discussion boards, posting of articles, daily science newsfeed, lab profiles, science forum, blogs etc. Many of these sites are updated with more recent technologies to host a free video conferencing service to facilitate long distance collaborations and science journal clubs. Scientists can keep in touch with their fellowmen who live not only within the country but also halfway across the world.Through scientific social networking sites, scientific community becomes more connected and can share or exchange ideas across disciplines.

Science is not only about collaboration but also about competition. Hence scientists are limited for sharing ideas. But most of the category believes that sharing will improve the quality of research.The development of ICTs (Information and Communication Technology) and associated tools opened a new door to the world in front of the scientific laboratories.These collaborative technologies together with open resources encourage more new innovations in research.This is known as e-Science or Science 2.0. Science 2.0 is the application of social networking technologies to the scientific process. The social web is revolutionizing the global scenario of scientific environment by interacting and sharing data and resources

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openly, especially for the management of bibliographical information and for relations between researchers.The openness of science can be divided into three main areas:

Social networks enable scientists to share resources and their work. Social Web facilitates the flow of research work in the scientific community and with the formation of research groups the rigid walls between scientists break down.These scientific platforms link people with the same scientific interests, through which they can exchange information, resources and documents.With the effective sharing of CVs, research projects, hypotheses, etc. scientific collaboration increases. These technologies may include blog platforms, wikis, social networking sites, virtual laboratories, on-line teaching systems and intranet management servers.

2. Scientific Social Networks

With the creation of specialized platforms for researchers social networks act as excellent virtual laboratories, offering all the services required by a research group: communication systems, channels for sharing resources, document storage and discussion forums.The commonly used scientific platforms are

Academia http://www.academia.edu -A successful academic social network designed to put researchers with similar interests in touch with each other, grouping them by institution, department and field of interest. It also gives access to complete texts, specialist mailing lists and job offers.The researcher can create a home page (wall) on their work, share papers, search for colleagues and acquaintances via Facebook, LinkedIn and Gmail, and follow the work of other researchers.The user can also request news alerts related to his/her field and journals of interest (over 10,000 titles). It is effectively a Facebook for teachers and scientists.

Epernicus Network http://www.epernicus.com -A social network that complements the paid services offered by this company, which specialises in software and internet solutions for research, particularly in the field of biomedicine. Researchers can set up profiles allowing them to communicate with other researchers and to create networks. Institutions and companies that want access to a fuller service can buy an Epernicus Solutions package.

Lalisio http://www.lalisio.com -A German-based academic

social network. Like other such networks, it is designed to be a meeting place for researchers from around the world, allowing them to set up a fairly complete profile, similar to a CV, organise groups and upload texts (around two million documents have been collected). Its most useful feature is the *Q-Sensei* search engine for scientific texts in English and German.

Methodspace http://www.methodspace.com -A free social network site created by SAGE publishers as a discussion area on research methods. Users can set up a profile, but it is not necessary to register to access most of the services. Its most useful features, compared with other similar sites, include the chat facility, an updated events calendar, discussion forums and a question and answers service (similar to *Yahoo! Answers*) and a good selection of resources.

ResearchGate http://www.researchgate.net -A scientific social network that allows users to create a profile and access interest groups and forums, connect with other scientists, find literature in related fields, and access job listings. Groups, of which there are over 1,100, can be public or private and can be created at any time. Each group can use collaborative software, including a file sharing tool that allows members to work together on writing and editing documents. Its most important features include a semantic search engine that operates on a database containing over 35 million scientific journal articles. Full text documents can be published and downloaded.

Sciencestage http://sciencestage.com - A webpage with a search engine that accesses videos, audio presentations and texts from a wide range of disciplines. Users can comment, tag and vote, and can search by subject matter. It has a recommendation system based on search terms and results. It includes social networking functions such as the creation of personal and institutional profiles and a messaging system. Groups can be created, although many of them are clearly false or inactive, or not particularly 'scientific'. The site features a diverse and clearly excessive amount of advertising which detracts from its usefulness. The general impression is one of disorder.

Feelsynapsis http://www.feelsynapsis.com ñ A social network that is mainly of interest due to its Spanish origins, so it contains plenty of resources in Spanish as well as in English. Workspaces for research groups can be set up, through which users can access

forums, share publications, resources and calendars and work as a social network. It also allows real time communication, with video-conferencing tools. Users must register to create a profile or join a group. Information can be public or restricted.

Academici http://www.academici.com ñ A Social network that allows users to contact authors of resources in related fields, mainly social sciences and humanities, to publish and exchange results and manage bookmarks.

Scispace http://www.scispace.com - Originated from a seminar organised by Cambridge University. Its main distinguishing feature is that access is by invitation only, like Tuenti, although it is possible to request an invitation. Allows the creation of profiles, communities, wikis and news services.

Facebook http://www.facebook.com - General social network but one which may be of interest to scientists, given its wide usage.

LinkedIn http://www.linkedin.com - A platform designed to allow people with similar educational or professional backgrounds to exchange information and ideas.

Ning http://www.ning.com ñ A platform that allows users to create their own social network sites. Researchers who want to have their own network can set one up using this well-known service, although the hosting is not free.

Twitter http://twitter.com - Although Twitter is a microblog rather than a social network, this service can be included under the social network heading as it allows users to communicate directly with the people they choose, follow the publications of people they are interested in, and share information, links, documents, etc. Contact lists can be created to group together specialists in a particular discipline.

3. Databases of scientists

Social networks are designed to bring together people working in similar scientific fields and share CVs, but they are not intended to be platforms for the exchange of documents or discussion forums for research projects.The services include databases of scientists, where researchers can post details of the institutions to which they are affiliated, their career details and their scientific publications, listed under specific branches of knowledge. Databases of scientists are

useful both for publicising researchers' work and for helping them link to people working in similar fields. They also usually contain tools that allow authors to indicate the different forms in which their names may appear in publications (attribution), a useful feature for researchers who sign using two surnames. Scientists working in related areas can be linked, allowing users to contact authors directly, follow the profiles of selected authors or sign up to alert services when a scientist adds documents to his/her profile.

Researcher ID http://www.researcherid.com Free service provided by Thomson-Reuters and therefore linked to its products and Web of Knowledge. Researchers can create a unique name with an identifying number, preventing errors and duplication in the attribution of authorship. It also provides information on publications, citations, h index etc., thereby acting as an attribution database, bringing together resources by the same author, irrespective of what form of his/her name they have been published under. These forms are supplied directly by the author, who is the best person to know all the different forms of his/her name under which documents have been published.

Connections http://info.emeraldinsight.com/research/connections/index.htm -

Emerald offers a free directory for researchers which they can sign up to in order to link with researchers in the same discipline (limited to the fields covered by the publishing group), research level and area of interest.

4. Research platforms

Research platforms offer scientists a number of facilities ranging from the creation of specific subject-based networks to options for sharing data or setting up shared document depositories. Under virtual laboratory services hypotheses can be proposed and experiments performed collaboratively with contributions from scientists from around the world. These platforms offer a range of value- added services including shared calendars, the ability to create or add blogs, generate statistics and graphics, publish results, etc.

HUBzero http://hubzero.org - HUBzero is ì a cloud, a content handling system and a Facebook for scientists, and something else againî . It allows users to share information, educational resources,

generate graphics and perform simulations, all of which can be tagged, queried or discussed with the author.

NanoHUB http://nanohub.org - *HUBzero* is a platform used to generate web sites for research, providing an infrastructure for dedicated platforms such as *NanoHUB*, which is dedicated to nanotechnology and has over 100,000 users.The hub platform uses and combines various open source technologies (Linux, Joomla, etc.) to create an environment and package of tools which are also open source. Originally created by Purdue University to replace another, simpler infrastructure (*Punch*), the service is now developed by a consortium with other institutions. The options for developing, personalising and configuring the platform are extensive, as reflected in the wide range of hubs on different subjects already up and running.

MyExperiment http://www.myexperiment.org This resource differs from other scientific social networks in that it is specifically dedicated to publishing scientific and experimental models and workflows. These process maps can be reused and modified using the site's own tool, tags added and comments addressed to the original author.

NatureNetwork http://network.nature.com -This is a platform created by *Nature*, with two specific facilities that go beyond the services provided by scientific social networks: the possibility of creating or joining local hubs for specific regions, and the possibility of creating a personalized interface with specific tools and applications, such as simulators, a tracker that alerts users to changes in contacts' pages, and an organiser. It also offers all the usual options for creating blogs, forums, interest groups, contact lists, etc.

Other research platforms

The platforms described above are those which are most widely used by the international community. There are, however, other services which are worth highlighting as they are currently growing or because they are of interest to researchers in specific fields.

Arts-humanities.net
http://www.artshumanities.net

British platform created to enable researchers in the arts and humanities to share research and projects. It allows the exchange of

information on projects, publications and conferences. Extensive information is provided on each project, with details of methodology, funding and results.

5. Collaborative tools

The Social Web offers a range of services with practical applications for research, at the planning, documentation or experimentation stages.There are a range of tools and services which can be used to share files, carry out sociological research and develop mind-maps.

Researchers need to have access to servers where they can store their documents and those working files that they wish to share with their team, who can then add documents or edit existing files. Such platforms ensure that everyone in a team is working with the correct version of a file and allows them to share amendments and additions.This type of service is extremely useful for shared projects, forms for collecting data, work plans, etc. The platforms selected allow text documents, calendar sharing, spreadsheets and presentations which users can work on jointly, i.e. all the authors involved in working on a single document will work on the same version of said document.

Google Docs http://docs.google.com
Office Live Workspaces http://workspace.officelive.com
Zoho http://docs.zoho.com
Thinkfree Online http://www.thinkfree.com.

Google Docs is one of the most useful, with a questionnaire-making facility, and is totally free, as is Office Live.The others offer different versions of the same products, for which some of them charge.

Other file sharing services

There are dozens of services that allow files to be stored and shared. Such services are normally generic rather than aimed specifically at researchers. Some of the spreadsheets and presentations to be created and offer additional services such as most widely used collaborative tools for storing files, sharing presentations or publishing documents are listed below. Given the wide range of resources available related to multimedia files and the fact that these are generally well-known, there sources selected do not include services related to images, audio or video.

Box http://www.box.net

Skydrive http://skydrive.live.com

4shared.com http://www.4shared.com

Mediafire http://www.mediafire.com

Megaupload http://www.megaupload.com

Rapidshare http://www.rapidshare.com

SlideShare http://www.slideshare.net

Zentation http://www.zentation.com

SciVee http://www.scivee.tv

Platform for sharing videos presenting scientific publications. The authors describe the methodology and results of their research. The videos may be accompanied by the presented articles.

Videolectures http://videolectures.net

Issuu http://www.issuu.com

Prezi http://prezi.com

Scribd http://www.scribd.com

Calameo http://es.calameo.com

6. Surveys and social research

Scientists use surveys for collecting data for their research projects. On-line surveys and web questionnaires have simplified the process of using these tools to collect information and transfer the data to applications where the results can be analysed. These web tools data can be exported, although this is limited to the paid-for versions in the case of some of these services. These are the globally most widely used on-line tools for carrying out surveys.

Survey Monkey http://www.surveymonkey.com
Survey Gizmo http://www.surveygizmo.com
Free Online Surveys http://freeonlinesurveys.com
SurveysPro http://www.esurveyspro.com
Google Forms http://docs.google.com

Other social research services

There are commercial platforms as well as free versions. The questionnaires can be distributed through specific websites and the data obtained to be professionally analyzed. There are free versions with limits on the number of questions, and extended versions with more options depending on the package selected.

Limesurvey http://www.limesurvey.org
Zoomerang http://www.zoomerang.com
E-surveys Pro http://www.esurveyspro.com
Kwik surveys http://www.kwiksurveys.com

7. Mind-mapping tools

Mind-mapping tools are extremely useful for the design phase of a research project, and are especially important for teams that need to plan a research methodology that will involve a large number of people. A range of platforms are available to researchers for creating and jointly editing mind-maps. Mind-mapping tools allow ideas to be linked to whatever level of detail is required. There are on-line tools that allow mind-maps to be developed collaboratively by a dispersed group of people, i.e. Web 2.0 services.

Compendium http://compendium.open.ac.uk
FreeMind http://freemind.sourceforge.net
Mindomo http://www.mindomo.com

Mindomo is designed on-line paid versions, private initiative by Expert Software Solutions, Compendium and FreeMind are downloaded free software. Compendium is provided by the Open University, although it was originally developed in the mid-90s by Ninex, Freemind is open source software developed by a number of programmers.

8. Bibliographical reference management tool

Bibliographical reference management tools may facilitate the work of compilation, systematic recording and integration of resources and research work. Bibliographical reference management tools are applications designed to handle bibliographical reference databases produced from different sources and able to create, maintain, organise and design bibliographical references according to different standards. The tools can share the same basic characteristics such as storage of bibliographical references, description of references, organisation

of references, retrieval of references, creation of bibliographical records and citation building. The tools used widely used by the scientific community are

Zotero http://www.zotero.org - Zotero is a reference management tool which runs in website environments and allows users to compile, administer, cite and share research work from any source anywhere via the user's browser. It also allows data to be used in different types of citation, report, and bibliographic record. Zotero is free software, with an open licence. It is an extension of Mozilla Firefox and only works with this browser. It has been translated into 30 languages, including Spanish. The program is web integrated and installs its own toolbar, which works with the Firefox browser. It exists in web and local versions. It is not essential to be on line to use Zotero; functions such as annotating, searching and organizing are available without going on line, using the local version. Version 2 is able to automatically update local versions on different computers, using the web version. Another interesting feature is that Zotero can create images of HTML documents. This means that, even when you are not online, you can view the whole document if you have previously generated this image. Another possibility with Zotero is that it allows you to incorporate documents (Word, PDF, PPT, etc.) in records. Version 2 also includes a very useful new feature, the automatic detection of PDF metadata. This means that if you have a number of PDF documents on your computer you can drag them to the manager and it will look for the metadata in each document using Google Scholar.

Zotero can export data to various formats: BibText, EndNote/ Ref Man, RIS, RDF and others. One of the basic functions of a reference manager is to facilitate the inclusion of bibliographical citations in the standardised formats used in research work. This can be done in two ways: citations can be included in the main body of the text or a bibliography can be added at the end of the document. Zotero has extensions or add-on programs which can be incorporated in word processors, using a toolbar with different icons to facilitate the task of citing a document in the format one prefers. As is appropriate for free software, Zotero can add a plug-in (Write & Cite) to word processors such as Open Office and Word to facilitate the addition of citations in the text and format them for inclusion in the final bibliography. Hundreds of styles are available, including APA, MLA, Chicago and ISO, and others can be suggested.

ERefworks http://www.refworks.com - RefWorks is a web-based multilingual application which allows researchers to import references from multiple information sources, include citations when writing a document, create bibliography in a wide range of formats and share information with colleagues, students and anyone else, whether they have RefWorks or not. RefWorks is a web-based application, so no software needs to be downloaded or updated; individual accounts can be accessed from any PC connected to the internet by entering a user name and password.This has advantages, in that it is always available from different sites or work stations, and disadvantages, in that if you have no internet connection you cannot access your bibliography, as there is no local version of RefWorks. RefWorks is the tool which deals most effectively with recording sources. It generates hypertext indices of authors, descriptors and journals, with the number of occurrences of each item, allowing individual items to be edited or deleted from the index. RefWorks allows the Write-N-Cite plug-in to be added to word processors such as Word and Open Office to facilitate the inclusion of citations in the text and format them for inclusion in the final bibliography. An interesting feature for researchers working on European projects is that RefWorks can automatically generate citations in ISO format. It includes an RSS reader and allows material to be syndicated using RefShare, so that individuals sharing folders can know at any time that new entries have been added.The RefShare module allows users to share folders containing bibliographical references with colleagues, both within their own and in other institutions, and to publish them on the web.This is an interesting feature when working with colleagues from the same department or in other locations, as a common bibliography can be made available to be used by all; the only problem is that all the researchers must use RefWorks/RefShare and have an account in the system.When permission is granted by the RefWorks user, others may see, print, export and generate lists of references using RefShare.The fact that groups can be created and reference lists shared justifies including this service among the social networking tools used for research, as a useful e-Science resource.

