

Design and Establishment of Knowledge System in Rural Areas to Promote Elementary Education

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ABSTRACT: In this paper, the author suggests a system that presents practically implemental solutions to the problems responsible for present under- developed condition of rural India. The solutions presented are all based on the Information and Communication Technology based methods that are considered the major reasons for the infrastructural and economical development in urban areas. The author examines the current financial, educational, infrastructural status and the level of awareness among the rural masses and based on the survey, plan out the system, proposed in the paper. Practically, it includes the establishment of KS based IS equipped with all the required telecom access devices and infrastructure. Issues considered, involves providing all the facilities like medical information, updating rural people about the current market value of products, making them aware of latest governmental schemes and financially upgrading policies. The paper maps out the possibility of making available the mentioned services through the usage of the current bottleneck for the IT sector, namely the telecommunications infrastructure including internet and video conferencing. To bridge up the gap between these modern tools and the village masses certain experts are arranged to make the information access easier. The practical accountability of the system makes the reliability of suggested ideas, a surety. The analysis highlights the building blocks required for successful implementation of the proposed ideas.

KEYWORDS: Information System, Information and communication technology , Knowledge System, Expert Agent

I. INTRODUCTION

The modern means of Information and Communication Technology (ICT) are very popular and are a significant reason for the of same ICT tools in rural areas that promise to improve the scenario. [2]

There have always been efforts made by governmental and non-governmental organizations to introduce schemes like ESeva, InformationVillage, Bhoomi, EChoupals etc. in rural areas. But the effect of these schemes has never been much, given problems like – development in urban areas. But, the present undeveloped scenario of rural areas demands a fine solution. The paper suggests introduction difficulty in implementation of schemes and interacting to villagers, unavailability of infrastructure and lack of awareness. The author in the paper accounts for all the practical measures possible due to the ICT tools that will definitely make the system a success.[2]

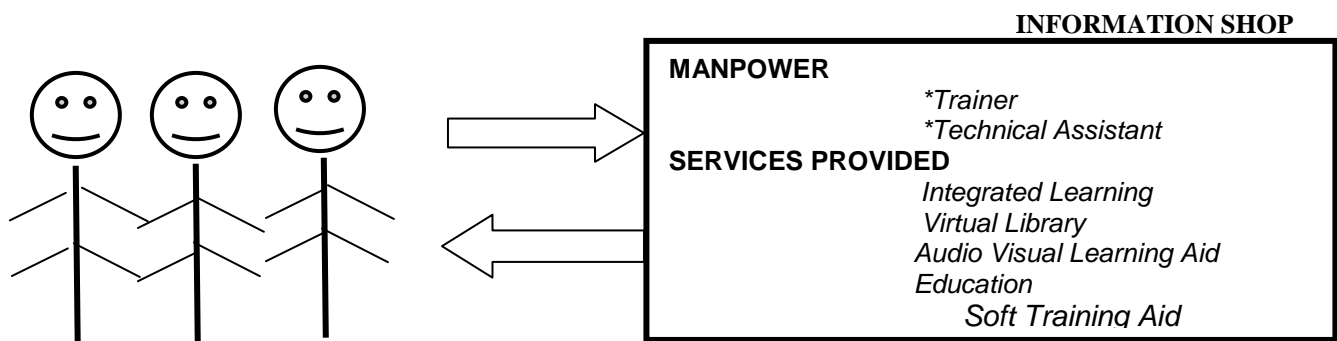


FIG 1: KNOWLEDGE BASED INFORMATION SHOP

The system discussed, mainly focuses on bridging the gap between the urbanized India and the rural India. It involves the introduction of modern Information Technology tools to areas that need them the most. The system involves many steps to make the village people more aware of the information that can prove useful and increase their standard of

living. The system suggested in the paper involves certain steps. Firstly, setting up of IS specific to every village and connecting all shops to Internet. Then, it involves appointing experts to handle the shop and reply the queries of villagers. They will also keep the rural people aware of latest financial and marketing information using Internet. Additionally, Video Conferencing will be arranged for direct contact of the villagers with specialized people. Simultaneously, the youth of the village will be trained and students will be given coaching. All kinds of medical information will be provided to needy through Internet and video conferencing. Rural people will also be encouraged to open their own micro-enterprises[7].

