Abstract:

In the age of globalization and information, education is a major indicator of human development. Unfortunately India, a nation of one billion has the dubious distinction of having the largest single illiterate population in the world. In a society as diverse as India with multi-cultural, multi-lingual and multi-religious populations, the challenge in educational sector is multifarious. Making education accessible to a nation of one billion is a stupendous task. In the era of women’s empowerment, India still has a very high rate of illiteracy among women, about 45.84% percent. India a land of villages and agriculture has a large segment of rural illiterate population i.e., 43.3% against the urban rate of illiteracy of 19.9 %.

The government cannot ignore educating unorganized population who falls outside four walls of the classroom. As per UNESCO declaration, education is not restricted to curricular learning as learning is a life long process. It is obligatory on the part of every nation to provide life long meaningful education to its citizenry irrespective of age and gender. Therefore the concept of education has been reinvented to include education of mind, body and soul. Today education is more comprehensive and is viewed from broader perspectives. There is a paradigm shift from human resource development to human development being the purpose of education.

Application of space technology to deal with the problems of education is not new to India. The Indian space programme should be given credit for the massive expansion of television and for developing innovative satellite linked educational system to serve the pro social needs of the rural society. Today one can count on space technology to reach the voiceless, oppressed and poverty-stricken people and bring them under the umbrella of development. The village satellite in the form of GRAMSAT is a unique concept of interactive technology that can overcome the
technological obsolescence as it is compatible for media convergence. As a result it
can become a unique tool for imparting continuing education and training with
greater degree of flexibility. GRAMSAT has reinvented the concept of development
communication. The obstacles in the earlier models of communication for
development have been overcome in the GRAMSAT that ensures application of space
science and technology for socio-economic development.

Thanks to GRAMSAT, the villages in India can now be reached through the
new program of Indian Space Research Organization (ISRO) of taking satellite-based
media intervention in development programmes. The GRAMSAT programme is an
ambitious initiative of India’s premier space house, ISRO, to bring villages, blocks
and taluks under the umbrella of communication network at the state level. It
facilitates creation of electronic highways between villages and state capitals.
GRAMSAT is designed to provide better connectivity to villages through advanced
programmes like computer connectivity, data broadcasting and TV broadcasting
facilities. The ground has been prepared for the media interventions in rural
development through e-Governance, National Resource Information System (NRIS),
Development information, Tele-Conferencing, Disaster Management, Telemedicine
and Distance Education.

GRAMSAT, the village satellite has provided the much-needed succor for the
desperate village members including women Panchayat members in Karanataka.
India hopes to cover the entire rural areas through GRAMSAT programme by the end
of tenth plan period and establish strong database of rural development. The
architects of GRAMSAT have brought this project under the patronage of state
governments compelling the latter to create necessary infrastructure in every village.
Today’s vastly changed media scenario calls for a recasting of the role of media in
promoting pro social change.

Introduction

INDIAN SATELLITE FOR PRO SOCIAL NEEDS

The forces of privatization and globalization prompted India to place
high priority on developing indigenous capability to harness media for
development. India with an active and advanced space programme for development has explored space technology to energize the process of mediated development. Armed with the experiences of satellite route to development, India has conceived satellite-based media intervention to address vital social needs. These alternative media are participatory to the core and are free from the clutches of regulatory authorities.

It is evident from past experiences in India, that decentralized community media are crucial for sustainable economic and social development. One of the achievements of post liberalization era is the successful application of space technology to deal with the problems of development. One such programme born out of social commitment of the Indian space programme is the GRAMSAT project. It is an ambitious programme that democratizes the media and creates space in the community for the poor and impoverished at the grassroots. Though India is not new to the application of space technology for societal issues, GRAMSAT endeavours to overcome the inadequacies of the early attempts to harness media for development.

GRAMSAT is the innovative programme of Indian Space Research Organization of taking satellite applications to villages, which has recast the media for pro-social needs. GRAMSAT was formally launched in May 2002 by the then Prime Minister, Atal Bihari Vajpayee in the State of Orissa. GRAMSAT programme is an initiative to provide a decentralized communications network at the state level connecting the state capital to districts and blocks and State Governments.