EndNote Web http://www.endnote.com -EndNote Web is a web-based citation manager developed by Thomson Reuters. It is designed to help students and researchers to write up projects. ISI Web of Knowledge, EndNote and EndNote Web are designed to

function simultaneously and simplify research work. Their use is free but there is a limit to the number of references that can be entered. EndNote Web is a tool that allows researchers to retrieve references quickly from a wide variety of on-line data sources such as PubMed and ISI Web of Knowledge via direct export, on-line searches or importing text files. They can create a private library protected by a password to store these references (up to 10,000 entries), which can be accessed anywhere with an internet connection. References can be shared with other users of EndNote Web. The functions available and compatibility are similar to those of the other managers. However, its internal organisation is very clear, making all the basic functions (compiling, organizing, exporting) easy to understand. One major advantage is that it is available in on-line and local versions (the latter has to be purchased). They can be perfectly synchronized, giving users the advantages of working in either mode. As a Thompson product, it is perfectly compatible with all ISI Web of Knowledge products. EndNote Web allows the Cite While You Write plugin to be added to Microsoft Word so that references can be added instantaneously and documents formatted. It also offers hundreds of different formats for bibliographical references, using APA, Chicago, Harvard, MLA and many other standards. Data can be imported from an enormous range of databases and other sources.

Other bibliographical reference management tools

RefBase http://www.refbase.net
Bibme http://www.bibme.org

9. Bookmarking resources and bibliographical references

The Web based scenario has become a standard way of obtaining and sharing scientific information. The bibliographical references cited in a scientific work should be a standardised one. The bookmarking of resources and bibliographical references is known as social bookmarking. This allows scientists to share links to references.

The social bookmarking applications widely used by the scientific community are CiteULike, developed by Springer, and Connotea, produced by Nature Publishing group.

Making research data openly available creates opportunities for other research groups to analyse it and make their own scientific

discoveries.The benefits of openly available data are many: it can be the key to establishing cooperation with other research groups, increasing the likelihood of new material being published.

Sharing research data publicly may have a positive effect on the citation, increasing productivity and the impact of a research group. The most popular tool for sharing data among researchers is Mendeley. This application combines the services of bibliographical reference managers and social bookmarking and allows users to share the data obtained in their research.

CiteUlike http://www.citeulike.org -CiteUlike is a free on-line service, with which bibliographical references can be stored and managed. It was the first web-based social bookmarking application, designed specially for the needs of scientists and academics who work in shared environments and need to know what their colleagues are reading and want to recommend material for others to read. CiteULike has become one of the largest and most popular social bookmarking reference websites, helping users to optimize their procedures for storing and administering academic references. This is easily attached to the browser using the "Post to CiteULike" button and extracts the bibliographical data appearing in a web page.When incorporating them the user classifies them by thematic area and assigns an indexing term or tag to them.The system saves them as the user's own but they are visible to everyone via a public profile and a private one: MyCiteUlike.With CiteUlike references can be captured from external sources such as Archiv and Amazon and they can also be captured and integrated from other accepted sources, including a list of major publishers and distributors of open and commercial content. References may also be added from blogs and newsletters, using services such as addtoany, which allow information to be posted by any user who consults a source and then sent to a reference manager.

An important utility is the CiteGeist service, which allows users to track the most popular references. The popularity index measures how many writers have read the article or included it in their personal managers.The "Watchlist" option allows users to contact others with similar interests and know which new documents they are reading, so that they can keep up to date at all times. CiteULike allows users to create research groups related to a subject or a department with the aim of sharing references among members. Users

are grouped according to their areas of research and they can locate other researchers with the same interests using the "Research Field" option.

For users who have Netvibes there are two APIs available from CiteULike, one for searches and one for RSS channels. Other interesting options provided by CiteULike include adding comments and including reviews of an article. The CiteULike-Delicious Synchronization option (Beta) allows references to be transferred automatically from delicious.com.

Connotea http://www.connotea.org - Connotea is an on-line open source reference management service for scientists and researchers. It is one of a new generation of social bookmarking tools which sed and updated version. 2011 36 allow users to save and share references. Connotea was the first tool to use a social bookmarking system combined with a reference manager. It recognises scientific websites and automatically compiles metadata for the article or page it is visiting. It allows this information to be retrieved via the digital object identifier (DOI). When an article is saved on Connotea, users can tag the article with the keywords they consider most appropriate to the content, which they can then use to retrieve it.

Diigo http://www.diigo.com - Diigo is the most complete and versatile social bookmarking tool currently available. The tool has to be purchased, although the favourites manager is available free. This platform goes beyond the philosophy of social bookmarking: as well as allowing users to select websites, it enables them to share files, documents, notes and text selections. It combines social networking with social bookmarking and servers which allow users to share files. It could even be included with specific platforms for research and teaching, as it can be a simple way to conduct peer assessment and for teaching staff to comment on specific aspects of students' work published on the internet. One great advantage is that the application is accessible using practically any browser. It has been tested with Explorer, Firefox, Flock and Chrome and works with any operating system that allows internet navigation.

Mendeley http://www.mendeley.com - Mendeley is free software, created to help researchers to manage the libraries of research documents they have on their computers and share them, find new data and work together on line. Mendeley combines Mendeley

Desktop, an application to manage PDFs and references (available for Windows, Mac and Linux), with Mendeley web, an on-line social network for researchers. It is compatible with different browsers and platforms. It successfully combines the features of conventional reference management with social bookmarking managers. It has one old and updated version. 2011 39 unique feature: it has an advanced statistics tool where users can keep statistics on documents, authors, the most extensively used material in an area and shared references.

Bibsonomy http://www.bibsonomy.org
Delicious http://www.delicious.com
Mister Wong http://www.mister-wong.es
H2O Playlist http://h2obeta.law.harvard.edu
StumbleUpon http://www.stumbleupon.com
Digg http://digg.com

9. Citation indices

The impact of scientific work is often measured by the number of citations it receives. There are various techniques to measure the impact factor of a scientific work. Web of Knowledge and Scopus are the leading international applications. Through Web 2.0 technology e citations can be are indexed in the traditional way using web resources. From Google Scholar, Microsoft Academic Search and CiteSeer users can search texts and authors and find out how many citations they receive in on-line documents.

Google Scholar http://scholar.google

Google Scholar provides a search engine for scientific publications and an index of citations which helps users to assess the impact of publications. Google Scholar thus competes with other citation indices such as Web of Science (WoS), from Thomson Reuters, and Scopus, from Elsevier. It is an ideal application for at least three tasks: looking for the complete text of a paper, looking for bibliography for a writer or a journal, or dealing with a topic, and looking for citations of a publication (book, journal article, thesis, report, etc.)

Google Scholar covers a wide range of documents: books, articles in journals, scientific and technical reports, pre-prints, talks and presentations at congresses, seminars and conferences, dissertations and theses, government and institutional websites, etc. It does not include non-scientific documents such as book reviews,

textbooks, newspapers and commercial magazines. Searches are conducted in a wide range of information sources: repositories, databases, scientific societies, online library catalogues, research institutes, and Google products (Google Patents and Google Books).

Microsoft Academic Search http://academic.research.microsoft.com

Microsoft Academic Search is an alternative to Google Scholar. Like the latter, it searches scientific publications and indexes citations. Developed by Microsoft Research's Asian team, it has been running since late 2009. At first it specialised in IT but it has gradually incorporated other disciplines: chemistry, engineering, mathematics, physics, biology, pharmacology, psychology. art and the humanities, economics and social sciences. They are classified in three groups: ì Natural Scienceî , ì Life Scienceî and ì Othersî . Microsoft Academic Search is notable for its ì Timelineî function for author's citations, indicating their centre of work, publications, citations, G-index and H-index. The 2D graphic showing co-authorship is visually very attractive.

CiteSeerx http://citeseerx.ist.psu.edu - CiteSeerx is a public search engine and digital library focusing on academic and scientific publications, with special emphasis on computer science, IT and engineering. CiteSeerx searches for and captures academic and scientific documents on the internet and indexes them using its own method of citation analysis, allowing searches to be made by citation or from the classification of documents based on this analysis. CiteSeerx is intended to provide resources such as algorithms, data, metadata, services, techniques and software that can be used to promote the development and use of new digital libraries.

The most notable features are:

ï Autonomous Citation Indexing (ACI): CiteSeer uses ACI to create indices of citations automatically, which can be used to search literature and assess citations. Compared with traditional citation indices, ACI offers Improvements in cost, availability, integrity, efficiency and scope for use.

ï Citation statistics: CiteSeer calculates statistics for citations and related documents for all the articles referred to in the database, not just indexed articles.

ï Links to references: As with many on-line editors, CiteSeer allows users to navigate through the database using the links in citations.

ï Context of the citation: CiteSeer can show the context of citations in a document, allowing a researcher to view quickly and easily what other researchers have said about an article of interest.

ï Alerts: CiteSeer provides automatic notification of new citations of documents and of new documents indexed in the database which match the user's profile.

ï Metadata: CiteSeer extracts metadata for all articles indexed automatically and makes it available to users.

ï MyCiteSeerX: As well as indexing citations, CiteSeer provides a personal portal for users who register, where they can save personal collections, receive RSS notifications, use social bookmarking and other social networking functions, and personalise their search options.

GetCITED http://www.getcited.org - GetCITED is an open source on-line database containing bibliographical information about academic articles. Content is entered and edited by members of the academic community. The database contains over 3,000,000 publications and over 300,000 authors. GetCITED allows members to enter and search for information about publications of all kinds. As well as books and articles from journals, chapters of books, talks, working documents, reports, records of conferences, and pre-prints can be entered and searched for. It also allows researchers to link a publication with all the publications in their bibliographies, enabling them to produce a wide range of citation and publication reports.

Scholarometer http://scholarometer.indiana.edu
Publish or Perish http://www.harzing.com/pop.htm
Citation gadget http://code.google.com/p/citationsgadget
Scholar H-Index Calculator https://addons.mozilla.org/eseS/

10. Blogs and wikis

Blogs and wikis are excellent tool for disseminating the results of research work. 2011 50

There are specialized scientific blog platforms specializing in certain exchanges.The scientific publishing sector has been among the last to join this trend, seeing in these sites a way of maintaining its market share in the face of the new 2.0 tools and open access publication.

Science Blogs http://scienceblogs.com

This is a portal which hosts blogs with scientific content. It attempts to maintain a minimum standard in content by a prior selection of bloggers, allowing them to post their content on the portal when they have been accepted. Currently there are about fifty blogs dealing with very varied topics.

MADRI+D http://www.madrimasd.org/blogs

This portal provides hosting for the blogs of researchers and companies based in the Autonomous Community of Madrid. Despite this wide variety of users, it is currently hosting only around 100 blogs.

PLoS Blog http://www.plos.org/cms/blog

Portal designed to encourage the open access culture in all its forms: blogs, journals, news, events, etc. Its twenty or so collaborative blogs (PLoS Blogosphere) are intended to allow a selection of specialists to express themselves. These are linked to an official blog (PLoS Blog) and two official thematic blogs (PLoS One y PLoS Medicine). Material is posted under a Creative Commons Licence.

Open Wet Ware http://openwetware.org/wiki

This wiki was set up to share information and know-how in the field of biology. It provides a space where laboratories, individuals and groups can organize their own information and collaborate with others. Like most wikis, its usefulness depends on the number of specialists that use it. It is designed using Media-Wiki, the most widely used open source software for this type of service.

Nature blogs
http://blogs.nature.com

OpenWetWare blogs
http://openwetware.org/wiki/Blogs

Hypotheses.org
http://hypotheses.org

Wiki Urfist
http://wiki-urfist.unice.fr

11. Scientific news services

Scientific news services are Web 2.0 tools to access and

share news information via RSS feeds and social networks, and to comment on and rank items. Through these tools scientists can participate, adding their own content and updated version. 2011 54 and news, are only offered by a limited number of services, such as Wikio.

Servicio de InformaciÛn y Noticias CientÌficas http://www.agenciasinc.es ñ A news portal that acts as a specialist information agency for the fields of science, technology and innovation. It belongs to the Spanish Foundation for Science and Technology (FECYT) and may therefore be considered the most important news portal in Spain. News stories are grouped under major field headings, which are in turn broken down by discipline. The website also provides news alerts, reports, interviews and special investigations. It has a multimedia gallery, a calendar listing major scientific events, and an "on this day in history" section.

SciTopics http://www.scitopics.com - This is a highly specialised scientific news site, where authors are invited to publish short works on their areas of research, with a form and style similar to that of the letters published in science journals. This helps researchers keep up to date on colleagues' work and new developments in their discipline, or to learn about new disciplines. Although the articles are published by invitation, they are not peer reviewed and this cannot therefore be regarded as an e-journal. Users can comment on papers in a social network-like interface.

Wikio http://www.wikio.es - Wikio is a "news portal based on a semantic search engine that filters news items from media sites and blogs and classifies them under thousands of subject headings". Users can create personalised pages to enable them to follow subjects that interest them. Its includes Web 2.0 style collaborative tools such as options to add user generated content or comment on existing articles, vote, share, follow via RSS feeds, etc

ScienceDaily http://www.sciencedaily.com - This is a scientific information website, with the appearance of a general news site but one which focuses on the scientific information published on the internet. In its updated version. 2011 57 articles are based on, and link to, the scientific articles that constantly appear online. Researchers cannot publish their own content here, making this a limited resource from a Web 2.0 perspective.

Science News http://www.sciencemag.org - A constantly updated science news resource, developed by the publishers of Science journal. The quality of the content is guaranteed by this connection, although the site suffers from being too focused on its own publications to the exclusion of others. As stated, users may not add their own content, limiting the usefulness of the resource for disseminating information from researchers.

Science 2.0 http://www.science20.com

13. Open access

Depending on open access, free exchange of research findings to global audience becomes a reality.

BASE - Bielefeld Academic Search Engine http://www.base-search.net - International harvester that searches open access document repositories around the world. It collects metadata from virtually all the world's harvestable open access scientific repositories. The technology used by this harvester has progressively improved and it now offers advanced searches by subject area, even using a thesaurus, which no other similar service offers. It provides access to over 30 million full text documents, mainly scientific in nature. It searches over 2,000 repositories and its interface is available in several languages, including Spanish. It offers some collaborative features, such as the option to add an RSS feed to a query in order to receive alerts on new documents or to share the search results via a selection of collaborative channels such as blogs and social networks.

Scientific Commons http://www.scientificcommons.org - Although unrelated, this project is designed along the same lines as the Creative Commons initiative. It is a harvester, currently in the beta phase that finds scientific documents stored in repositories based on the OAI-PMH protocol, and links to the full text when this is available.

Public Library of Science (PLoS) http://www.plos.org - This is a website to promote the open access publication of scientific materials, based mainly on Creative Commons licenses. It is dedicated to disseminating existing resources and creating its own, in the form of journals, blogs and other formats. It is effectively the flagship for the open access movement in the area of scientific information, and is likely to be a model for the development of parallel or similar projects

for other fields of knowledge. It should, however, be pointed out that, although PLOS uses an open access model, authors are charged to publish in the site's journals, and their articles must be approved by its scientific committees.

Sciyo http://sciyo.com - On-line publication service for open access documents published under Creative Commons 3.0 licenses. Published works must pass through a review process and the quality is therefore good. Includes not only books but also journals and video content is planned. On the down side, the volume of content available is still limited It is included here as an example of a site for publishing scientific content, but the service is developing very slowly.

Bubok http://www.bubok.com - There are other on-line publishing and editing services which, although commercial, allow users to benefit from the open access principle. Bubok is a Spanish commercial publishing and printing program that makes intensive use of Web 2.0 tools. Registered users can edit a book and choose to sell it in electronic format, charging for downloads, and/or in paper format. Authors can select print quality and format, and the printed books are sent to customers. Books can be printed to order as sold, with financial savings and environmental benefits.