II. A CRISIS IN MODERN EDUCATION

India is no doubt equipped to be a global leader in the domain of knowledge. Complete development of a nation depends not only on the availability of resources but on the effective utilization of these resources. Unless effective technical education is provided to the youth of our nation, the process of development cannot be accelerated.

A. *Three Burning Issues:*

1. Inefficiency in teachers:

As the demands of knowledge economy driven by experimentation, innovation and creativity require education systems to equip students with different skills, it is crucial for teachers to be well-rounded and equipped with necessary expertise. Teachers need to upgrade their knowledge on the latest technologies and develop skills in using modern gadgets. Smart phones are fueling a steep growth in the knowledge of children today. The need for teachers to hold a vast amount of skill and proficiency, to remain a step ahead of students, has become imperative [8].

2. Improper use of technology:

Despite steps taken to improve conditions for technology integration, including increased access to technology and research efforts for improving technology integration practices, high-level technology use in teaching is still low. In general, use of 'high-level technology' tends to be associated only with superior institutes and teachers tend to use technology mostly for communication and low-level tasks, such as word processing, drill-and-practice activities, and exploring websites, many of which align minimally with core pedagogical goals. [10], [11], [12]

3. Lack of employability:

Employability refers to a person's capability for gaining and maintaining employment.

According to the findings of one survey made public last year, none of our universities including the IIT's has appeared in ranking of first top 100 universities of the world. It is therefore, stands appropriate to think that if some of bright ranked foreign universities come to India, we will have their standard of excellence to compare with at home for our own growth and the development.

III. IMPLEMENTATION

The system suggested in the paper shares the idea of introducing ICT tools for the upliftment of rural areas. The practical implementation of the system involves finding out the current scenario (economic status, health facilities, income methods etc.) of the village. Then deciding upon the infrastructure required.

Developing background for Setting up of IS:

A detailed survey of the village area where this system is to be implemented will be done to find out incidence of poverty, status of literacy and education, the state of telecom infrastructure and communication habits. For that, 10% of the village population will be assessed. A good picture of the rating of various information sources by the rural families will also be also generated. And the area in village, suitable for setting up the shop, supporting the system's infrastructure and accessible to all, will be found. According to the result of survey, required resources, infrastructure, expertise and governmental support will be arranged. Then the actual IS will be set up[3][7].

[III.1] Architecture:

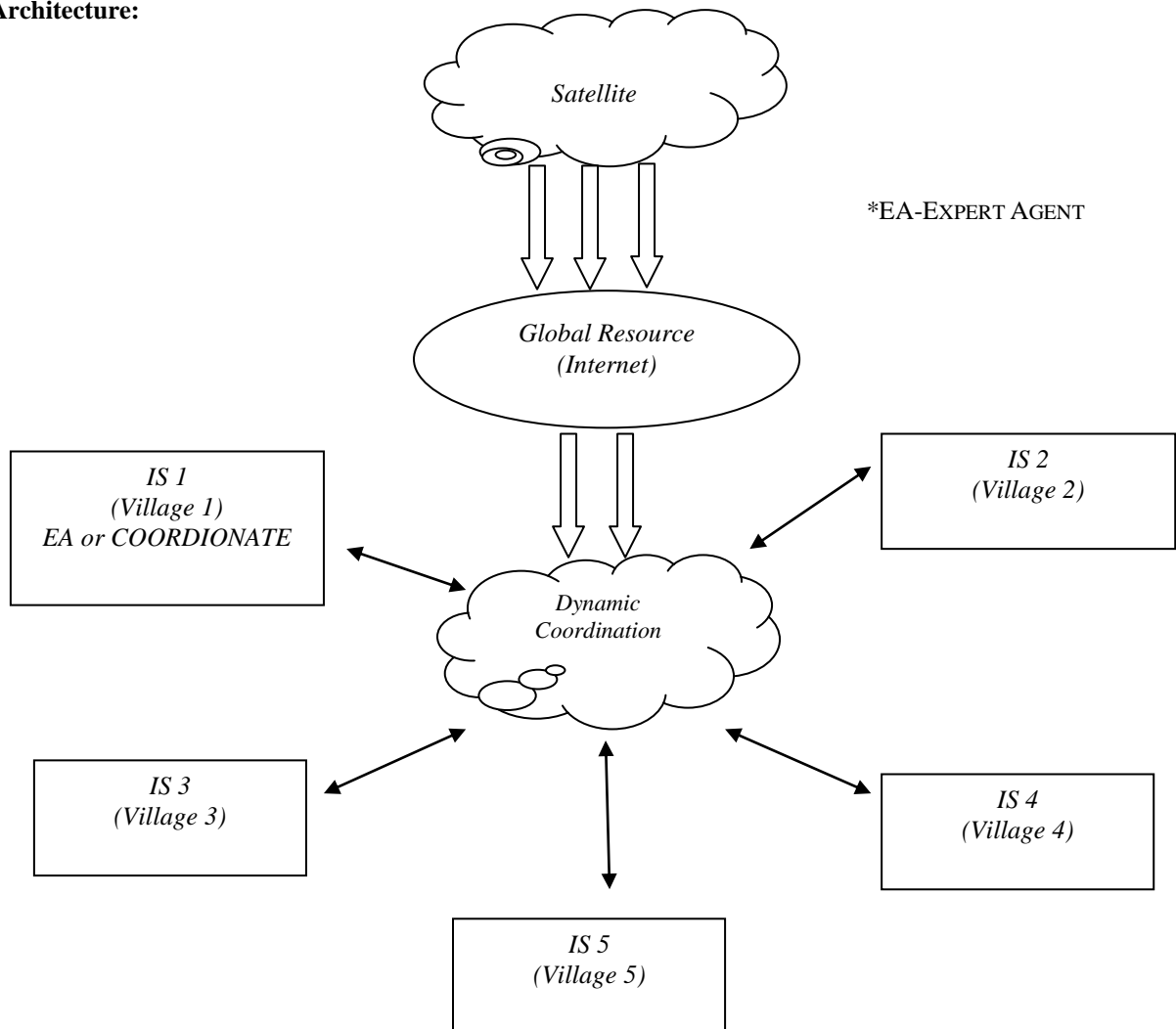


FIG 2: INFORMATION SHOPS SPECIFIC TO EVERY VILLAGE ARE CONNECTED TO INTERNET

The basic idea of the Information shop is similar to the information centre and objective is to educate people. The infrastructure involved in this reveals hardware components and knowledge library which can be called also virtual resource for the learning.

Setting up the shops:

A hub supporting data-cum-voice communication will be set up for each village at the suitable place. It will be connected to the Internet using a hybrid of two-way VHF radio and wired public telephone network(dial-up connection). This approach will provide an integrated voice and data communication capability. The data transmission will be restricted to a maximum speed of 14.4 KBPS on the wireless, where Email (SMTP) or fax protocols will be used. Through a PBX (office intercom-style), every village center will be connected to this hybrid network. To overcome power outages, a hybrid system of solar photovoltaic panels and grid power, interfaced by a commercially available digital circuit, was used as source of power[3].

IV.METHODOLOGY

[IV.1]A case based application of IS:

As the architecture of IS proposed there are many areas where its application could be observed. Authors are trying to consider a typical case where some kind of static interaction taking place between people seeking knowledge and IS. Fig 3 reveals this service showing conferencing in video mode. People can sit and interact with IS through video conferencing in closed and disciplined observation under technical experts in IS. There are four different areas where people wanted to extract knowledge from IS. One can get the information about primary sector agriculture from IS easily and to meet advanced queries IS also takes help from GIS to make it more relevant and error free. For example, with this facility farmers can be able to look after and care crops more technically and may face less loss. Likewise, IS also fulfills and meets queries regarding health care. Similarly, one can get the information about financial concern and Government initiated policies but along e\with this only thing required is awareness. This all could be achieved after establishment of static interface between people and IS and which IS runs smoothly[7].