The networks provide computer connectivity, data broadcasting, TV broadcasting facilities having applications like e-governance, National Resource Information System (NRIS), development information, tele-conferencing, disaster management, tele-medicine and distance education. According to the Department of Space, the GRAMSAT networks are operational in the States of Gujarat, Karnataka, Madhya Pradesh, Orissa and Rajasthan. The report further states that in Andaman and Nicobar the GRAMSAT network has been utilized for vocational training in multicast and
multipoint video conference mode providing computer education in polytechnics. In Orissa the network has been expanded and upgraded for TV broadcasting to Khalahandi-Bolangir-Koraput region (800) and also for interactive training programmes, e-governance and National (Natural) Resources Information System to reach all the 234 blocks in 30 districts.  

**Genesis of GRAMSAT in India**

Application of space technology to deal with the problems of education is not new to India. As early as the 1960s Dr.Vikram Sarabhai, a visionary and eminent space scientist took the initiative and established the National Satellite Communication (NASCOM), which prepared the blueprint for INSAT- the Indian National Satellite. The outcome of these developments was the birth of India's giant television experiment, the SITE- the Satellite Instructional Television Experiment that became operational in 1975-76. It was undertaken as a year long experiment with satellite television broadcasting to provide communication support to education and development activities in rural parts of India. One of its major objectives was to improve the primary school education in rural areas and to provide teacher training to strengthen school education. SITE was the first effort to use satellite communication for communication and development. The outcome of SITE was *Kheda* Communications Project in Gujarat, which gave new perspective to the concept of development communication.

The impact of these projects was visible in 1995 with evolution of Training and Development Communication Channel-TDCC at Jhabua in Madhya Pradesh experimenting with talk back facility. Training and Developmental Communication Channel (TDCC) is an experimental project conceived by ISRO- Indian Space Research Organization. The uniqueness of this experiment was to transform television, which till then was presumed to be an impersonal medium, into an interactive mode of communication. The project provided a one-way video and two-way audio system using satellite INSAT-3B. The infrastructure was a simple one, a one-way video and two-way audio system where as the teaching-end included a studio and up link facility for transmitting live or pre-recorded lectures. The receiving end consisted of well-equipped classrooms located nation-wide to receive
lectures through simple dish antennae as well as a facility for interaction with teaching end using telephone lines. The central nodal teaching facility was made available at Delhi, Gujarat, Madhya Pradesh, Orissa, and Karnataka States. Studies have indicated that TDCC system is an appropriate and cost-effective tool in education promoting distance education, rural development, health and nutrition, sanitation, women and child development, Panchayats and vocational education. The studies indicate that TDCC has benefited over 60,000 participants including primary school teachers and Panchayat members in several states. Interestingly, in the state of Gujarat, TDCC facility has been adopted to connect engineering colleges in the state.

The success of TDCC led to the planning and implementation of Jhabua Development Communication Project in the villages of Jhabua district in Madhya Pradesh. The experience of JDCP led to the evolution of the concept of GRAMSAT- a village satellite with the objective of connecting villages with bureaucracy.

The Jhabua Development Communication Project (JDCP) in Madhya Pradesh gets credit for evolving a system of satellite-based education and training in India. Regarded as a milestone in the history of broadcasting, Jhabua project is a laboratory for implementing spacebridge in rural India. What India learnt from SITE and Kheda projects was put into practice at Jhabua making it a viable model of decentralized communication. The Jhabua Development Communication Project, a synthesis of SITE and TDCC projects is operational since 1995 covering all Panchayats in its district in Madhya Pradesh. Jhabua, one of the 45 districts of Madhya Pradesh has a population of 1.3 million. The district has 1360 villages and over 80 per cent of them have electricity. However the literacy rate is very low at 14.54 percent. The JDCP established a network of 150 DRS- the receive terminals and one talk back terminal in each of the 12 development blocks in the district. The receiving sets were installed at Panchayat office for easy access to the transmission. The project became operational on October 21, 1996 and the first Talk Back program was transmitted on January 10, 1997. The Project differed from earlier experiments by introducing interactivity
component in its programmes. Today it covers 1062 villages in three districts of Madhya Pradesh. The success of Jhabua project encouraged the government of Madhya Pradesh to extend the GRAMSAT facility to another 200 villages in the neighbouring Dhar and Barwani.