OAIster Worldcat http://oaister.worldcat.org

DRIVER http://search.driver.researchinfrastructures.eu

Hispana http://hispana.mcu.es

Recolecta http://www.recolecta.net

OpenDOArt http://www.opendoar.org

14. Conclusion

With the introduction of open access journals and scientific social networking sites, scientific communication can be exchanged at faster rate than before. Majority are highly skeptical towards openness because patents, tenure and promotion can hinge on being the first to publish a new discovery. To some science2.0 seems dangerous using blogs and social networks for serious work feel like an open invitation to give online lab notebooks vandalized or worse, have best ideas stolen and published by a rival (Horrobin, 2001). Through these scientific communication, collaboration between scientists will facilitate the spread of raw research data. This paves

way towards criticizing, suggesting, sharing ideas and can develop a powerful tool for correcting mistakes.

The resources used by scientists in their work may be useful for team members or other researchers working in the same field. Open access allows bibliographic references and links to other on-line documents to be shared via bibliography and social favourite management. Bibliographic references have normally been managed by means of closed programs which act as document databases. Some of the new versions of the programs allow references to be shared and work to be done on line. Through social networks users can share links via general social bookmarking systems such as Delicious and Mister Wong, although for Science 2.0 the interest lies in those services in which documents and bibliographic references are shared.

Social networking technology allows users to publish information that can be shared, by the addition of comments, syndicating content or integrating material from other sources in a website. In Science 2.0 platforms with scientific blogs and wikis are used, through which new developments in research are published and comments are posted from scientists working in the same fields. In wikis content is developed on a cooperative basis.

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8. Feelsynapsis http://www.feelsynapsis.com
9. Scispace http://www.scispace.com
10. Facebook http://www.facebook.com
11. LinkedIn http://www.linkedin.com
12. Ning http://www.ning.com
13. Twitter http://twitter.com

14. Researcher ID http://www.researcherid.com
15. Emerald Research Connections http://info.emeraldinsight.com/research/connections/index.htm
16. HUBzero http://hubzero.org
17. NanoHUB http://nanohub.org
18. MyExperiment http://www.myexperiment.org
19. NatureNetwork http://network.nature.com
20. Arts-humanities.net http://www.arts-humanities.net
21. Google Docs http://docs.google.com
22. Office Live Workspaces http://workspace.officelive.com
23. Zoho http://docs.zoho.com
24. Thinkfree Online http://www.thinkfree.com
25. Box http://www.box.net
26. Skydrive http://skydrive.live.com
27. 4shared.com http://www.4shared.com
28. Mediafire http://www.mediafire.com
29. Megaupload http://www.megaupload.com
30. Rapidsharehttp://www.rapidshare.com
31. SlideShare http://www.slideshare.net
32. Zentation http://www.zentation.com
33. SciVee http://www.scivee.tv
34. Videolectures http://videolectures.net
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ROLE OF COMMUNICATION TECHNOLOGY IN ENHANCING FARMERS' KNOWLEDGE

V. Rajagopal

Farming is a noble profession as it provides three essential life saving materials to the human beings; namely food, fodder and fuel. The practitioners of that profession are ëfarmersí. The term ëagricultureí refers to the overall cultivation of all crops, rearing of livestock, fishes, etc. India is essentially an agricultural country with over 70% population depending on various agricultural sectors, although in recent years the percentage declined pathetically to less than 50%. From its prime position during early years of Independence, agriculture has been relegated to third or fourth position by other sectors like industry and technologies in recent years. This does not augur well to meet the high demand on food production for the ever increasing population in the country. This article analyzes the role of media in helping the farmers with knowledge on technologies. Agricultural communication is an important toolcapable of bringing together farmers and experts for interaction on various aspects of farming operations.

Farmers ñA National asset : The cultivation of a wide range of crops like cereals, millets, pulses, oilseeds, vegetables and fruits requires a thorough knowledge of the land, soil type, water resources, nutrient requirement and weather situations. Likewise, rearing of animals and fish culture are also essential components of agriculture sector. India is fortunate to have farmers with traditional knowledge, handed down by fore-fathers, on all aspects of farming, referred to as ëindigenous technical knowledgeí (ITK) in their given area with cropping system and agro-ecological conditions. Such farmers are *National assets* which deserve to be exploited with proper exposure to emerging technologies

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which will equip them to face the challenges of food production.When viewed from this angle the large number of farmer suicides is a blot on the Nation. At all costs farmersí suicides should be prevented; failing which food production will be adversely affected.

Agriculture extension: If the production in India increased from 52 million tons in early 1950s to over 230 million tons in recent years, and a record of 253 million tons this year, the credit should go first to the farmers who worked hard toiling under the sun with utmost commitment to produce food for the growing population. However, the significant contribution of the agriculture scientists in the research institutes and universities who were responsible for developing varieties, technologies for production and protection cannot be ignored. There is a virtual explosion of knowledge in agriculture sector to benefit the farmers.While it is the mandate of the agriculture research scientists specialized in various disciplines to develop the appropriate technologies to enhance yield, protect the crops from pests/ diseases and harvesting and processing in the institute/university farms, the responsibility of transferring the knowledge on various technologies rests with the agriculture extension scientists and field officers of the State agriculture departments. A cursory glance at the National Agriculture Research, Education and Extension scenario for the past decades reveals that while the research and education, with the establishment of many Institutes and State Agriculture Universities (SAUs), progressed well with an array of crop varieties released and methodologies developed, the much needed extension sector remained a weak link.This had an adverse impact on the farmers who could not keep pace with the research findings, for whomthey are meant.There was a mismatch betweenthe results obtained in the Institutes/ Universities and those from the farmersí fields for the same varieties and methods.This reflected on the poor scientific knowledge of the farmers on modern farming technologies. Here comes the relevance of communication skill of the scientists to help the farmers.

KrishiVigyan Kendra: Realizing the major lacuna in dissemination of knowledge to famers, the Indian Council of Agriculture Research

(ICAR) in mid 1990s had given top priority to agriculture extension, not only by recruiting specialists in the subject and strengthening the Institutes and SAUs, but also through various schemes/projects like the Institute Village Linkage Program (IVLP), Agriculture Technology Information Centers (ATIC) as single window system for farmers to avail the facilities. With emphasis on the participatory research between the scientists and famers involving training and demonstration of technologies in farmersí own fields, the Union Ministry of Agriculture provided adequate funds to establish the KrishiVigyanKendras (KVKs) ñ farmersí knowledge centers, in almost each district, now numbering over 600, including some operated by non-government organizations. These positive steps improved the situation with frequent training programmes on both on and off-farm technologies to educate the farmers not only to enhance yield but more so to increase income. In recent years, many progressive farmers emerged in the country with high responsiveness to adopt the scientific methods of cultivation. Thus, there is perceptible improvement of knowledge among farmers and many National and State awards in recognition of their significant achievements bear testimony to the knowledge gained by farmers. This reveals that the scientists have communicated the relevant information to the farmers.

Role of the media: The media, both print and electronic, has to play a stellar role in disseminating knowledge to farmers on different aspects of farming. The significant role played by the All India Radio (AIR) in middle sixties during the green revolution was a classic example. For effective transfer of technologies the media must employ an agriculture correspondent with basic understanding of agriculture, who has an aptitude and right attitude to study the ground situation in the farm and to bring a rapport between the scientists and farmers. Their interaction should be productive and beneficial to farmers in tackling many field problems. The publication ì Farmers- Scientists interaction ñ a knowledge sharing approach), edited by V. Rajagopal and colleagues (CPCRI, 2004) highlighted the concept of ëcaring the uncaredí, íreaching the unreachedí, ëteaching the untaughtí and

ëlearning the unlearntí based on field visit by a multi-disciplinary team of scientists, not only to teach the farmers the technologies but also to learn from farmers the wisdom gained from local methods (ITKs). This proved to be a successful approach in sharing knowledge anda model for other Institutes/universities to follow. Thus, the communication technologies were effectively utilized by the Institute for the benefit of farmers on coconut, areca nut, cocoa and cropping system.

The Hindu as a model: Among the print media, perhaps The Hindu, a 130 year old National Newspaper, is the only one which has a well structured ëFarmersí Note Bookí (FNB), published under the Science, Technology, Agriculture, every Thursday for the last few years, which is popular among the farmers and scientists alike. In his article ì Impact of FNB in exposing the farmers to advanced technologies î (unpublished), V.Rajagopal analyzed over 120 articles spread over two years. From the series of reports, the author could categorize them into production, protection, processing/machineries technologies adopted by the farmers, the crops covered, the agro-climatic zones, the range of farmers interviewed which helped to critically assess the FNB vis-‡-vis the commendable role of the Hindu.The analysis revealed the magnitude of the spread of knowledge on agriculture among the farmers in the country.

The FNB is the true reflection of The Hinduëcaring the uncaredí farmers by deputing its agriculture correspondent to ëreach the unreachedí areas and farmers in different parts of India for first-hand information on farmersí perception on technologies painstakingly developed by scientists.The interview with the farmer is formatted well ñ problems, progress and prospects in that order, with photographic evidence.This gives an opportunity to other farmers to absorb that knowledge on the practical approach made by the fellow farmer with achievement both in enhancing yield and economic returns. The creativity of a few farmers who developed their own simple, easy to operate gadgets with low cost is well projected, which serves as a morale booster to the ëinventorí to see that his work is appreciated and published widely

in a National newspaper.Thus, The Hindu proved to be a close friend of farming community through its sustained efforts to impart knowledge to farmers, which is commendable.The scientific communication link was well established among the farmers.

Commitment: The agriculture correspondent of The Hindu, M.J.Prabhu had initial training on FNB under the accomplished agriculture journalist G.Venkataramani. Over the years, he gained experience through continuous visit to farmersí fields, research institutes and SAUs, across the country, a strenuous job, to collect, collate and compile the information in a presentable and easy to understand form. The uniqueness of the FNB lies in providing at the end the contact address, phone number and e-mail ID of farmers visited, to facilitate those interested to have a direct correspondence with the farmer to ascertain more details.This perhaps is creditable journalistic excellence in the realm of knowledge sharing. Rightly so, M. J.Prabhu was the recipient of prestigious awards including the one from Dr.A.P.J.Kalam and recently the ICARís Dr.ChoudharyCharan Singhís award for agriculture journalism in recognition of his untiring efforts to keep the farmers abreast of the latest knowledge on useful technologies.Thus, here is a print media which has been playing its role effectively and efficiently for the cause of agriculture in general and farmers in particular through the FNB.

Magazines: At the National level the Agriculture Today published by the Center for Agriculture Development is much sought after in view of the wide coverage on variety of topics.The magazine is credited with both International and National news on policy matters, agriculture business, crop production, protection and processing sectors and also value addition and product diversification. At regional level many magazines in local languages cater to the needs of the farmers throughout the country like *Annadhata*, *Kisanpatrika*, *krishivigyan*, *karshakan*.

To sum up, the communication technology has great impact on the growth of agriculture and the success depends on a good science communicator whose rapport with farmers and positive outlook are essential pre-requisites.

SCIENCE COVERAGE IN PRINT MEDIA & REGIONAL LANGUAGES: OBSERVATIONS OF A CONTENT ANALYSIS

S. Anil Kumar

Introduction

A content analysis to find out the status of Science coverage in regional languages was conducted by the Centre for Science Communication of the Cochin University of Science and Technology during the year 2010. The programme was funded by Kerala State Council for Science, Technology and Environment under Science Popularization Scheme and prominent Malayalam dailies representing various strata of the society were subjected to content analysis. The results of the analysis clearly show a decline in the trend of science coverage in print media, irrespective of circulation, political affiliation or language. Though the expectation is that the science coverage is directly proportional to scientific progress, it is not the reality in a state where 100% literacy has been achieved.

Kerala is well-known for its social empowerment and scientific thinking. The grass root level voluntary organizations in the area of science have spearheaded the message of science popularization among the Kerala society. It helps the society to be in the fore-front of social development and helps to inculcate scientific temper. However as time passed and technological advancements became the rule of the day, journalists and journals gradually lost their interest in reporting science. Politics, crime, sports and cinema became the order of the day and science was neglected ignominiously. This negative trend was heavily criticized by various organizations working in the field of science communication without much avail.

Evolution of Science Periodicals

A brief look at the evolution of science periodicals in Malayalam would provide the right context for the reader. *Rajyasamacharam*, considered the first newspaper in Malayalam and

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published from Illikkunnu in Thalassery from June 1847 unfortunately did not carry any articles on science. The second Malayalam newspaper '*Paschimodayam*' which was started during October 1847 by F.Muller from Nettoor, Thellichery in north Kerala on the other hand devoted a considerable space for science. Subjects like geology, geography, astronomy, history, zoology, health and general science found place in the periodical which continued publication up to August 1851. The initiative showed by the Editor in publishing so many science-related news-items prompted the noted journalism chronicler PuthupallyRaghavan to record, "*Paschimodayam* can be considered as the first science periodical in Malayalam" in his book on the Evolution of Malayalam Journalism. The third Malayalam periodical '*Jnananikshepam*' published from Kottayam in 1848 also provided news, views and articles on animals, plants, health, treatment, geography, and the like. However the Travancore Book Committee constituted by the then Maharaja under the leadership of Kerala Varma Valiyakoyil Thampuran during 1866 provided the much awaited spur to science popularisation by publishing lots of biographies of scientists like Benjamin Franklin and Isaac Newton in Malayalam.

But the noted book on herbs and medicinal plants in Kerala '*Horthus Malabaricus*' printed in 1703 in Amsterdam is widely known as the first book on science in Malayalam. However the book classification index published by Kerala ShastraSahithyaParishad (KSSP) mentioned '*Yogamrutham*' by 'UppottuKannan' as the first book on science in Malayalam. Umpteen number of science books were published in Malayalam during that period.

Even magazines on 'literature' like '*Vidyavilasini*' published in 1881 from Thiruvananthapuram provided ample space for notes and views on agriculture, zoology, botany, mechanics and atomic structure. The '*Vidyavilasini*' from Thrissur in 1889 followed suit by publishing serious pieces on science in a simple and easy to read style. Another noteworthy monthly publication that contributed for enhancing the scientific awareness of people during the yester-years was '*Bhashaposhini*', a literary journal published from Kottayam. Out of 57 articles published during 1899 in '*Bhashaposhini*', 20 were exclusively on science and allied matters.

Publications like *Nair, Vivekodayam, Rasikaranjini, Bhashavilasam, Sujananandini, Vignanaratnakaram, Vignana*

Chandrika, Mangalodayam, Powarn, Kerala Kesari, Service, Vidyabhivardhini, Vignanabhandaram, Deepam, Keralam, Vignanasagaram, Grameenam, Mathrubhumi amd *Malayalarajyam* provided considerable space for science coverage during the pre-independence period.

'*Dhanwanthari*' magazine initiated its publication in 1903 under the auspices of the well-known *KottakkalAryaVaidyasala* was widely considered as the first periodical in Malayalam on health science. It was visualized as a popular health science magazine appreciated by all concerned. Launched under the editorship of P.S. Warrier and the stewardship of P.V. Krishna Warrier, *Dhanwanthari* was published continuously for a period of 23 years catering to the reading and thinking habits of the literates in Kerala. The magazine which gave equal importance to Allopathy and Ayurveda was mainly intended to cater to the common man, rather than the medical practitioners or health workers.

The *Dhanwanthari* was followed by *Aarogyam*, *Ayurvedic Gazette*, *Aarogyadeepam, Vaidya Prabodhakam, Vaidya Manjari, Vaidya Deepika, Vaidya Bandham, Vaidya Bharatham, Vaidya Masika* and the like. Today, the language Malayalam boasts of at least a dozen magazines on health, published mainly by leading newspaper establishments like Malayala Manorama, Mathrubhumi, Kerala Kaumudi and other professional organizations.

However the farmers in Kerala had to wait until 1881 for getting a magazine with a strong pro-agricultural attitude, namely, *Vidyavilasini* (Dance of Knowledge) published by Easwara Pillai from Thiruvananthapuram. The journal started a regular agricultural science column in September1883. The '*KeralaVilasam*' press was started by Easwara Pillai with the help and support of the Maharaja of Travancore way back in 1853.