Services Provided by Information Shops:

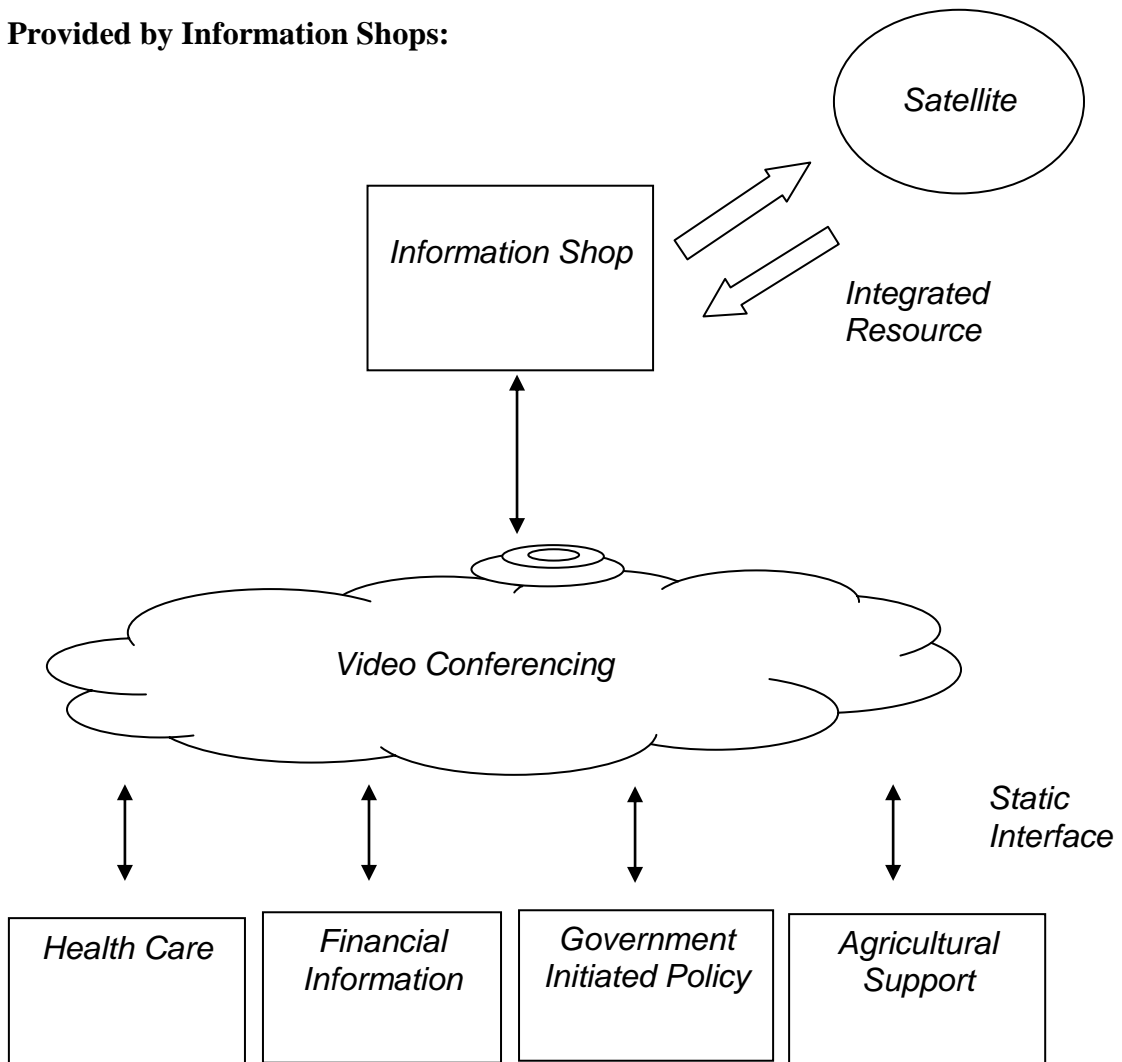


FIG: 3 A CASE BASED SERVICE PROVIDED BY IS

At IS, the staff will create locally useful content to constantly update the villagers in their specific fields .The village centers will receive queries from the local residents and transmit information collected from the internet, back to them.

An important feature of this project is the strong sense of ownership that the village communities will develop towards the village centers.

Villagers will constantly be kept updated and will be encouraged for new banking methods, insurance policies and home loans. And if interested, they will be provided help via internet in handling their accounts, loans and policies etc.