The GRAMSAT at Jhabua and other places has proved beyond doubt that non-commercial information requires exclusive participatory channels of communication. The overwhelming response to GRAMSAT in States like Madhya Pradesh and Karnataka has emboldened the government to extend the satellite based village development to other areas namely northeastern region, Andaman and Nicobar, Chhattisgarh, Jharkhand, Uttaranchal and West Bengal.

The uniqueness of the JDCP was the involvement of state governments in crucial issues like broadcasting, as it is the foray of union government. The participation of the state governments and voluntary organizations was considered vital for the meaningful implementation of development programme. For almost five decades broadcasting has remained the forte of the Central government. It's noteworthy that both ISRO and the central government had recently redesigned GRAMSAT with full involvement of the respective state governments right from the stage of planning. Interestingly GRAMSAT is detached from the mainstream electronic media of state radio and TV.

Projects Conducted in Collaboration with Indian Space Programme to Harness Media for Development:

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The Indian space programme deserves credit for the massive expansion of television network in the country and the development of innovative satellite linked educational system to serve the pro-social needs of the rural society. By using satellites to address the issues like training of farmers, female literacy, primary education and continuing education to the special groups has become feasible. The earlier policy of reaching people for pro-social needs through mainstream media consisting of public service broadcasting and commercial-broadcasting channels has been done away with. It is evident that these conventional channels, which are rich in quantity and quality, cannot bring about sustainable development. Today one can count on space technology to reach the voiceless, oppressed and those living below the poverty line and bring them under the umbrella of development.

The village satellite in the form of *GRAMSAT* is a unique concept of interactive technology that can overcome the technological obsolescence, as it is compatible for media convergence. It has the potential to become a unique tool for imparting continuing education and training with greater degree of flexibility. *GRAMSAT* has reinvented the concept of development communication. The obstacles in the earlier models of communication for development have been overcome through *GRAMSAT* since it facilitates the application of space science and technology for socio-economic development.
In the post liberalization era, the market forces have compelled the de-linking of media such as radio and TV from state control. The privatization of electronic media and the rapid changes in communication technology has brought about the emergence of participatory communication and the intervention of media in community development. When radio and television were in the formative years, specific need based programmes on agriculture for example would be decided and produced by the experts from the apex body for education, research and extension education in the field of agriculture and the Indian Council of Agricultural Research in New Delhi. In the later years this practice was gradually discarded and the mandarins of Akashvani and Doordarshan- the public service broadcasters, became the decision-makers of the special interest programmes. Today technology has come to the rescue of the intended beneficiaries of such programmes by allowing experts to have a better say in the content of the programmes. The communication revolution has resulted in decentralization of media and facilitated its application to cater to specific needs and demands of the people. Thanks to GRAMSAT, the villages in India can now be reached through the new programme of taking satellite-based media intervention in development programmes by ISRO.

India is one of the emerging space powers in the world. Its space programme has ushered a new era in communication with its satellite-based communication and broadcasting system to meet the development needs of the country. As a result the villagers in the remotest parts of the country, who are deprived of the most basic information and training about their development can avail the services of the best of experienced subject experts and administrators without leaving their villages. A significant advantage of spacebridge is its flexibility and compatibility for integration with several newly emerging technologies in telecommunications and broadcasting.

GRAMSAT was introduced in 2002 in Orissa, Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh and Rajasthan revolutionizing communication in the villages of India. GRAMSAT pilot known as Swarn Jayanti Vidya Vikas Antariksh Upagraha Yojana (Vidyavahini) has been
brought in 800 villages in the Kalahandi-Bolangir-Koraput (KBK) region in Orissa under the network of development. In Andhra Pradesh GRAMSAT has provided connectivity to distance education, Tele-medicine, agricultural extension, E-governance and community Internet centre through an integrated satellite network called MANA TV, with the up link facility at Hyderabad. Andhra Pradesh is the first state in India to establish and run a TV channel called, MANA TV, outside the control of the Ministry of Information. Today engineering colleges in the States of Karnataka, Andhra Pradesh, Maharashtra and Gujarat are using TDCC network to beam live lessons to classrooms to overcome acute shortage of human resources, infrastructure and expertise in engineering education. Several state governments have adopted the network to train schoolteachers and technical staff demonstrating the feasibility of satellite linked media intervention in development.