Yet another periodical, *Vidyavinodini* which initiated publication from Thrissur during 1889 had also provided noteworthy contributions to the up-liftment and popularization of all forms of sciences including agricultural sciences. A well-known writer of yester-years, C.S. Gopala Panicker, considered as an expert in natural sciences was the chief contributor of science articles in *Vidyavinodini*. Kandathil Varghese Mappilla the founder of *Bhashaposhini* magazine in 1867, Kesari alias Vengayil Kunjiraman Nayanar, noted litterateur from Malabar, and Mooloor Padmanabha Panicker, noted poet, who contributed a lot for

propagating modern agricultural thoughts among the farmers of previous century are some other personalities worth mention.

Newpapers also played an important role in uplifting the farmers from their age-old beliefs and systems to a brave new world of scientific thoughts. Malayala Manorama contributed much for the popularity of modern farming through news, views and editorial columns. *Krishi Pradarsanam* (29 March 1890), *Puncha Krishi* (09 December 1903) and *Kayal Krishi* (22 June 1903) are some of the editorials that appeared in Malayala Manorama during that period. *Agriculture in Travancore* (17 June 1899) was an English editorial on the spread of coconut disease with a plea to strengthen scientific research in the area of agriculture. The editorial exhorted the organization of a full-fledged Dept. of Agriculture for the erstwhile state of Travancore. It was evidently published with an eye to invite the attention of the officers of British East India Company and the then Dewan of Travancore.

As time advanced and sensationalism became the order of the day, the newspapers in Malayalam also moved onto other areas of interest. Kerala had to wait until 1975 to see a full-fledged farm-feature page in any of the leading Malayalam dailies. It was materialized in the backdrop of emergency and the resultant pre-censorship. However, the first farm feature page '*Karshika Rangam*' finally appeared in *Mathrubhumi Daily* on 6, August 1975. Almost all newspapers in Malayalam followed suit within no time and that trend is still continuing, of course with reduce rigour.

Kerala, one of the most literate states in India is well known for its affinity towards newspapers. Even after the advent of electronic media like radio, television and internet, the circulation and popularity of print media has increased considerably in the state. Another interesting aspect is the role of media played in the society as opinion leaders. The Newspapers always help the society to form its opinion on various issues like agriculture, health sanitary and such other areas which ultimately prompt the members of the society towards adoption. The print media was so keen in providing them knowledge, awareness and finally adoption of ideas. However the situation has changed drastically.

A strong demand to moot a comprehensive action plan for effective science communication for print media was also demanded from various foreign nations. In order to initiate such a plan of action

it was highly imperative to conduct a content analysis to assess the status of science coverage by language newspapers. Accordingly the Kerala State Council for Science, Technology and Environment had provided trants for this study at the Centre for Science Communication, of the Cochin University of Science and Technology.

A total number of eight newspapers including two English newspapers published from Kerala were selected for content analysis on the basis of various parameters and the social situation that prevailed in the state of Kerala. The newspapers were grouped according to the similarity in their nature, circulation and editorial mix. The intention of the researcher was to find out the attitude of largest circulated newspapers, medium level circulated newspapers, and political party sponsored newspapers in Malayalam towards science. Two English newspapers in Kerala such as New Indian Express and The Hindu were also considered as the control group for the study. The period of study was the calendar year 2010, and 365 days of the year unlike other short term studies conducted by certain groups and organizations.

The categorization of the Malayalam newspapers was as follows. *MalayalaManorama, Mathrubhumi* (the first and second largest circulated dailies in Malayalam); *Kerala Kaumudi, Madhyamam* (leading medium circulated newspapers having the third and fourth position in circulation); and *Deshabhimani, Janmabhumi* (political newspapers sponsored by political parties in Kerala). The political party newspapers such as *Deshabhimani and Janmabhumi* are also commanding a fairly good circulation i.e.between 1–3 lakh copies.

The percentage of Science coverage in print media was calculated on the basis of area devoted for news and views (other than advertisements). The area devoted for science was catagorized under different heads for getting more clarity and meaning to the outcome of the content analysis.The rationale behind this expectation was that such a categorization would help to draw conclusions in an intelligent and easy manner. Hence the science news was categorized into various sub-heads such as *general science, technology, environment, health and agriculture* while computing the space allocated.

Another interesting break-up of science news was arranged on the basis of the forms of presentation of science like *article, project help (for school children), features, letters to editor, editorial* and *news.*

Project help is a recent phenomenon in Malayalam newspapers which provides maximum inputs to the student community with short notes and pictures for preparing their school projects. In the real sense, the project help *perse* cannot be considered as popular science coverage, but is incorporated in the survey because the 'project help' helps the media to boost its circulation among school-going children rather than popularizing science. Hence it cannot be considered as popular science, in the true sense.

Another categorization of the coverage of science news was based on the point of origin(ie., date line) of the science news/feature/ article such as *local,national* and *international.* The area devoted for science coverage in all newspapers during each month in 2010 was also assessed in the survey.The table which explicitly indicates various trends in Malayalam Journalism regarding Science Coverage can be considered as an indicator of the trends in regional newspapers.

The results of the content analysis clearly indicate a trend which is detrimental to the interests of science communication. Though the organizations working for effective science communication and science journalism are lamenting the sharp decline in me coverage of science in print media as only 3% or so, the percentage is much lower in reality. It is only around one percent of the total news area. That too, in a state like Kerala which has achieved 100 percentage literacy.

Summary of conclusions

1) During the year 2010, the major leading Malayalam dailies such as *MalayalaManorama, Mathrubhumi, Deshabhimani, Kerala Kaumudhi, Janmabhumi&Madhyamam* (combined) produced a total print area of 5,74,62,046 sq.cm

2) Out of the total print area of 5,74,62,046 sq.cm, an area of 1,32,71,450 sq.cm was set apart for advertisements (23.10%) and an area of 4,41,90,596 sq.cm was set apart for news and allied matters (76.90%)

3) Similarly in the case of two English Newspapers published from Kerala out of the total print area of 3,72,81,043 sq.cm, an area of 64,14,867 sq.cm was set apart for advertisements (17.21%) and an area of 3,08,66,176 sq.cm was set apart for news and allied matters (82.79%)

II Specific Conclusions

1) Out of the total area devoted for news in six Malayalam newspapers (44190596 sq.cm), an area of only 4,61,797 sq.cm was devoted for the coverage of science; i.e. *the percentage area devoted for science coverage in selected Malayalam newspapers during 2010 was only* ***1.05%***

   As all the newspapers selected for the survey are true representatives of Malayalam Dailies and command more than 80% of the total circulation enjoyed by all the Malayalam dailies, we can come to the conclusion that the *space devoted for science coverage is only around one percentage which is quite negligible.*

2) The two English dailies selected for survey provide a total area of 2,14,829 sq.cm, for science, out of the total news area of 3,08,66,176 i.e. *the percentage of science news coverage in English dailies (Combined) is only* ***0.70%.***

3) The Hindu gave more prominence to science than the New Indian Express. The increase of space devoted in Hindu is mainly because of the feature pages.

4) The break-up of Malayalam dailies clearly indicates that the *Malayala Manorama, the largest circulated daily in Malayalam provides only* **0.86%** of its news area for Science Coverage whereas the *Mathrubhumi, the second largest circulated daily provides* **1.26%** *of its news space for science.*

5) Among the six dailies taken for survey and content analysis, *Deshabhimani, a political newspaper provided the largest area for science coverage; ie* **1.85%**

6) The least space provided for science coverage among Malayalam dailies was *Kerala Kaumudi* daily; published from Thiruvananthapuram, the capital of the state. (i.e. **0.53%**)

7) While examining the six newspapers in Malayalam, it is found that the area for science coverage suddenly increased during the month of June. It was because of the publication of umpteen number of news and views especially local items in connection with World Environmental Day celebrations.

8) Generally, the priority of newspapers in Malayalam in providing area for science is health, agriculture and environment.

Malayala Manorama gave **31.07%** *of its space for health followed by environment* **(24.12%).***Mathrubhumi gave priority to agriculture* **(27.69%)** *followed by health* **(23.08%)**

9) The Malayalam newspapers included in the survey were least interested in providing space for writing editorial on science topics, which clearly shows the lack of interest on the part of editors in science coverage.

10) The percentage of science news in the combined news area of Malayala Manorama is **1.03%.** But the combined science news percentage of the medium level circulated newspapers (Kerala Kaumudi & Madhyamam) is only **0.68%**

11) However the science coverage in political newspapers is slightly better.The combined percentage of science news in political newspapers (Deshabhimani & Janmabhumi) is **1.38%.**

12) Publication of various science pieces and 'Do it yourself' items helping the school students for their projects is a comparatively new phenomenon in Malayalam newspapers. On an analysis of the results it is found that the pages devoted for 'project help' actually helps the newspapers to boost their coverage of science.

13) Out of the total area devoted for science (85780 sq.cm), **24.91%** of the total space was devoted for project help items in Malayala Manorama and **18.53%** in case of Mathrubhumi respectively.

14) Feature occupies the largest chunk of **35.79%** in science items of MalayalaManorama and **29.22%** in Mathrubhumi. For other newspapers the percentage of area devoted for project help is quite negligible.

15) Out of the total area of 85780sq.cm devoted for science in Malayala Manorama, preference was given to news/feature/ articles of local origin is **4.42%.** Whereas Mathrubhumi preferred science items of International Origin (**3.28%**)**.**

16) The preference of New Indian Express was for health news **(41.06%)** commenced with other science items; whereas the preference of Hindu is for items on general science (**33.56%**)**.**

ENVIRONMENTAL EDUCATION AT SECONDARY LEVEL EDUCATION IN INDIA AN OVERVIEW

Bipasha Dutta

Abstract

Environmental concern in recent times is part of a big time discourse and has virtually entered every important forum for discussion. The growing concern about the rapid deterioration of environment has forced lawmakers as well as educationists all over the world to reckon that this is the moment of make or break for environment. And for any concern to be rationalized and permeated into the larger spectrum of societal discourse it must have a presence in the curriculum at some level of academic disciplines. Although Environmental education in India is a rather new entrant to the field of academia, it has now become an integral part of school education also in addition to being taught at the higher levels.This is a laudable effort on the part of the educational planners since a large part of the maintenance of environment depends on the capabilities of barefoot ecologists especially in a developing society.The study involves a probe into the texture of the environmental curriculum in the secondary schools of the country and what kind of rationale has been followed in developing the curricula which is supposed to determine the environmental consciousness of the future citizenry of the country.

Introduction:

The term Environment in recent times got centre stage since it is getting affected and has deteriorated rapidly on account of excessive and undesirable human activities. The concept of environment encompasses all the non-living and living organisms which we find in our surroundings like plants, animals, land, water, air, etc. Modernization and rapid growth of population brought unalterable damage to all these elements of environment to our planet earth.The physical facilities of the earth, a vital force for the life and life systems, took millions of years to reach the present state through natural

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process. Damages to these systems began from the foundation of civilization as it required the natural resources as an input for its growth and development.The industrial revolution of the modern period caused irreversible damage to the system although it brought comfort and employment to the masses. Exponential increases in the demand on nature in turn threaten the very existence of life. Environmental education is a new area of study in the discipline of education and is virtually a new source of concern for teachers, educators and students. The necessity for the knowledge of environment, awareness and education was not felt until the 19th century.The natural disasters that followed the industrial revolution in England and the first and second world wars, the atomic onslaught on Japan followed by a series of atomic tests conducted by different countries after the war and the Bhopal gas-tragedy prompted the scientists, policy makers and the social activities to respond.The values of environmental education have of late been recognized the world over.It is an integrated process which deals with man's inter-relationship with his natural and man-made surroundings, including the relation of population growth, pollution, resource allocation and depletion, conservation, technology for urban and rural planning to the human environment. Environmental education is a study of factors influencing eco-systems, mental and physical growth, living and working condition, decaying cities and population pressures. It has been defined in a number of ways. "Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. Environmental education entails practices in decision-making and self-formulation of code of behavior about issues concerning environmental quality". (The Nevada conference of the International Union for the Conservation of Nature and National Resources, 1970). "Environmental Education means the educational process dealing with man's relationship with his natural and man-made surroundings, and includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the total human environment" (The United States Environmental Education Act-1970).

Environmental Education curricula and text books in India were developed in response to the National Policy on Education 1986

and the environmental education dimensions have been reinforced at all levels since then. The NPE prescribed environmental protection as a core element to the national curricula. The concentric and spiral method of organization of curriculum was used to explain various concepts to the students of various levels in the subjects like Science, Geography and Social Studies. Again the school curricula underwent changes in the year 1988 (MHRD), 1995 (NCERT), National Curriculum Framework 2005 (CBSE). It would be interesting to study the structure and the changes that the curricula underwent to address the issues of environment.

II

Treatment of Environmental Education concepts in school textbooks is expected to equip students with awareness, attitudes, values and skills to protect environment. Environmental Education is imparted as Environmental Studies with an interdisciplinary approach for recognizing the inter-relatedness among man and his social and biological environment. In line with the proposed plan of action NCF-2005, the schools across the country run by CBSE and different state governments under the aegis of respective school education board have started incorporating EE concepts in a graded manner. It is revealed that concepts most commonly dealt with are associated with the different scopes/areas within the ambit of Environmental Studies. Textbooks developed by NCERT and the different state's school boards reflect the viewpoints and recommendations that emerged from national level consultations. At the secondary level, the focus of Environmental Studies as a compulsory subject should be not only on knowledge and information processing but also on acquisition of skills, development of attitudes and values and participation in actions through activities, projects, field interactions and co-curricular activities. Environmental Studies, therefore, slated to aim at cognitive, affective and conative behavior modifications. Separate textbooks entitled as Environmental Studies have been developed by different school boards whereas some boards have decided to adopt "Infusion model + Project" for imparting Environmental Education instead of a separate subject. The various EE concepts have been included in various subjects like Social Science, Science and languages.

The subject Environmental Studies has been developed with an eye on the school level, as an academic field which systematically

studies constituents of the environment as well as the interaction between them. It describes human interaction with the environment. It includes natural environment, built environment and the sets of relationships between them. Environmental Studies is deemed to be a broad interdisciplinary field of study. Environmental Studies (EVS) is supposed to encompass a wide range of disciplines.

It is observed that the EE concepts, covered in secondary textbooks across the states in the country, are selected from different subject areas/scopes of EVS, namely

1. Environmental Science
2. Social Science
3. Environmental Biotechnology
4. Environmental Engineering
5. Environmental Law

Environmental Science is an academic field that systematically studies the constituents of the environment. It integrates physical and biological sciences and environmental science helps to find out the solution of environmental problems. It has an integrated, quantitative and interdisciplinary approach. Environmental Science provides a systems approach to the analysis of environmental problems. Environmental Science differs from environmental studies from the view point of social science domination and problem solving approach. Environmental Studies includes more of social science dimension to comprehend human relationships and perceptions with environment. On the other hand, Environmental Science is an active field of scientific investigation that analyses complex environmental problems to provide solutions.

Environmental Science includes mostly-

a) Physical Science (Physics, Chemistry)

b) Biology

c) Soil Science

d) Geography

e) Atmospheric Science

f) Ecology

g) Environmental Chemistry

Environmental Biotechnology is the discipline in which biotechnology is applied to study the natural environment. It harnesses biological process for commercial use.The International Society for Environmental Biotechnology defines Environmental Biotechnology as "the developments, use and regulation of biological systems for remediation of contaminated environments (land, air, water) and for environment friendly process (green manufacturing technologies and sustainable development)î . Environmental Biotechnology uses nature at optimum level to produce renewable energy, food and nutrients in synergistic integrated cycle of profit making processes.The waste of each process is used as the feedstock for another one.

Environmental Engineering applies science and engineering principles for the purpose of improvement of environment. It supplies healthy water, air and land resources and remediates polluted sites for the well being of human and other organisms. Environmental Engineering mostly deals with control measures of water and air pollution, recycling, waste disposal and public health issues. It also studies impacts of proposed construction projects upon environment.