If any problem of villagers could not be solved by the use of internet, provisions will be made for direct contact with experts using video conferencing. For this, special medical practitioners, insurance company agents, housing scheme agents, small computer education centers will be signed into a contract.

Market consultants will be consistently consulted to know the current market value of grains, vegetables, and other items that are produced by farmers and other villagers. This information will be given to villagers on regular basis so that they are aware of current market status and get maximum profit for sale of their goods.

For training youth to handle the Information shops, special hours in a day will be fixed when the experts will train them. Also certain hours will be fixed for children interested in learning use of computer and internet in the same information shop. These specific hours will be fixed when the shops are free. This will make the information shops multipurpose[7].

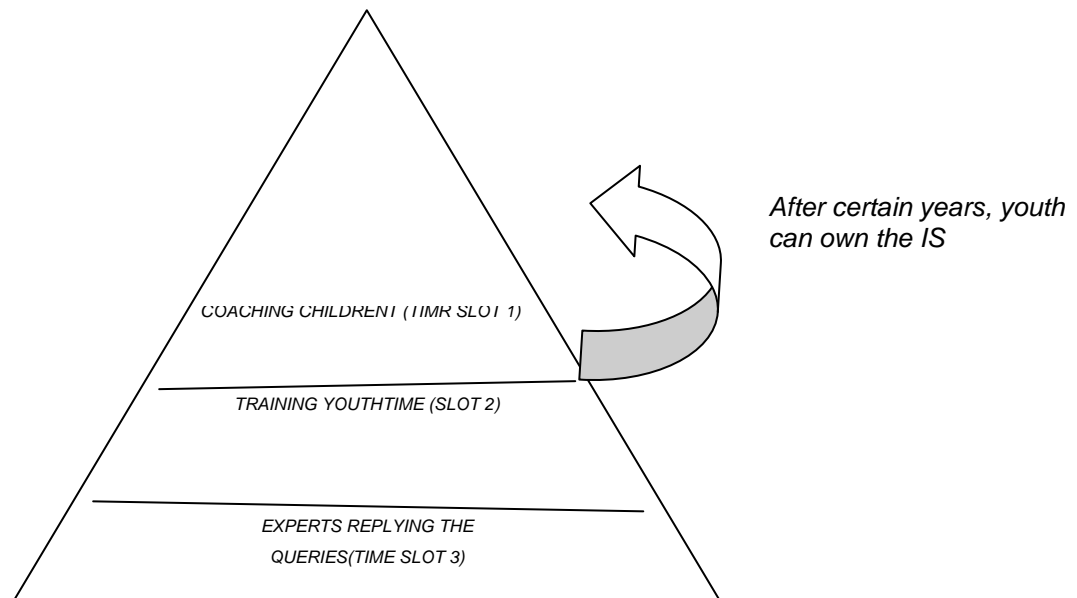


FIG 4: THE MULTIPURPOSE INFORMATION SHOP

V. ADVANTAGES

In the working domain of KS based knowledge system following advantages have been observed:

[V.1] Improvement in knowledge on the base of paperless resource

Using IS, which is a paperless resource, knowledge is made available to rural people very efficiently. There is no need of any educational qualifications for getting the information by IS. They can get their queries solved at their doorstep. For example, farmers can know about the availability of rain easily and can make necessary arrangement if there is no rain. So there is no need of any special training to get the information.

[V.2] IMPROVEMENT IN LIVING STANDARD

By providing quality education to the rural people and by improving their per capita income, living standard of farmers can be improved. Information shop will make awareness about the various schemes of Government for rural development. Villagers can make benefit by using these schemes like *National Rural Employment Guarantee Scheme, Rashtriya Sam VikasYojana, IndiraAwasYojana, SwarnaJayanti Gram SwarajgarYojana*. These schemes will be explained by the experts at IS. The consistent efforts and awareness about various modern means of investments, banking etc. provided by the IS by will definitely help the rural population to raise their levels.

[V.3] Benefits to the agriculture based people (mention MIS, GIS, Weather forecasting etc)

Agriculture is the main vehicle, which needs a rural policy to be delivered. IS will increase share ability of information typically used for improving income-earning opportunities (e.g., weather news for farmers, to enhance sustainable growth in farming). Information Shop will help a lot in encouraging the growth of agriculture industry. As the National Farmers Federation has observed:

“In order to achieve the economies of scale and efficiencies required to remain competitive in traditional industries, or to diversify into new and emerging agricultural opportunities, farmers will require access to new and additional capital.”

Investment is necessary to meet the challenges of farming in the twenty-first century by helping boost productivity and thereby overcome declining terms of trade. To do so, there is a need to implement MIS and GIS. MIS (Management Information System) will collect, process, store and disseminate the data in the form of information needed to carry out the functions of experts and IS. On the other hand GIS will provide precision farming techniques to produce highest yield and make large profit. It combines agriculture features on a map that demonstrates agriculture conditions to influence productivity. For example, a farmer can utilize to examine relationship between soil type, water and fertilizers to influence crop yield in a square acre of lands. GIS is a powerful tool for analyzing geographic data and making important decisions. Agriculture information can be stored and displayed by GIS. Weather forecasting is also an important aspect to enhance growth in farming. It will help the farmers to be prepared for any natural disasters like drought and flood. All the above facilities will be made available in rural areas through IS. Hence, it is going to boost the productivity of crops and will also strengthen the economical standard of farmers[2][3].

[V.4] Optimum utilization of information for whom knowledge recovery is being done

The solutions of the queries asked by farmers or rural people may include some scientific aspects which will be not understood by them. To make it meaningful, experts has to explain in more simple words so that they can utilize the information in a better way. Hence experts need to explain information in such a way which is acceptable by the villagers and they can get more benefit.

In this way IS will succeed in optimum utilization of information.

[V.5] Frequency matching with global concern

Since Independence, India has achieved development in many sectors. But it is lagging in agricultural sector. By implementing IS, agricultural sector and rural areas will be economically strong and more educated. Today there is need to uplift the rural area so that the rural population can compete with urban area. Due to development in technology urban area is more advanced where as India is lacking behind in rural area. So there is need to educate youngsters of rural area in terms of technology. By promoting education in rural area, we can match the productivity or yield of crops and living standard of farmers with other countries. IS will not only help in rural development but it will also behelping hand in making India a developed country which is our ultimate aim.

VI.FEASIBILITY

The system stated in this paper aims at “Minimum resource, maximum benefit” principle. The only infrastructure required is a hub with internet connection and set up for video conferencing. With the presence of few experts, villagers will get all kinds of information required. They will all be collectively made aware of the current e-banking ways,

insurance policy schemes and housing schemes, so that they can improve their standard of living. Also, the current market positions will help them to sell their goods at appropriate price, thus gaining profit.

The multipurpose usage of IS makes sure, the utilization of the system, to its fullest. When the frequency of villagers to IS is less, such hours can be fixed to train the youth for future handling of the IS. This will make them completely self dependent after certain years when the young people of village will themselves be able to handle the IS. Also, certain hours will be fixed to educate the students about the computer, internet access and different IT tools.

Thus, this very simple system brings out the significance of the role of Information and Communication Technology as an effective tool for empowering the rural masses.

VII.CONCLUSION

KS based IS is an IT aid for rural areas designed and developed to educate people and promote education in the same domain. The KS justify itself, that is, connectivity with relevance connect people with knowledge center. The strategy is to bring the internet to rural and agricultural community in developing country like India will definitely help enable rural people to face the unprecedented challenges brought on by the changing global economy. One aspect could be observed by the expert in IS is the feasibility, actually, no longer it would be a question because KS based IS is consistent with adequate power backup with whatever infrastructural support given by the Govt in rural and suburban zones. Eg solar energy cell, biogas can produce uninterrupted power supply. So, additionally dedicated power supply is not required. Apart from all the facilities available in IS like video conferencing, connectivity, up gradation in this paper is required. Authors have been trying to remarkably highlight one value addition in KS based IS is continuous training, hence system becomes feedback system where IS will train some people and after training is over, these trained people will become technical expert and later enrich the system. Likewise they will train more people and flow would be maintained. This way the objective of the knowledge system could be achieved and can set a benchmark in learning methodology revolution.

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