These experiments paved the way for India, with its mastery over space technology to successfully launch on September 20, 2004 an exclusive satellite called EDUSAT for spreading the footprints of education across the Indian subcontinent.

**GRAMSAT in Karnataka**

The state of Karnataka is in the forefront for decentralizing the administration through Panchat Raj Bill that dates back to 1990. The 73rd amendment to Indian constitution in 1993 empowered the state to establish the Panchayat system- local self-governance. The amendment gave constitutional status to local self-governance giving political power to the common villagers. In 1993, a three-tier system consisting of Gram Panchayat, Taluk Panchayat and Zilla Panchayat came into existence. In this decentralized model of governance the lowest rung in the ladder is Gram Panchayat that consists of one or more villages. The next in line is Taluk Panchayat and the highest is Zilla Panchayat, which is the district level. Panchayat is the traditional name given to local government. The aim is to accomplish decentralized administration by bridging the urban and grassroots link. The Panchayat Raj legislation also ushered in transfer of political power from traditional upper castes to backward caste people.
The amendment assumes importance since it made reservation for women in Panchayat mandatory. Also, it allowed one third of seats in Panchayats to be reserved for women thereby ensuring women's participation in political process. The State of Karnataka renowned as the IT capital of India, was one of the first few states to implement the process of decentralization in administration through Panchayat Act of 1983 much before the constitutional amendment. Nevertheless, the Karnataka government passed the Karnataka Panchayat Raj Act of 1993 to incorporate the benefits of 73rd amendment of the Indian constitution. The legislation strengthened the process of democratizing local administration literally bringing the fruits of democracy to the grassroots level. The broad aim was to give greater participatory role to the neglected and marginalized people in forming local government to share political power. As a result common people found place in the decision-making bodies realizing the concept of village self-governance. The legislation allows for reservation of one third of seats for women in Panchayat bodies creating greater opportunities for women to participate in the local governance. The women in the villages at present enjoy political power and have a great say in the development programmes. Interestingly, one of the local governments- Panchayats in the State of Karnataka is entirely run by women. The high rate of illiteracy and poverty has underlined the need to train and educate the villagers in general and women members in particular. Illiterate and poor women members did not know their rights and duties and were unaware of what was expected of them. As a result the process of decentralization suffered a setback giving room for abuse of power by vested interest. The government was seriously concerned about the deterioration of local administration as elected members from the socially and economically backward classes failed to run the administration.

Significantly, the state took lead in imparting the satellite-based training to improve the quality of administration at the village level. The government made the right move by selecting Abdul Nazir Sab Institute of
Rural Development, a premier institute situated at Mysore to implement the GRAMSAT, instead of Doordarshan- India's public broadcasting system. The Institute implemented the GRAMSAT project in February 2002. Communication technology has now enabled experts in Panchayat Raj to use their expertise in training the Gram Panchayat members of Karnataka via satellite. The paradigm shift has yielded rich dividends. The process of communication employed by new age experts is participatory and decentralized to the core.
Figure-1 The configuration of satellite system in GRAMSAT housed at Abdul Nazir Sab Institute for Rural Development, Mysore, is illustrated below; (Courtesy: Abdul Nazir Sab Institute for Rural Development, Mysore, India)

The communication configuration technically consists of infrastructure for conducting two-way audio and one-way-video system. The teaching end includes one earth station, one studio and the up link facility. The earth station receives satellite support C-Band transponder of INSAT 3B. The receiving end comprises Direct Receive System (DRS), television set, telephone line, fax and Computer with Internet facility. The GRAMSAT in Karnataka is currently connected to 175 Taluk Panchayats, 17 DIET’s-District Institute of Education and Training, 17/18 DTI’s, 18 engineering colleges and 51 Study Centres of Karnataka State Open University. This
The project has brought about connectivity between the State Headquarters and different locations in the state, including district, Tehsil, block and Panchayat headquarters, with selective video and audio capabilities.