Environmental Law is a collection of treaties, conventions, statutes, regulation, acts which regulate the interaction of humanity and the rest of the natural environment. It is actually the legal measure to conserve the environment. Environment Laws and acts are established for the purpose of reducing the impacts of human activity, both on the biophysical environment and on humanity itself. Environmental Laws are mostly dealing with two major areas- (a) pollution control and remediation (b) resource conservation and management.

III

These five areas well define the scope of environmental studies or it can be said in another way that Environmental Studies involves a wide range of subjects that have been divided into five major branches. Environmental Education programmes were classified into three separate disciplines by Newman (1981) as quoted in Sharma, P.D.(1999). The disciplines proposed are Environmental Studies, Environmental Science and Environmental Engineering which are

associated with social sciences, physical sciences and engineering sciences respectively. Environmental Studies here imply the study of environmental disturbances and minimization of their impacts through changes in the society. Environmental Science refers to the study of processes which lead to environmental degradation and at the same time to ascertain knowledge about the scientific basis for establishing an eco-friendly atmosphere. Environmental Engineering, in this three-fold classification, implies the educational programmes associated with the study of technical processes for minimizing the pollution as well as the assessment of their impact on the environment. The prescribed curriculum for Environmental Education in India is related with the discipline of outdoor education and Experimental Education. Both the disciplines are complementary to EE. Each of these disciplines has their unique philosophies, own objectives. But there are points where both disciplines overlap with the intentions and philosophy of environmental education. Outdoor education implies learning 'in' and 'for' the outdoors. It enriches curriculum through outdoor experiences. Environmental Education also requires outdoor experiences for the purpose of meeting with its goals. Again experimental education implies obtaining knowledge, skill and value through direct or firsthand experiences which is also a criterion in Environmental Education. Existing curriculum of EE are supposed to allow students to make informed decisions and take action based on experience as well as data instead of mere ideology. Environmental Education provides an opportunity for community involvement, grass root level learning. Students may garner knowledge based on local environment using presently available resources. EE is also planned to sometimes involve institutional planning for the purpose of executing field studies. Environmental Education offers instances from local as well as global phenomena related to environmental issues. EE offers opportunity to use low-cost or no cost materials available in local environment, audio-visual materials related to information and communication technology depending on the facilities available. EE involves exhibition, excursion and action research based on environmental issues and problems. In this media-dominated era, EE finds room in various non-formal modes of education.

IV

NCF-2005 envisages an educational policy regarding environment which attempts forming a holistic approach in the students

towards their immediate surroundings. The guidance conceived of certain projects to be executed at different classes between 'VI-X' with a view to help the students to connect with the real life and examine the problems affecting environment. It has been observed that it is difficult to connect with something that is far away, but when it comes to the problems faced in daily life, students find it easier to locate the problems.The National Focus Group on Habitat and Learning amplifying the focus of NCF-2005, outline ì The human habitat displays tremendous variability in space and time and its understanding has to be locale-specific albeit in the context of global vision. A great deal of knowledge of environment lies with Indiaís barefoot ecologists, the people at the grassrootsÖ îThe children are essentially conceived as ecologists in the making and the teachers are expected to help them in the construction of their knowledge by helping them to execute certain recommended projects for each class.

The entire approach towards conceiving these project books as well as overall perspective of environmental education looks at infusing ideas and awareness of environment across the curriculum. Environmental awareness should not be restricted to environmental books, rather according to NCF-2005 it should be an essential dimension of each segment of the curriculum.This integrative approach would be able to hopefully inculcate in the students a multidisciplinary critical faculty, integral to the formation of a socio-cultural ethos conducive to the growth of an environment friendly holistic approach leading to sustainable development of the country.

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COMMUNICATION ASPECTS OF RESPONSIVE WEB DESIGN

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1. Abstract

Responsive Web Design (RWD) is a relatively new methodology in the web design arena. The use of responsive frameworks while designing the website enables the web pages to render effectively across various devices of different view-port size and resolution. This in turn helps the publisher of the website to deliver the content effectively to the users of the website and increase the usability of the website. The advantages of using a responsive framework is not only limited to this. It does have publisher-specific as well as user-specific advantages over traditional forms of designs. Here we are trying to define the web communication system using the Shannon's mathematical model of communication and analyze how the use of responsive frameworks will result in an effective web communication.

1. Introduction

Internet is no longer limited to desktops and laptops alone. It is spreading to a plethora of devices including smartphones, tablets, netbooks, televisions and so on. Websites built on concepts and techniques used over the early years of web development, become inefficient when delivered across these devices. An early solution for this scenario was to design separate websites for desktops and mobile devices based on the early concepts and techniques. But it proved inefficient in no time, as the sizes and resolutions of displays in mobile devices varied from small to large. It was not feasible to design

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separate websites matching various sizes and resolutions. The web pages designed for small screen mobiles wasted the potential of much larger displays available in advanced smartphones and tablets. This resulted in the development of Responsive Web Design (RWD) frameworks which utilized the Media Queries proposed in CSS3. RWD frameworks utilize a set of fixed width layouts which will switch automatically according to the view-port size and resolution. Before going into the different aspects of RWD, let's have an overview of the concept.

1.1. Responsive Web Design (RWD): A Case Study

We need to understand the basics of RWD before considering how it will enrich the web communication experience for the users. Let's check the website of 'The Hindu' daily in a desktop browser (*Google Chrome – desktop version at 1024×854 resolution*) and in a mobile browser (*Mozilla Firefox – mobile version at 480×854 resolution*). The image given in Fig 1 shows how the website will be rendered in both these browsers. Notice that the mobile browser shows the website meant for the desktop and it tries to make the content fit to the view-port size. By doing this, readability of the website is affected to a great extent and this makes the website practically unusable in a mobile device. A solution for this is to have a separate mobile website. 'The Hindu', does have a separate mobile website which can be accessed from [http://m.thehindu.com/]. When a user accesses the website from a mobile device, s/he will be automatically redirected to the mobile website. A script running in the background does this job. But, many mobile browsers disable scripts running in the background for security reasons and as a result the users will often get the desktop version itself making it a non-viable solution. If you check the mobile website of 'The Hindu', you will find that it simply lists a few of the top stories in the homepage and does not use the available screen space effectively. Modern mobile devices are capable of handling any type of media similar to desktop computer machines but many mobile websites still carry only text and a very few images to enrich the content. In short the potential of these devices is never utilized to its maximum.

Fig 1: 'The Hindu' website as seen in a desktop browser and in a mobile browser. (Retrieved on 2012 Nov 07.)

Now let's check the website of 'The Boston Globe' daily in the same browsers at the same resolutions. Fig. 2 shows how the website will be rendered.

'The Boston Globe' website self-adjusted its content according to the resolution of the rendering device. Notice that the website became more mobile friendly by removing the advertisements meant for desktop browsers and only retaining the necessary images. The readers can straight away start reading the content of 'The Boston Globe' website whereas to start reading the content of 'The Hindu' website requires additional adjustments such as zooming in and panning. To find and read a particular content from a non- responsive website is never going to be an easy task for the readers. Also notice that the full content available in desktop, in the form of text, images and videos are available for the mobile devices as well. Which means, the content is not getting reduced rather it is optimized to certain levels and presented in a device-friendly manner.

Thus, responsive websites are websites which are able to adapt their design and layout to fit the specifications of the device in which they are rendered, by dynamically adapting to different screen sizes and by reformatting the positioning and look of the different elements included in each web page.

Fig 2:'The Boston Globe' website as seen in a desktop browser and in a mobile browser. (Retrieved on 2012 Nov 07.)

1.1. *Advantages of RWD*

Responsive web design allows for optimal viewing of a particular website across a variety of devices with different display sizes. This in practice results in a lot of advantages. There are user-specific advantages as well as publisher-specific advantages. Let's first check the user-specific advantages:

* ***Feels comfortable***: The web pages will be optimized for the device screen size, which means it will provide a better level of comfort to the users. As the displayed content too will get optimized, navigation and usability will be easy.

* ***Ultimate reach***: Users may access the internet anytime from anywhere using any device. If the website is done in a RWD framework, it means that the visitors will be served in a better manner all the time.

* ***Presents full content***: Unlike the dedicated mobile websites which provide only bare minimum content to the visitor, RWD websites often provide the full content (*in the form of text, images, sound clips and videos*) or customized content based on the rendering ability of the mobile device. Also, the hardware capability of mobile devices is often in direct proportion with the display size.

* ***Utilizes the full potential***: RWD websites utilize the full potential of modern mobile devices and enrich their mobile browsing experience by serving content in multiple formats which includes text, images, sound clips and videos.

Now let's look from the publisher-perspective:

* ***All in one***: Earlier, the publishers made two websites; one for the desktops and another for mobile devices. Concurrently updating the two websites is not a feasible solution for long-term purposes. RWD eliminates the need of multiple websites for multiple devices.

* ***Save time, increase productivity***: By using RWD, publishers can resort to maintain a single website for all needs. This in practice will help them to save time and concentrate on other productive activities.

* ***Technical and financial feasibility***: Maintaining multiple websites for multiple devices may not be a feasible solution for long-term purposes. The technology is ever-changing and new devices which support web services and applications are being added day by day. Developing a new website for each one of these devices in the market can never be a financially feasible solution.

2. How do websites communicate?

How do websites communicate? We need to find an answer to this question before we consider the communication aspects of a responsive website. The Shannon – Weaver Model of Communication, which is considered as a comprehensive model, can be used here to understand the way websites communicate. The model was initially proposed to understand the role of noise in telecommunication but later it got accepted in the other fields of

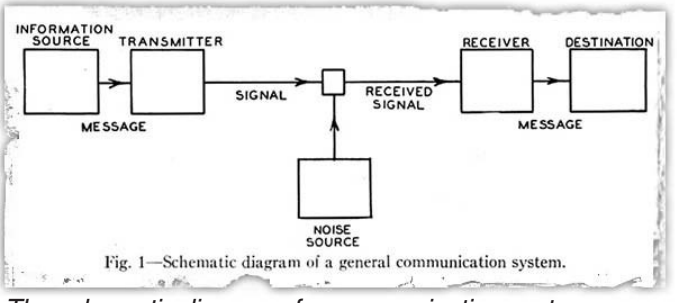

Fig 3: The schematic diagram of a communication system as proposed by Claude Shannon in his original paper.[1]

communication as well.

Based on the Shannon – Weaver Model of Communication, let's try to define the different facets of web communication. It is possible to represent the web communication process in this model based on purely technical aspects. Since we are trying to analyze the communication aspects of the process, here we are not considering the technical aspects involved in the process. Barring the technical aspects, we can represent the web communication process based on the Shannon – Weaver Model as follows:

1. ***Information source***:The publisher or the owner of the website can be considered as the source of information.The information can be any content which can be included in a web page. It includes text, graphics, animations, applets, sounds and videos.

2. ***Transmitter***: A transmitter or encoder represents the information in the form of a web page. Here we can consider it as coding the content using HyperText Markup Language (HTML) and Cascading Style Sheets (CSS).The pages written in HTML are then uploaded to a server and transmitted through the Internet in binary format.

3. ***Channel***: In the case of web communications, the various computers and networks which form the Internet can be considered as the channel.

4. ***Receiver***: A receiver or decoder (*the device in which a user opens a website*) receives the web pages in binary form and feeds them to the web browsers. The web browsers read the pages represented in HTML and then render the web page as intended by the publisher of that particular website.Thus, in web communication, the devices and the installed browser software used by the users form the receiver part.

5. ***Destination***: The visitor or the user of a website can be considered as the destination. A website serves its purpose when the information published in the website is successfully communicated to its visitors.

6. ***Noise***: The noise can be any technical or non-technical aspects which act as a barrier to effective communication. Inappropriate design and design schema can be considered as a major noise when we consider the communication aspects of a web system.

When it comes to RWD, we are more concerned about the decoding and rendering process of the web pages at the receiver end. Shannon suggests the possibility of interference during the transmission through the channel. Network errors and device failures are the possible problems that will affect the channels and disturb the communication system. In the communication point of view, we are more concerned about the noise or the design faults that occur at the receiver end. That is where RWD gains its importance.

2.1. The Web Communication Process

The web communication process is heavily influenced by the planning of the website. A website, be it of any type or for any purpose, should be designed considering its potential visitors and the ways in which they might be using the website. The content, the navigation, pagination, distribution or arrangement of content in each page, functionality, additional features, design aspects, technical aspects – all these should be decided from the user perspective. The appropriate use of text, images and other elements, the arrangement of these elements in a page, the size of each element, the use of colors and other visual elements; all these contribute to the effective communication of a particular website.

Once the content and the visual layout are ready, then it can be converted to different web pages using HTML and CSS. HTML defines the basic structure of the page and CSS is used to apply various styles to each element. Further adjustments with the design and distribution of content might be required here to achieve technical feasibility.

Completed web pages are then uploaded to specific servers. The registered domain name is pointed to the server location. Once the necessary server side configurations are complete, the website will be available online. Now onwards any user with access to the Internet can avail the website.

When a user opens a website in her/his device (*which is connected to Internet*) by providing the URL of that particular website in the address area of an installed browser, the first page (*usually index.html*) gets loaded. The browser will read the page written in HTML and render the page also considering the styles described in the associated style sheets. The page rendering may take a few

seconds to a few minutes based on the content of the website and the quality of the network connection.

Once the page gets loaded, the user can start browsing. The first page of a website often contains the hyperlinks to the various sections of that website. If the website is designed in a user friendly manner, it will not be that hard to find the required content and to make use of it.

2.2. Role of RWD in Web Communication

Responsive Web Design plays a major role in modern web communication systems. It is required to analyze the role of RWD both in the development stage of a website as well as in the rendering stage at the user end.

Fig 4: Foundation 3 is one of the most popular RWD frameworks.

In the development phase, the designer or web programmer is required to follow certain guidelines or use an RWD framework to make a website responsive. The use of @media-queries in CSS3 and utilizing the additional features of HTML5 is important in RWD based websites. RWD frameworks are ready-to-use templates which can be employed in a website at the time of development. By using the framework, the developers can concentrate on the other aspects of web development instead of spending their time on making the website responsive. It means, making a responsive website is no longer a hard task. Foundation, Skeleton and LESS framework are a few of the widely used RWD frameworks.

Even though developing a responsive website does include some changes in work-flow, for a user it may not be very visible. (*Unless s/he prefers to re-size the browser window and experience the responsive behavior in a desktop machine!*) But it does do the job of communicating effectively in the background.

Let's get back to our earlier example. Fig 5 shows the screen-shots of the websites of 'The Hindu' and 'The Boston Globe' opened in a mobile browser. The former website is a non-responsive one while the latter uses a responsive architecture. For a user, the following advantages are there:

Fig 5: Websites of 'The Hindu' and 'The Boston Globe' opened in a mobile browser. (Retrieved on 2012 Nov 07.)

1. Once the website is loaded, if it is a responsive one, the users can start using it straight away. But in case of a non-responsive website users need to pinch-zoom and then navigate to the required content.

2. A responsive website tends to use the available screen-size to its maximum potential. Often, the content will be optimized according to the screen-size. In case of a non-responsive website, it will be showing the same website across all devices. As you can see in the example, the website of 'The Hindu' loads all the advertisements which makes use of the website even harder on a mobile device. Also, more data will be loaded which are not of much use to a visitor to that website using a mobile device, and more time will be consumed for loading the full desktop website.

3. Content which requires additional plug-in support or applet support to display it correctly may not be suitable for a mobile device. As you can see, the mobile browser displays an error message for the right-top box of 'The Hindu' website, as it requires additional plug-in to display the content. In a responsive website, items which require additional plug-ins or resources can be ignored. Responsive websites are not only suitable for mobile displays. In case of large format displays (*such as Internet enabled television sets*) also responsive websites can be used very effectively. Fig 6 shows the website of BBC one channel [http://www.bbc.co.uk/bbcone/] as seen in a normal desktop and in a large format display device. The website uses a RWD framework and notice how the website has responded to the additional display space. The preview screen of the available videos becomes large enough so that it can be viewed from a distance. Also notice that the Next / Prev navigation arrows also get more prominence. If the website was non-responsive, the preview size would have been the same and the rest of the available screen space would remain unutilized.

Fig 6: Website of 'BBC one' in a normal display and in a larger format display. (Retrieved on 2012 Nov 07.)

Even if a publisher maintains a separate mobile website, then also responsive websites have an added advantage. Mobile websites often work by redirecting the users to a special domain or a separate folder location in the same domain. In both cases, it takes a little more time than usual to load the content. Moreover mobile websites will be designed keeping a standard resolution in mind or use a fluid layout style which is not an effective way of utilizing the available display size of the target device. Maintaining a separate mobile website up-to-date with the desktop website itself creates an unnecessary overhead. Responsive approach eliminates the need of all these extra efforts and the use of additional scripts to perform the redirecting. If a

publisher resorts to a separate mobile website, then in near future s/he may need to invest more and make a website for large format displays as well. But in case of responsive websites, it will be just a matter of adding a few lines of code for the larger displays.

Conclusion

Websites being able to render in various devices irrespective of their display size makes them more user- friendly. Today's technology enables the users to access web content from any device and from any place irrespective of time and location.The accessibility is further increased by the self-adaptive nature of responsive websites. All these contribute to make the web communication process more effective. In contrast to the scenario of having a separate mobile website, the content available across all devices will be the same in case of responsive frameworks and it reduces the chances of messages being ambiguous to a large extent. In view of technical feasibility also these websites score better than that of traditional websites as they effectively make use of the available view-port and also use the bandwidth in an optimal manner. All these make responsive web designs the need of the hour and the effective communication platform it provides further increases its potential in modern web scenario.

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MEDIA AND HUMAN RIGHTS: INTROSPECTION IN THE INDIAN CONTEXT WITH SPECIAL REFERENCE TO PRIVACY

Dhar Subhadeep

Abstract

A right normally refers to a privilege unhindered by interference from individuals or the state. A right can normally also be defined as a principle authorising a man's freedom in a social context.

Human beings are designed to live in a society comprising of the family, household or a small group which is one of the most fascinating aspects of fundamental, unchanged human behaviour. It is the natural tendency of any human being to carve out a smaller group from a large group which may be designated as the private realm. Problems arise when the right of society to be informed conflicts with the individual's right to privacy. A balance needs to be struck between the public's right to know and sensitivity towards respecting privacy of an individual just as any other fundamental right.

In the present age of information technology a vast amount of social and behavioural information is available on the internet and other forms of media. The world has become more open in the sense of communication and internationalisation allowing trans-border flow of data. This paradigm shift brings new ethical and juridical problems that are mainly related to issues such as the right of access to information and the right of privacy that is threatened by the emphasis on free flow of information.

The present paper tries to examine why privacy can be termed as a human right and the protection of privacy as an individual right which has been upheld by various international bodies and the constitution of several countries. The paper will also try to justify the norms of journalistic conduct and what constitutes 'public interest' and who is a 'public person'. It will also shed light on whether privacy intrusions by media which constitutes violation of individual rights is justifiable against the people's 'right to know'.

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Media and Individual Rights

The concept of privacy and its understanding varies according to sociological and historical backgrounds whereby it is difficult to define what privacy is. Debbie V.S. Kasper (1) defines privacy as one of those common sense concepts that is understood on some level within every human society. To be sure, the meaning of privacy and the social conventions surrounding it vary dramatically by socio-historical context but anthropological research reveals that 'at least a desire for privacy is a pan-human trait'. (Moore, 1984:276)

The coverage of human rights by media is more exhaustive than it used to be perhaps a decade earlier. The concern over human rights globally is remarkably high for the simple reason that human rights abuses are talked about more by political leaders and policy makers. This has generated public interest in issues relating to human rights globally which has triggered coverage of human rights issues by media houses in a big way. Since the last couple of decades a large number of human rights organisations have sprouted across the globe which monitor violations of human rights, lobby for reform and feed the press with information on the subject. In fact, freedom of the press can itself be categorised as a human right. The First amendment (1791) to the Constitution of the United States (1787) forbade any laws abridging the freedom of the press. The press hold to account the three branches of democracy in the United States-the executive, the legislature and the judiciary and a free press was considered vital to the functioning of a civilized society. The journalistic task of providing free and accurate human rights issues be it in times of war or civil strife assumes significance at a period when a protracted battle has been declared by the international community against human rights abuses. It is also true that the imperatives of journalism –truth telling, independence and awareness of the impact of words and images on society is manipulated at the news editor's desk to suit national interests or military and strategic objectives.

The present paper focuses on the responsibility of the media regarding abuse of individual rights of a human being with special reference to invasion of his privacy.

Sting operations such as the *Radia tapes* and Wikileaks have exposed the vulnerability of the right to privacy against the people's right to know. Controversies surrounding the *NiraRadia* tapes and the

2G scam have raised questions of informational activists overwhelming the right to information and the right to communicate this information for petty commercial interests.RatanTata chairman of the Tata group who was also involved in the controversy filed a petition in the Supreme Courtof India on the ground that disclosure of his conversation with Nira Radia has violated his right of privacy.The phone tappings were actually part of the investigations by the Indian income tax authorities to probe allegations of money laundering, irregular financial practices and tax evasion.Though there is no definite law under the criminal penal code to punish privacy intrusions, privacy is deemed to be protected under Article 19 and Article 21 of the Constitution of India. In India there is no regulatory authority to oversee activities of media houses.The print and the audio-visual media are generally guided by some norms of self-governing bodies like the Press council of India, the Cable Television Network (Regulation Act, 1995)and the code of Ethics drafted by the News Broadcasting Standard Authority (NBSA).

The media exposure over the IPL Kochi Franchise involving Sunanda Pushkar,one time friend and now wife of deposed Minister Shashi Tharoor is one example where there are allegations of intrusions in the private realm by the over enthusiastic media.The controversy erupted after Indian premier league (IPL) commissioner LalitModi revealed the ownership pattern of IPL Kochi stating that Pushkar,a friend of Tharoor owned free equity in *Rendezvous* sports which is a part owner of IPL Kochi team. The Rendezvous free equity is co-owned by SunandaPushkar along with 07 other stakeholders. Pushkar who has been linked to this controversy for acting as proxy for ShashiTharoor accused the media of ignoring her professional background and international business experience and focussing more on her personal life as if 'a woman cannot be capable of professional or financial success'. If justification of such privacy intrusion is public interest, much of the personal information published by the media failed to shed light on IPL holdings or the establishment of the nexus between the IPL holdings and involvement of public officials in the Government.

However there are instances when good and honest journalism has prevailed over constant pressure from advertisers, sponsors and political lobbying.it is also true that the media houses and journalists are often restricted of reporting human rights abuses

and war crimes by political establishments to garner public support of their acts.

A report published by Reuters Institute for the study of journalism has noted an increasing use of the human rights Act with media lawyers describing privacy as 'a new libel'. Naomi Campbell and Max Moseley are among the growing number of celebrities who have resorted to court action to safeguard their privacy. The report states that citizens in a democracy should know and be aware of the manner in which the government and the bureaucracy perform. This may extend to private organisations also if it requires the public trust. But it restricts this right to know to acts which are public and not private concerning personal relations and personal communication or belief. The report suggested that all media organisations should follow the same approach to intrusion and that the codes of any self-regulatory body for the press should have a two stage process: firstly, to justify the intrusion and then to defend printing the material and putting it in public domain.

It is true that freedom of the press is vital for garnering public opinion and at the core the right to criticise the government. The architects of the Indian Constitution had guaranteed the freedom of the press under article 19(1) (a) of the Constitution thereby sanctioning it constitutional status. Thus it cannot be curtailed like any other fundamental right by executive orders or administrative instructions which lack the sanction of law. Problems crop up when the citizen's right to know conflicts with an individual's right to privacy. It will be totally unreasonable to argue that for a public figure or a celebrity all compromising private relationships should be investigated for *misdemeanours* in the public domain. This area calls for handling issues relating to reporting any private activity sensibly and a balance needs to be struck between the concern for individual rights and the responsibility towards the society. Private lives of public figures can be reported upon if (1) it tells something about their character which might affect their public duty (2) they are responsible for public assets and (3) their private misdeeds could affect the public good.

The media people should possess that subtle ability to decide what is private or public in a particular context. The law generally views privacy in a binary way dividing the world into two distinct realms- the private realm and the public realm. Prof David E Morrison and

Michael Svennevig in their report for BBC identified three types of spaces associated with privacy. These are closed space(at home),restricted public space(the office or secluded beach) and open public space(town centre, shopping precincts, open public beach).Filming a celebrity figure in the open public space may not be an intrusion into his privacy but may be desired by the person in question to boost up or publicise his image. But filming him/her in the restricted public space without consent or taking photographs in the closed space can be considered as an offence for violating his private space. Journalists often justify their intrusion of privacy under the pretext of public interest but often lack knowledge of what constitutes public interest. Issues of public interest often encompass the benefits accruing to a large group rather than a single individual. Hence a proper judgement is to be made by media houses before releasing any private information in the public domain. Journalists should not go overboard while reporting any personal activity in the private domain. Every individual has a fundamental right of the right to privacy and this cannot be infringed upon to create ''sensational news'' that may be of commercial interest but against media ethics and morality.

Investigative journalism has become more aggressive both in the Indian and Western media where big media houses play a covert role. On 20th August, 2007, Live India a news channel carried a story on a Delhi Government school teacher Uma Khurana who was forcing a girl student into prostitution.The news spread like wildfire and angry guardians physically assaulted the teacher who was later suspended by the Delhi Government. Investigations by the policefound that it was a stage-managed operation and the girl student who was allegedly forced into prostitution was a journalist.The Delhi High Court slapped cases of impersonation,criminal conspiracy and false evidence against the journalist and the Ministry of Information and Broadcasting sent show cause notices to Live India on the ground that airing of the sting operation was 'defamatory,deliberate, containing false and suggested innuendos and half-truths.' India has a commitment to the International community to fulfil Article 12 of the Universal Declaration of Human Rights (1948) which provides that "no one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, or to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks." In performing this task,the Press Councilof India can legitimately adopt, by

analogy,principles of law and ethics for safeguarding personal privacy and lay down norms of journalistic conduct. Certain vulnerable categories of citizens likechildren and women may be given added protectionwhile reporting cases of sexual abuse of children or rape and molestation of women. Reports gathered through interception of mail, phonetapping,bugging andphotographing people without their consent are cases which constitute intrusion of privacy. The International Covenant on Civil and Political rights, 1976 under article 17 imposes the state to ensure that individuals are protected by law against "arbitrary or unlawful interference with his privacy, family, home or correspondence nor to unlawful attacks on his honour and reputation." Similarly Article 16 of the Convention on the Rights of the Child provides protection to a minor from any unlawful interference to his/her right to privacy and imposes an obligation on the states who have ratified the Convention to enact a law protecting the same.

Privacy as a fundamental human right has been affirmed by the United States Supreme Court, the constitution and laws of many countries in the European Union, the United Kingdom and the United Nations Universal declaration of Human Rights. However, in India it has failed to secure the status of an absolute right. In India media houses infringe on individual privacy with impunity throwing to the wind all norms of journalistic conduct. It is only when the violation assumes massive proportions that we sit up and take notice.Though judicial activism has been instrumental in restraining the media, this is too inadequate in an age of rapid technological advancements. ThePress Council of India may be empowered with sweeping powers to penalise media houses and errant journalists for wrongful intrusions in private domain of individuals under the pretext of public interest.

COVERAGE OF ANTI CORRUPTION MOVEMENT: A CONTENT ANALYSIS OF NATIONAL NEWSPAPERS

Arpan Paul

Abstract

The Indian anti-corruption movement 2011 has been one of the most popular movements in the history of India against the illuminated acts of scams and scandals. Anna Hazare being the leader, the movement has been an amalgamation of large diversified Indians which has often been equated as the second independence movement by various critics and media professionals. The research takes into account coverage of this mass movement by select national English newspapers of India in order to find the importance given by respective newspaper of different editions to it and their extent of setting the agenda. Quantitative content analysis for five months reveals a good amount of space allocated by each newspaper to the movement but the setting of agenda turns to be partial in outlook.

Keywords: popular movement, agenda, corruption, civil society

Introduction

Modern Indian society of twenty first century suffers many gruesome problems that have remained a colossal barrier in the escalating track of its socio-political, economic and even cultural development. As elaborated in his book *Patriots and Partisans* (2012), Ramchandra Guha traces the hindrances that have remained a challenge in bringing a holistic development of democratic India and one such is being corruption. According to Transparency International, corruption is defined as the misuse of entrusted power for private gain. India ranks ninety-fifth of the 183 countries in the category of Corruption Perception Index (Transparency International, 2011). Since independence, the country has been ripped by nearly forty eight major scams and scandals (List of scandals in India, 2011). Recent scams like 2G spectrum scam, Common Wealth Game (CWG) scam, Adarsh

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Housing Society scam, Indian Black Money in Swiss Bank, National Rural Health Mission (NRHM) scam in Uttar Pradesh etc. became the precursor of the popular mass movement better known as 2011 Anti-corruption Movement of India.

Anti-corruption movement of India, 2011

Anna Hazare, a voluntary retired army and social activist, is the man behind the growth of the popular mass movement, the Anti-corruption Movement of India, 2011. Imitating the old Gandhian methodology of 'fast unto death', Hazare compelled the nation to join him in this so termed as the second freedom struggle of India. Gaining momentum since April 5, 2011, when Anna Hazare went for fast unto death in Jantar Mantar for the incorporation of a law 'Jan lokpal Bill' to clean up corruption in many departments (PTI, The Economic Times, 2011), the whole nation joined the fight against corruption. The Jan Lokpal Bill proposed by members of the India Against Corruption (IAC) a non-governmental organization, was an alternative to the Government drafted Lokpal Bill having an independent body to investigate cases of corruption. Initially reluctant, the government finally accepted the proposal (mostly out of pressure of the magnitude of the movement) and April 16, 2011 was notified the due date of negotiation between them and the civil society members in drafting a joint strong Lokpal Bill (NDTV, April 17, 2011).

Swami Ramdev followed next in his fight to bring the stashed black money in foreign banks. The activity of government in evicting the supporters from Ramlila Maidan at midnight further incited the civil society (NDTV, June 6, 2011). The showcase of such brutality and the deepening rift between the members of the drafting committee to achieve consensus on the Lokpal Bill agitated Hazare to restart his hunger strike on August 16, 2011 as a protest against the government's version of the Lokpal Bill and to pass the Jan Lokpal Bill (PTI, Hindustan Times, June 8, 2011).

The arrest of Anna and other members of civil society on due date by the government under sections 107 and 151 of the criminal procedure code, heightened the fury and within hours turned the largest jail of Asia, Tihar, as the epicenter of the anti-corruption movement in support for Anna and Jan Lokpal Bill (Saxena & Mishra, The Week, 2011). When Anna refused to leave the jail, his release orders given few hours after his arrest, the pressurized government had to finally

accept all his twenty two demands, and he went on triumphantly on August 19, 2011 the fourth day of his fast, to the Ramlila Maidan where he continued his hunger strike for another eight days breaking it on August 28 after the Lokpal Bill finally reached the Standing Committee accepting his three main points- Lokayukta, lower bureaucracy and Citizen's Charter to be included in the Bill.

The movement broke all barriers of class, age, gender and even religion (Raman, Outlook, 2011). Not only had the glossy mega cities joined the agitation, villages across India too had lend their support (Dasgupta, Outlook, 2011). In fact the movement acquired huge popularity internationally especially among Indian-Americans who hugely supported Anna and the fight against corruption (International Business Times, August 25, 2011).

The coverage of the Indian Anti-Corruption Movement, 2011 has been non stop across Indian media world. Survey data and slogans buzzed from the screens of the television (Exchange4media). Similar to the Middle East, the social network sites streamlined the movement while the other media constantly flashed the updates to advertise its status. Facebook alone has 542 fan pages by Anna's name (Economic Times, August 22, 2011). The role thus media played in making the movement popular is identifiable.

Theoretical perspective

The analysis of the content can be better understood by the usage of Agenda Setting Theory. The agenda-setting concept (Rogers & Dearing, 1988; Bink & Leen, 2007) describes the strong link, and/or causal relationship, between the media agenda and the receivers' agenda as it is assumed that the more people hear or visualize an issue, the more they talk of it, and thus the agenda that media industry initially sets ultimately ends gaining popularity in the public domain. The role of civil society too can be judged with the above concept for the application of the theory will help understand the extent how the event slipped to be an agenda for both the media and civil society group and thereby analyzing, if there exists any, a mutual attitude towards the setting of agenda by both the groups.

Review of literature

Research conducted on popular movements has been quite exhaustive and its dimensions cover various aspects from education,

women to social stigmas. In their writing Choudhury and Kapoor (2010) explores the dynamics, politics, and richness of knowledge production in social movements and social activist contexts from which some of the radical critiques and understandings about dominant ideologies, power structures and visions of social change have emerged. Dr. M. Novelli in his writings (Novelli & Ferus-Comelo, 2009), focuses the way trade union movements respond with educational initiatives to the challenges brought about by neoliberal globalization. With range of case studies, the writer concludes that the knowledge production processes of labor movement around the world highlights the importance of knowledge production and processes of learning within social movements.

With women in particular, popular movements have been studied in various angles and dimensions. Role of women in popular movement against privatization has been studied by Dosh and Kligerman (2008). The researchers answers the questions regarding women leaders role in shaping the movements along with enquiring internally, for the qualitatively distinct decisions about movement governance and strategy, and externally, for finding the link between the gender of leaders role in shaping interactions with government and success of demands. Veronica Schild in her study (2006) highlights the untouched question on popular movement debate about the politics of gendered participation. According to the study, the women say in politics is directly proportional to their involvement in neighborhood-based organizations, as carried out in Chile, and thus they must have due importance in society. In fact, the category "popular" conceals the ways in which gender shapes the practices of men and women differently and thus the researcher used "recasting 'popular' movements" to mark gender as key category in understanding the legacy of newer neighborhood organizations. Women became the centre of agenda in the works of Indu Agnihotri and Rajni Palriwala (2001) highlighting the fight for their rights and survival. The researcher selected three issues that include anti-dowry campaign, campaign against Muslim Women's Bill and against sati practices (Rajasthan). The research was in fact an aberration to focus the need of social justice, for the campaigns represented only one of many facets of oppressions that ran within the web of societal relations in our country and more specific, the distinction between the genders.

Popular movement's role with democracy has been studied at length by various researchers. Whether it is the impact of urban popular movements on attaining democratic goals (Hellman, 1994), or the role of popular movement in ending an authoritarian regime to begin a democratic society (Haber, 2006) or popular movements and the process of consolidation of democracy (Cordosa, 1989), their relation has been found to be of much greater value. In fact, the Department of Political Science, University of Oslo, underwent a project analyzing the emerging efforts regarding new popular oriented politics of democratization against the conventional radical movements and elitist democracy building.

In Indian area, documentation of popular social movements has been well recognized. From the 1974 Bihar Movement highlighting the power of Jayprakash Narayan in curbing corruption (Ranjan, 2002) to the popular movements in Manipur (Singh, 1992) and Assam (Deka, 1996), the growth of popular movement in India has been found to be increasingly against the ruling government. In fact the rise of civil society in India has often been related with the increasing malpractices of government since 1947 (Kothari, 1988a, 1988b). The influence of Gandhi and his ideologies have turned to be the foundation of many popular movements in Europe especially Nordic countries since the end of World War II. Bjork and Ulvila (2008) in their study proved its argument that during the twentieth century the most important sources for new social movements in the West are located in Indian popular movements thus negating the Eurocentric view of the origin of popular movements in Western societies like US and UK which then spread globally.

Objective

The main objectives of the study include-

1. To conduct a quantitative analysis of the coverage of the anti-corruption movement.
2. To find the space devoted to the news related to the anti-corruption movement.
3. To measure the space given in editorial and letters-to-editor section on the movement.
4. To calculate the space allocated to visual contents regarding the movement.

5. To find the space devoted to the movement in opinion and feature related stories.

Methodology

Research approach

The researcher uses quantitative content analysis method to find the data required for the study.The unit of analysis taken is each news item.The quantitative content analysis seeks the space allotted to the various concerned items selected for the study in column centimeter (col.cm). The researcher also takes into account few editorials and analyzes them in order to provide a greater view on the subject.

Sample

The sample of the study includes two national English language newspapers and is selected based on purposive sampling. The newspapers include The Telegraph, Guwahati edition and The Hindu, Kolkata edition. Each newspaper follows a specific news ideology and thus provides a diverse view on the topic. Besides the newspapers selected will help understand the way the event is being emphasized in that particular region since the central locale of the event has been far away (in Delhi).The researcher also standardizes one newspaper (The Telegraph) and applies its column width to the other newspaper (The Hindu).

Period

The period of the study include the beginning of the anti-corruption movement i.e., April 5, 2011 to August 29, 2011 when the movement achieved its initial goal. The period selected signifies a nonlinear curve with movement's initial beginning, temporary halt and final rise.

Research questions

The following research questions are to be analyzed

1. What percentage of space has been devoted by each newspaper to the anti-corruption movement?
2. How much space has been provided to the news related to the anti-corruption movement by the newspapers?

3. What percentage of space is dedicated for the editorials and letters-to-editor for the movement?
4. How much coverage is given to the visual contents in each newspaper concerned about the movement?
5. What is the space given to the movement in the opinionated and feature section of the respective newspapers?

Reliability and validity

The researcher has undertaken certain steps to provide a reliable and valid data as far as the study is concerned. For assuring reliability, the researcher has conducted an inter-coder reliability test with two coders.The researcher based on their (coders) outcome has applied Holsti's formula to find the value of inter-coder reliability.The Holsti's (1969) formula, as mentioned in the book *Mass Media Research: An Introduction* (Wimmer & Dominick) is given as

$$\text{Reliability} = 2M / (N_1+N_2)$$

where M is the number of coding decisions on which the two coders agree while N_1 and N_2 are the total number of coding decisions by the first and second coders respectively.The test shows a figure of 0.825 as inter-coder reliability.

The validity of the study is provided based on an earlier work carried out on same methodology by Rajan Zed of San Jose State University (1996). In that study the unit of analysis was a news item (written or pictorial) measured in column centimeter as well as the researcher standardized one newspaper (The New York Times) and applied its column width to another newspaper The Times (London).

Data tabulation and findings

The quantitative data for the two newspapers for five months gives varied findings.The total print space for The Telegraph is found to be 1072785.6 col.cm, of which the total news space is 381190.4 col.cm, total visual news space of 98081.1 col.cm and the remaining 593514.1 col.cm as the total non news space.The Hindu provided a higher amount of total print space, 1129536 col.cm, with 509555 col.cm of total news space, 105241.5 col.cm of total visual news and 514771.5 col.cm of total non news space. The other quantitative data for the two newspapers are tabulated below

Table 1: Data showing space division of anti-corruption movement (ACM) with percentage.

Newspaper	Total space for ACM (col.cm)	Percentage (%) from total print space	Space in news section (col.cm)	Percentage (%) from total news space	Space in non news section (col.cm)	Percentage (%) from total non news space
The Telegraph	16060	1.49	11217.9	2.94	4842.1	0.81
The Hindu	27054.4	2.39	20657	4.05	6397.4	1.24

Source: The Telegraph, Guwahati edition; The Hindu, Kolkata edition (March 5 – August 29, 2011)

Table 2: Data showing space division of visuals of anti-corruption movement (ACM) with percentage.

Newspaper	Total visual space for ACM (col.cm)	Percentage (%) from total print space	Space provided in news section (col.cm)	Percentage (%) of space from news space	Space provided in non news section (col.cm)	Percentage (%) of space from non news space
The Telegraph	3994.5	0.37	3233.8	0.84	760.7	0.12
The Hindu	4674.3	0.41	4554.5	0.89	119.8	0.02

Source: The Telegraph, Guwahati edition; The Hindu, Kolkata edition (March 5 – August 29, 2011)

Table 3: Data showing space division of anti –corruption movement (ACM) from editorial.

Newspaper	Total editorial space (col.cm)	Total space for ACM (col.cm)	Percentage (%) of space from editorial space
The Telegraph	11928.8	439.9	3.68
The Hindu	13154.4	447	3.39

Source: The Telegraph, Guwahati edition; The Hindu, Kolkata edition (March 5 – August 29, 2011)

Table 4: Data showing space division of anti –corruption movement (ACM) from letters-to-editor.

Newspaper	Total letters-to-editor space (col.cm)	Total space for ACM (col.cm)	Percentage (%) of space from letters-to editor
The Telegraph	12033.4	546.6	4.54
The Hindu	13855.2	2558	18.46

Source: The Telegraph, Guwahati edition; The Hindu, Kolkata edition (March 5 – August 29, 2011)

Table 5: Data showing space division of anti –corruption movement (ACM) from opinionated space.

Newspaper	Total opini onated space (col.cm)	Total space for ACM (col.cm)	Percentage (%) of space from opinioated space
The Telegraph	72557.7	3711	5.11
The Hindu	126926.6	2569.4	2.02

Source: The Telegraph, Guwahati edition; The Hindu, Kolkata edition (March 5 – August 29, 2011)

Table 6: Data showing space division of anti –corruption movement (ACM) from feature space.

Newspaper	Total feature space (col.cm)	Total space for ACM (col.cm)	Percentage (%) of space from feature space
The Telegraph	54264.5	144.6	0.26
The Hindu	86077.6	38.7	0.04

Source: The Telegraph, The Hindu, The Indian Express (March 5 – August 29, 2011)

The above tables reflect the following findings:

¾ The overall importance given to the movement by each newspaper has been interesting. The Hindu provided the highest news space (45.11% of total print space) than The

Telegraph (35.54% of print space). News visuals have been maximum for The Hindu (9.31% of print space) followed by The Telegraph (9.14%) in accordance with the news space sequence. The non news space has been highest for The Telegraph (55.32%) than The Hindu (45.58%).

- Of the two newspapers, The Hindu provided the highest amount of space for anti-corruption movement both in news section as well as non news section. In the news category it documented 4.05% of the total news space while in non news category it provided 1.24% thereby bringing the tally to around 2.39% of space from the total print space. The Telegraph on the other hand, provided 2.94% of space in the news section, 0.81% in the non news section and the tally adding up to 1.49% (half of percentage of The Hindu) of total print space for anti-corruption movement for the five months under study.

- Regarding the visual space, of the two newspapers The Hindu printed highest percentage of news visuals (0.89% of total news space) related to the movement while The Telegraph provided about 0.84% of space to the movement. But in the non news section, the ranking reverses with The Telegraph providing 0.12% of space to the movement from total non news space while The Hindu provided about 0.02%.

- The overall editorial space has been highest in The Hindu than The Telegraph but the space provided to anti-corruption movement has been interesting. The Telegraph provided greater coverage in its editorial columns to the movement with 3.68% of total editorial space, while The Hindu provided about 3.39% of space.

- In case of letters-to-editor section, The Hindu provided the highest space both in itself as well as to letters related to the movement (around 18.46%). The Telegraph provided a mere 4.54% of space to the movement from total letters-to-editor space respectively.

- In case of opinionated stories, The Telegraph provided higher percentage of space from total opinionated stories (5.11%) though its total opinionated space in col.cm is much less than The Hindu which in turn allotted a space of 2.02%. The

anti-corruption movement related feature stories have been higher in The Telegraph (0.26%) than The Hindu (0.04%).

The analysis of few editorials provides a further clear picture on the level of importance given by the respective newspapers to the movement. In the editorial, *Corrupt, repressive and stupid*, published in The Hindu in August 17, 2011 the editor straight away speaks the loop holes of government and their illogical act in arresting Anna Hazare to stop his fast against the incorporation of Jan Lokpal Bill and the crusade against corruption. Highlighting the right of every citizen of India who are allowed to carry out peaceful rally or protest any where, the editor identifies the act of government to be illegitimate and beyond the ethics of constitution. Explaining the movement as an opportunity to curb the high level corruption by the ordinary mass, who are portrayed to be victims of the same, the editorial extends the fight beyond Anna and other members of the civil society group. The importance of media is too spoken as the vehicle to strengthen the mass movement, the editorial in all respect turns heavy for the insufficient handling of the issue by the government, their failure to curb corruption and above all justifies the need for such a protest by the common mass.

In the editorial, *Anna is not India nor India Anna*, published in The Hindu in August 20, 2011 the editor turns the focus away from both the government as well as Anna Hazare to a more realistic sight. The victory of Anna pressuring the government to allow him to do fast for the incorporation of Jan Lokpal Bill and the subsequent low level negotiations on the part of government to bring an effective Lokpal has been identified as two ends of a spectrum. Neither of which has been given a due importance in the column. In fact, the editorial strives to focus on a more stringent and authenticate version of reality. The way to curb corruption is essential but so also to respect the superiority of constitution and ways to abide by it. Anna's sole claim to pass the Jan Lokpal, in fact as the editorial directs, goes without any objective apart from negating the synonymous use of the term Anna and India by Kiran Bedi. The editorial stresses the importance of democracy and the urges suitable measures to be taken in abiding the democratic rules rather than violating it.

The Telegraph on the other hand took much stronger approach both to the government as well as the movement. In the published

editorial *All wrong* in August 18, 2011 the editor criticizes the illegal move on the part of the government in arresting Anna but clearly makes its stand that it even do not support Hazare's way of protest. The editorial is a clear picture of disgust both for the government as well as for Anna. In fact, the rage seems higher for the later as is evident with the comparison of Anna and his way of protest having touch of 'megalomania' and Ambedkar's 'grammar of anarchy' respectively. In fact, the editorial wholly considers the government responsible for its own fault for making a popular protest out of an ordinary man. The editorial as like its title portrays in all respect the movement to be a 'all wrong one' and is created out of wrong done by the government.

In another editorial *Inactivity trap*, published in August 24, 2011 the editor effectively showcases the weaker attitude of the prime minister and his inefficient tactics to handle the situation. The editorial out and out considers the movement being ran by group of maverick having covert political support, but lashes the government for its inability to handle situation. The prime minister being considered of no value and the government clearly submerged in its own threads of corruption. The editorial rightly equates government to a glass house for which they fear to throw stones at others. The editorial without lending any support for the movement has been list of deficiencies the government suffers.

Conclusion

From the above quantitative findings certain points stand clear and vivid. The coverage of anti-corruption movement and the appeal of Anna to fight against corruption have been well documented by both the newspapers in terms of words and visuals. Even the coverage of opinionated pieces and letters has been remarkable.

The seat of the anti corruption movement has been far away in the national capital. The extent of coverage in the newspaper of eastern and north-eastern region shows the effect of the movement as well as the importance given by the media to it. The media thus seems to be successful in setting the agenda for the public in order to make the event a prime concern. The comparison of the two newspapers shows their individual attitude towards the movement. The Hindu provided a greater coverage for the movement in both news section as well as non news section in terms of space. The Telegraph on the

other hand showed a higher editorial and opinion based space for the movement.

The Hindu in an overall basis has been found to be more elaborative in dealing with the movement. With an extended news coverage and visual presentation, the newspaper is highly successful in making the event noticeable for the public and the corresponding higher letters to editor space shows a direct relation in providing voice to the masses about the movement and thus shows a mutual relation between the civil society group and media in setting the agenda.

The Telegraph too covered the event at length but there seems a greater importance to the opinionated and feature pieces thereby reflecting a serious role of the general masses in their views regarding the movement. The higher editorial also reflects a more concerned approach towards the subjective functioning of the ideas about the movement. The quantitative study also proves one of the news values, proximity, to be true. The further we went from the main ground of protest, the less coverage we encountered and thus The Hindu provided higher amount of space to it than The Telegraph.

The analysis of the editorials on the other hand shows slight aberration. The Hindu tends to show a positive approach to the movement as is evident from the editorials discussed above. The importance and the extent of support for the movement is reflected in the editorial pieces though at times it focused on an more neutral point. The importance of media too has been justified by their write-ups. The Telegraph on the other hand proved to be completely neutral in their outlook. It in no way lends any support for the movement rather negates it to the lowest level. The editorials it provided clearly shows no trace for it supporting the agenda but showcased the faults associated with it.

To summarize, the agenda thus set by the media for the movement can be only be partially true. The respective media houses shows their extent of coverage in terms of space but their editorials reveals a different attitude altogether. The Hindu though has been successful to a considerable extent in setting the agenda but for The Telegraph the editorials breathe a counter agenda for the movement at large. The agenda setting theory in this respect seems to loose importance.

Limitations

Due to time constraints only two newspapers are included. The period of the study is fixed and therefore the findings depend on those particular timings. Since each and every day of the period is been studied, a qualitative assessment of all days has been difficult to include after going through the quantitative part.

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PROMOTING COMMUNICATION LITERACY EDUCATION FOR HUMAN DEVELOPMENT: AN INDIAN ENTITLEMENT

Vedabhyas Kundu

At 27, Sanjay Sahni is an unlikely messiah, but that is what he has become to hundreds of villagers in the Kurhani block in the district of Muzaffarpur in Bihar. It has all happened in the short span of a year, beginning with a chance search on Google for rural work entitlements promised by the government.

Thanks to Sanjay's gutsy initiative, the villagers of Ratnauli now get the 100 days work they have been promised by the government. More importantly, they also get paid – even if the money arrives in their post office savings accounts a few weeks later. The villagers have job cards and have learnt to ask for their money when earlier they would be given a pittance and turned away by contractors.

Like so many young men in Muzaffarpur, Sanjay migrated to the big cities to earn a living. ....On his trips back home to Muzaffarpur he would hear people complain that they didn't get work under the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA). Some were given work, but were not paid their dues....

Then one day in August 2011 he sat at a computer in a cyber cafe opposite his stall and typed 'NREGA Bihar' into Google. Sanjay dropped out of school in Class 7 and knows very little English. Before that day in August 2011, he hadn't used a computer. But someone had told him, *"Google se poocho aur sub kuch pata chal jata hai.* (Ask about anything in Google and you will find all the information you want)."

So, for the heck of it, Sanjay typed in 'NREGA Bihar' and the search engine sent him to the government's official NREGA website. There he found his district, Muzaffarpur, his block, Kurhani and his village, Ratnauli.

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He next clicked on 'Job cards in registration' and out came the official list of villagers who were supposedly getting 100 days work under NREGA and even being paid for it. Amidst 1,200 names he chanced upon the name of Mahendra Paswan, his neighbour in the village. It was amazing that such records existed and could be accessed. But what was shocking was the information was fabricated. Sanjay knew the truth: the villagers had mostly not got work and those who had been given work hadn't been adequately paid. Clearly the money had been siphoned off....Sanjay took printouts of the NREGA records and returned to his home at Ratnauli to show them to fellow villagers, who at first couldn't believe what they were seeing....So, when Sanjay showed up armed with his lists, it was difficult for them to comprehend how he could have got hold of the government's records.

Around 1,200 names were listed as recipients of NREGA money. In reality just a couple of hundred had job cards and they too had been given a few days of work and chased away by contractors....The money was collected and shared among the contractors, the village mukhia or headman and petty functionaries of the government.....But to question the mukhia and ask for accountability was to shake up the established order. A power centre was being threatened and there was also substantial money involved.....However, several older men with nothing to lose egged Sanjay on and soon he had a following.

These days, people turn up in hundreds in support of Sanjay. They hold up their job cards. The walls of the community centre and panchayat bhavan have names, card numbers and dues painted on them.

"Do you know your rights now? Will you tamely hand your job cards over to people you don't know? Will you allow contractors to chase you away like they used to?" Sanjay asks a large gathering consisting mostly of women. "No," they reply in chorus.

Asked what he thinks has changed, he says, "Nothing has changed. It is the same administration, the same system. The only difference is that people are now aware of their rights and have learnt to ask for them."

http://www.civilsocietyonline.com/pages/Details.aspx?176

The intelligent use of the digital media by Sanjay Sahni and the subsequent articulation of communication skills to fight for the rights of the poor in the remote village of Bihar underline the importance of communication literacy in the contemporary Indian society. The fact that the poor ordinary villagers are no longer ready to hand over their job cards to contractors who would have earlier exploited them is an indicator of how awareness about various communication tools brings changes in people. Sanjay's efforts have informed the villagers of their rights and armed with the right information they are no longer willing to hand over their job cards to the contractors.

Importance of Communication Literacy

Communication literacy which entails critical understanding of various tools of available communication modes and the ability to use these has to be an important feature of today's knowledge society. At a time when different communication channels are ubiquitous and the increasingly convergent nature of the communication architecture makes an important case in point for the citizenry to be communication literate. Only a communication literate citizenry can make optimal use of the available knowledge for sustainable development. In this context, the National Knowledge Commission in its report, Towards a Knowledge Society (2008), pertinently notes, "For India to be globally competitive in the twenty-first century, a critical factor would be our ability to harness our knowledge potential. With 550 million people below the age of 25, our human capital is our greatest asset. To best utilize this bourgeoning potential the country needs a knowledge oriented paradigm and focused capacity and quality building in the field of education."

Limited access to knowledge and most importantly inability to use it definitely hampers growth and development of people; it remains an important challenge before the society. Before Sanjay Sahni intervened with the NREGA records, the poor villagers were deprived of their livelihood opportunities by contractors. In fact, the UN Secretary General Ban Ki-Moon in his report on 'Realizing the future we want for all' (2012) underscores that limited access to knowledge hampers progress towards inclusive growth and technological progress for sustainable development. The report also notes the inequalities in access to ICT networks, education and technological progress within and among countries hampers progress. Besides it expresses concern at the rapid loss of traditional knowledge.

It is significant to note that the 2011 Human Development Report has ranked India at 134 out of 187 countries in terms of Human Development Index (HDI). HDI is a measure for assessing long-term progress in three basic dimensions of human development such as a long and healthy life, access to knowledge and a decent standard of living. Access to basic health facilities, child and maternal mortality rate, access to quality education and many other critical areas of human wellbeing continues to be a matter of concern in India.

In this context, awareness about different available opportunities and making use of them is crucial. Amongst the 12 Strategy Challenges identified by the Planning Commission for the Twelfth Five Year Plan is 'Decentralization, Empowerment and Information'. The Commission says, "Greater and more informed participation of all citizens in decision-making, enforcing accountability, exercising their rights and entitlements; and determining the course of their lives is central to faster growth, inclusion, and sustainability. How can we best promote the capabilities of all Indians, especially the most disadvantaged, to achieve this end?"

The Planning Commission's search for new approaches to meet the Strategy Challenges perhaps underlines the importance of communication literacy education for the citizens especially the disadvantaged. The empowering function of communication literacy is captured by Ratna Kumari. Way back in 2007 when Gandhi Smriti and Darshan Samiti, New Delhi(the national memorial of Mahatma Gandhi) was running a Gandhi Media Literacy programme in Bettiah, Champaran, Bihar for underprivileged girls of the area, some girls like Ratna Kumari expressed their interests to contest the local panchayat elections. They observed that with trainings in media and on how to use information gave them the wherewithal to contribute to the democratic process. They felt that enhanced communicative skills were important to take up the social concerns with a more concrete approach.

Then 20, Ratna Kumari felt 'better knowledge of the media and its functions' is essential 'to understand the actual meaning of media messages and the information it provided'. She opined 'critical use of communications not only empowered girls like her but also gave them the insight to look seriously on issues such as girls education, health and sanitation'. She was of the view that young

people like her could contribute to the development process if they developed necessary skills to critically analyse and evaluate information they receive daily from various media sources. "The training in communications we have been receiving has definitely changed the whole way we look at society and our own lives," she had said.

These views of Ratna Kumari can be reiterated by Jacquinot-Delaunay et al. (2008) who note that media literacy besides strengthening the critical abilities and communicative skills 'enables the individual to use communication for change'. The core points of communication for change are dialogue and participation.

An interesting example of how different mix of communication skills is used to take up social concern is by the children of Surovi Shishu Panchayat in Guwahati, Assam. The children have been taking up awareness programmes on health and hygiene, education especially of the girl child, child rights and wildlife protection. According to children like Supriya Dey, a student of class XII and President of the Surovi Shishu Panchayat, "By being part of Surovi we have not only learnt to be more responsible and developed leadership qualities, most importantly we are able to connect to knowledge outside our curriculum. Also in all our initiatives we use different communication strategies like interpersonal communication, street plays, develop wall papers, and conduct interviews for surveys. All these practical work have developed communication skills amongst the children who are involved in this initiative." Importantly, to develop knowledge base, Surovi and its adult mentors often invite experts to talk to the members so that they develop understanding on the issue they are trying to take up.

Meanwhile as part of the Children as Media Producers initiative, children in the Medak district of Andhra Pradesh are being trained to produce videos on local concerns to highlight these issues. The initiative is a joint effort of UNICEF and the Department of Communication, University of Hyderabad. P Anil Kumar (2010) points out that the translation of children's rights to expression and participation into reality depends on the children gaining the opportunity, ability and credibility to engage in dialogue with others in the community and expanding the notion of civil society at the grassroots.

Anil Kumar's contention of expanding the notion of civil society at the grassroots and linking it to development of communicative

skills of children through their training in video making underscores how civic engagement can be enhanced through communication literacy. His story quotes Md. Akram, IX standard, Doulatabad village, Medak district whose views encapsulate the emerging need to create awareness on local concerns through different media tools, "People fall ill because the drains aren't clean. That is why we make films on such problems."

The Pedagogy of Communication Literacy for Human Development

In the backdrop of increasing inequalities in the Indian society and continuing concerns on the country lagging behind in many basic human development indicators, developing an effective model of communication literacy education for the citizenry is important.

The theoretical grounding of communication literacy can be on Bandura's social cognitive theory of mass communication. Bandura (2001) notes, "Social cognitive theory provides an agentic conceptual framework within which to analyze the determinants and psychosocial mechanisms through which symbolic communication influences human thought, affect and action. Communications systems operate through two pathways. In the direct pathway, they promote changes by informing, enabling, motivating, and guiding participants. In the socially mediated pathway, media influences link participants to social networks and community settings that provide natural incentives and continued personalized guidance, for desired change. Social cognitive theory analyzes social diffusion of new styles of behaviour in terms of the psychosocial factors governing their acquisition and adoption and the social networks through which they spread and are supported. Structural interconnectedness provides potential diffusion paths; socio-cognitive factors largely determine what diffuses through those paths."

Meanwhile Asthana (2008) points out Dewey's theory of education with its emphasis on interaction, reflection and experience and Freire's insights on dialogical education and developing consciousness has shaped contemporary discussions on media education, learning and literacy. The pedagogy of communication literacy can also be framed on these insights.

Also Schudson's notion of monitorial citizen (1988 and 1999) can be the basis for such a model for communication literacy. It talks of changing nature of citizenship and stresses that a 'monitorial' citizen

is not an absentee citizen but watchful even while he or she is doing something else. Schudson says the media is an important tool in his concept of 'monitorial' citizenship'. It is premised on the notion that s/he must know how to interact with information.

Elihu Katz (1992) also talked about the organic connection between communication, education and democracy. Katz pointed out, "Democracy is meaningless without multiple voices… it is simply impossible to talk of citizenship training in modern society without reference to mass communication."

Further in the context of India, Kumar (2000) says 'the primary goals of media education are thus the conscientization, empowerment and liberation of the community and of society as a whole. Its concerns are the promotion of equality, social justice, democracy, freedom, human dignity and a more humane society. The methods or strategies it employs are dialogue, reflection and action.' He links media education to 'national development' and argues the need for education for citizenship and democracy'.

This notion of linking communication and media education to issues of empowerment and social justice is also underscored by Luke (1999) and Stack et al. (2006). They emphasize, "It is therefore important that media studies pedagogy be guided by social justice or equity principles that will enable students to come to their own realisations that, quite simply, racist, sexist, or homophobic language and imagery oppress and subordinate others. If students begin from a theoretically grounded understanding that inequalities and oppressive discourses (including mass cultural texts) are always socially constructed, then they will have the analytic tools to reconstruct in their own productions more inclusive, less denigrating meaning systems."

One important framework through which the pedagogy of communication literacy in India can be developed can be Amartya Sen's capability approach (Das, 2009). Sen and Dreze (1995) argue that the notion of capability is essentially one of freedom-the range of options a person has in deciding what kind of life to lead. They argue that one way of seeing development is in terms of the expansion of the real freedom that the citizens enjoy pursuing the objectives they have reason to value, and in this sense the expansion of human capability can be, broadly, seen as the central feature of the process

of development. This expansion of human capabilities can be linked to the notion of active and participatory citizenship aimed towards human wellbeing.

Walker et al. (2007) point out, "Sen promotes the notion of the capability of the individual agent to critically reflect and make worthwhile life choices from the alternatives available to her. The point is that capability, he would argue, equips us to determine our own major goals in life."

Das underscores, "It is important to acknowledge that the capability approach is not restricted to poverty and deprivation analysis, or development studies, it can also serve as a framework to understand media education in the developing world and the developed world by differentiating their capabilities and functionings."

Conclusion

With important credence being given to human wellbeing and the vision of the post-2015 development agenda (UN Secretary General Report) being to achieve an inclusive, people-centred, sustainable global development, communication literacy models in developing countries like India will have to respond to these issues and goals. A nationwide initiative to develop a people-oriented communication literacy programme keeping in mind the Indian context needs to be framed. It is also important that such communication literacy programmes should encompass traditional knowledge and communication channels.

In fact there has to be a definitive commitment to not only initiate but ensure the spread of communication literacy education to far flung areas of the country so that ordinary poor people like Sanjay Sahni and Ratna Kumari make use of available information and enhanced communicative skills for not only empowering themselves but also other marginalized groups.

It is only through such initiatives communication literacy can contribute to sustainable national development, evolution of an active citizenry and in strengthening of a knowledge society.

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FORM IV (See Rule 8)

Statement about ownership and other particulars about newspaper

SCIENCE COMMUNICATOR

1. *Place of publication* : *Kochi, Kerala State*
2. *Periodicity of its publication* : *Half yearly*
3. *Printer's Name* : *Dr.S. Anil Kumar*
   Nationality : *Indian*
   (a) Whether a citizen of India? : *Yes*
   (b) If a foreigner, the country of origin : *NA*
   (c) Address : *Director*
   Public Relations and Publications
   Cochin University of Science & Technology, Kochi -682 022
   Kerala State
4. *Publisher's Name* : *Dr. S. Anil Kumar*
   Nationality : *Indian*
   (a) Whether a citizen of India? : *Yes*
   (b) If a foreigner, the country of origin : *NA*
   (c) Address : *Director*
   Public Relations and Publications
   Cochin University of Science & Technology, Kochi -682 022
   Kerala State
5. *Editor's Name* : *Dr. S. Anil Kumar*
   Nationality : *Indian*
   (a) Whether a citizen of India? : *Yes*
   (b) If a foreigner, the country of origin : *N.A*
   (c) Address : *Director*
   Public Relations and Publications
   Cochin University of Science & Technology, Kochi -682 022
   Kerala State
6. *Name and address of individuals who own the newspaper and partners or shareholders holding More than one per cent of the total capital.* : *Dr. S. Anil Kumar*
   Director
   Public Relations and Publications
   Cochin University of Science & Technology, Kochi -682 022
   Kerala State

I, S.Anilkumar hereby declare that the particulars given above are true to the best of my knowledge and belief. Sd/-

22/02/2013 **Signature of publisher**

Reg. No. KERENG/2010/35808 ISSN 2231-217 X

Vol. 04, Issue 01 & 02, January & June 2013 (Combined Issue)

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Annual Subscription Rs. 200 (INR)

Edited, Printed and Published by Dr. S. Anil Kumar
Director, Public Relations and Publications
Cochin University of Science and Technology, Kochi - 682 022, India

Printed at Jose Printers, S. Kalamassery, Cochin - 682 033