The State of Karnataka has 131 taluks spread over 27 districts. 4339 Gram Panchayats exist with 61667-Gram Panchayat members out of these 34127 are male members and 27540 are female members. Interestingly owing to state legislation making one third of seats reserved for women in Gram Panchayats, a large percentage of women find themselves in corridors of power. Intriguingly a majority of these members lack administrative experience and exposure to state machinery. Illiterates and semi-literate members have been elected by the village electorates to run Gram Panchayats. Lack of education and knowledge of running the village administration are some of the bottlenecks faced in the decentralization of local administration. Often the members are ignorant of the administrative and financial powers vested on them. Worst still they are ignorant of the laws that relate to Gram Panchayats they have been elected to. The timely space inputs will no doubt help in bringing vital information from experts situated in state headquarters to the people residing in backward and remotest corners of the country. Further it is cumbersome to reach all the members located in over 4000 local bodies using conventional methods of communication. Therefore, the state government felt the need to impart training for well over 60,000 Panchayat members by reaching out to them through spacebridge. The huge number and the local problems were the hurdles in conventional methods of training. The use of space technology became viable option in such a situation.

The application of sky teacher to train the Panchayat members became a reality. GRAMSAT was thus born launching the first ever satellite based training in the State of Karnataka. Launched with a total budget of Rs.65 million, the project is operational in two stages. The stage-1 was completed in Feb 2004 and stage-2 was supposed to end in 2005.
The Significant Features of GRAMSAT are:

- Simple, sleek and effortless way of communication with over 60,000 members in their own village environment.
- Interactivity - a very high degree of interactive programme. One can air his/her question, opinion, suggestion, and query etc. and get immediate response.
- Communication in the local language.
- Need based programmes.
- Access to experts, bureaucrats, ministers and chief minister in local environment.
- Flexibility - the schedule of programmes is at convenient hours.
- Forum of redress of grievances.
- Better connectivity among members of different Gram Panchayats.
- A member gets exposure to the problems and functioning of other Gram Panchayats in the states.

Figure-2 GRAMSAT Model of Media Intervention in Development
• Exposure to technology and hands on experience in the use of tools of communication.
• Generates high degree of participation.
• Beneficiaries are central to the development process.
• It spreads technology literacy among target audience.
• It facilitates one-to-one communication;
• It’s individualistic.
• Encourages self-directed development.
• It overcomes geographical, social, political and cultural bottlenecks in pursuit of development.

The GRAMSAT at Mysore was conceived to help members of Gram Panchayats to understand the nature and scope of local self-government and the duties and responsibilities of representatives of people in exercising their administrative and financial powers. The earlier experiences like Jhabua Development Communication project with tribal population in Madhya Pradesh has also contributed to the better planning and implementation of the GRAMSAT project to train village and block level functionaries.

The people-centric approach, de linking the mainstream media, non-linear strategy and minimum government participation, social agenda and thoughtful planning are the salient features of this satellite-based training project. The innovative use of satellite to address vital social needs has brought the government, voluntary agencies, beneficiaries, academicians and experts on one platform with the common goal of enhancing the quality of human resources.

The project of village satellite imparts programmes based on the principle of Distance Participatory Training / Learning. The programme has received overwhelming response from the Panchayat members as it has given the geographically scattered people access to the programmes of development. The elected members are common people and some of them being impoverished have to give up their daily wages to attend Panchayat meetings. It’s a big challenge to expect these members to play an active role
in village administration requiring enormous resources to make them participate in governance.

There are two major achievements of GRAMSAT. Firstly, the intense debate and discussion the members had with the experts and authorities through interactive programmes on the intricacies of local self-governance has prompted the government to bring about legislative changes in Karnataka Panchayat Raj Act with particular reference to Gram Panchayats. Nearly 24 amendments in matters pertaining to Gram Panchayats and 18 amendments to Taluk Panchayats have successfully been made to the Panchayat Raj legislation to make the decentralization meaningful and relevant. It is no mean achievement for people’s representatives who had no clue about the nature of local governance to prevail upon the government to bring about legislative changes. Secondly, focus of some of the GRAMSAT programmes was on burning issues of local administration, viz., the property tax, which is also a major source of revenue to local bodies. The spread of awareness about property tax has improved revenue and tax collections in villages and taluks. It has also hastened the process of decision-making. With newfound awareness, the elected representatives are monitoring the implementation of development programmes and schemes. GRAMSAT has been applied to achieve the major tasks of decentralized governance heralding greater transparency in local government and downward accountability in Panchayat institutions.

These findings demonstrate how media intervention assumes significance if it is need-specific and learner-centric drastically reducing the wastage of message. This satellite based communication programme consists of wide range of activities like live talk and demonstration and uses variety of media and has opportunities to enhance learning, share experiences and increased reach to people at the grassroots. It also facilitates exchange of information between geographically scattered members and promotes sharing and learning. The programme has successfully created awareness about local governance and decentralised administration at village and taluk level. There is visible impact of these programmes particularly on women members who had never tasted power of
formal leadership and most of them have gained self-confidence in their new roles as elected representatives in a democracy. The crux of the issue is that most of the content of the programmes has been generated through meetings with the elected members reducing external interference to the bare minimum. Further these programmes therefore were participatory to the hilt. Further the programmes have connected the members at the village level, who are predominantly poor and illiterate, with the highest seat of power at the state capital enabling them to exchange information without beauracratic bottlenecks and this has hastened the decision making process.

**Lessons from GRAMSAT:**

- Earlier the government used to criticize that people don't participate in the development programmes. With programmes like GRAMSAT it's the other way round. The beneficiaries are demanding that government participate in the development, as it's a process of partnership. Participation has assumed new meaning with GRAMSAT.
- Technological intervention brings about development only when people at the grassroots are involved;
- There are two sub components to technological intervention. One is technology of development and the other is technology in development. With GRAMSAT we have come to realize that it is not just the use of technology or communication tools for development outcomes. But it is systematic approach to development that determines the technology of development.
- In the earlier projects, we used media more in a mechanistic sense. The presence of media without interchange mechanism reduced the beneficiaries to be passive listeners of technology. Beneficiaries are central to the development process and technology has empowered them to self-guide the development. The entire process of development is beneficiaries' controlled. The people at the grassroots are beginning to understand that they are responsible for their own progress. GRAMSAT primarily represents the technology of development. GRAMSAT demonstrates systematic approach to development and problem solving is central to it. GRAMSAT consists of
methods, techniques and resources to support the beneficiaries in pursuit of development. Where GRAMSAT succeeds is it creates space for the beneficiaries.

Communication technology has enabled the experts in Panchayat Raj to use their expertise in training the Gram Panchayat members in Karnataka. Mainstream commercial media like state controlled radio and television have been kept away from the network of GRAMSAT. The process of communication employed by new age experts is participatory and decentralized to the core.

The GRAMSAT programme is an ambitious initiative of India’s premier space house, ISRO, to bring villages, blocks and taluks under the umbrella of communication network at the state level. It facilitates creation of electronic highways between villages and state capitals. GRAMSAT, the village satellite has provided the much-needed succor for the desperate village members including women Panchayat members in the State of Karnataka. India hopes to cover the entire rural areas through GRAMSAT programme by the end of tenth plan period and establish strong database of rural development. The architects of GRAMSAT have brought this project under the patronage of state governments compelling the latter to create necessary infrastructure in every village. The vastly changed media scenario calls for a recasting of the role of media in promoting pro social change.

The economic reform has resulted in the democratization of media facilitating local governance as a stepping-stone for empowerment of communities. Media convergence has the immense potential to create social media, i.e. media with concern for development to provide alternative to commercial mainstream media.

A well-known African writer once said that the oppressed people are not blades of grass but trees with strong roots. By the same token, GRAMSAT propounds the theory that any process of sustainable development has to be people-centric and participatory.

“If you have come to help me you go home again. But if you see my struggle as part of your survival then perhaps we can work together” - Australian Aborigine woman. (Korten, 1990).
References: