

Vivekdisha: Knowledge in All Directions

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SITTING ON A ROCK at the southernmost tip of India, Swami Vivekananda ruminated on the ills India was facing. What was the way out? Was there a way out at all? Meditating on the problems he had seen in his sojourns across the nation, he realized that education was the panacea for all evils.

It was probably this realization that made him write in his letter dated 24 May 1894 to Alasinga Perumal: ‘Try to get up a fund, buy some magic-lanterns, maps, globes, etc., and some chemicals. Get every evening a crowd of the poor and low, even the Pariahs, and lecture to them about religion first, and then teach them through the magic-lantern and other things, astronomy, geography, etc., in the dialect of the people.’

A magic lantern is a basic form of slide projector. Fascinated by innovative methods of imparting information, Swami Vivekananda wanted to put them to good use in taking knowledge to the masses. He intended to spread education by using the latest technology. How thrilled he would have been at the launch of educational satellites; how much more enthused he would have been with the advent of the Internet and the unprecedented connectivity and access to information it ensures. And he would have had boundless joy on witnessing the confluence of the technologies of satellite communication and the Internet. This is what is happening at Vivekdisha, a synthesis of space science and Information and Communication Technology (ICT).

The Birth of Vivekdisha

As part of its efforts to reach the unreached, to uplift the rural populace on the lines of Swami Vivekananda’s teachings, the Ramakrishna Mis-

sion Vivekananda University (RKMVU) began the Vivekdisha project on 4 July 2008. The seeds of this venture were sown in December 2005, with an invitation from the Indian Space Research Organisation (ISRO) requesting the Mission to participate in its Village Resource Centre (VRC) project. An echo of the educational philosophy of Swami Vivekananda, this project envisions improving the standard of rural life in India by enhancing the quality of basic amenities and services, particularly in the fields of education, healthcare, sanitation, and empowerment through the use of space systems and information technology tools.

Vivekdisha strives to offer tele-education, tele-medicine, advisory services, and skill development programmes using the Indian Educational Satellite, EDUSAT.

While earlier satellites were capable of merely transmitting radio signals, present-day satellites are far more advanced and have an apparently unending potential. EDUSAT is a communication satellite primarily used for interactive satellite-based education. Using videoconferencing through this technology, Vivekdisha endeavours to provide multifarious need-based services suitable to local conditions. These services are designed to create avenues of income generation for the beneficiaries. Delivered timely in the local language, these services come as a ray of hope to rural people.

Presently, Vivekdisha caters mostly to the underprivileged rural populace of fourteen nodal points in the states of West Bengal and Jharkhand: Belur, Kolkata, Narendrapur, Medinipur, Purulia, Manasdwip, Cooch Behar, Khanakul, Sandeshkhali, Morabadi in Ranchi, Barwatoli, Chapatoli, Lamkana, and Gutigara. Each place has a local project centre with satellite videoconferencing equipment.

The equipment comprises camera, computer, speakers, microphone, and antenna with transmitter and receiver. Most of the centres in West Bengal have projectors to display the images received on the computer on a much larger screen. While the basic satellite connectivity and equipment have been supplied by ISRO, the Ramakrishna Mission Vivekananda University has purchased, developed, and improvised the system to better suit its needs. Most of the activities are transmitted from the expert centre at the Ramakrishna Mission Vivekananda University at Belur Math. The Vivekdisha centre at Ramakrishna Mission, Morabadi, Ranchi, can also transmit programmes to other centres. Most of the centres are located in remote regions very difficult to reach by common modes of transport. It is to such far-off areas that Vivekdisha diffuses knowledge to provide people the opportunity of enhancing their quality of life.

Tele-education Unfolded

In today's world education is needed for sustainable development. It encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating and enjoying a sustainable future. Tele-education, which uses ICT to provide distance education, fulfils this new vision. As the world is becoming increasingly connected, ICT-based teaching practices in education are being extensively used and emphasized, although face-to-face meetings or synchronous interaction in real time are still required to supplement asynchronous and independent learning, if education is to become more effective. ICT facilitates a high level of interaction among students and teachers, with the aid of multimedia-based materials. Videoconferencing makes dynamic the communication between teachers and students separated in space.

In comparison to traditional classroom learning, ICT-based learning offers greater diversity of learning goals, projects, activities, and exercises. It also allows learners to make full use of their own multiple cognitive abilities and conative powers. In the ICT-based teaching-learning process teaching becomes more dynamic and both teachers and students become enthused, as access to high quality and updated study materials expands their horizons. Teachers are motivated to teach more creatively and exchange lesson plans as well as pedagogical techniques and strategies with their counterparts all over the globe even on a day-to-day basis.

Since the age of the Vedas education has been instrumental in the development of society. It holds true in today's knowledge economy as well. Ramakrishna Mission Vivekananda University lays special emphasis on projects that impart education for keeping children—especially the poor—intellectually stimulated, mentally focussed, and emotionally sensitive, so that they are able to develop an all-round personality endowed with the faculties of jnana, intellectual knowledge, bhakti, emotional richness, and yoga, mental concentration and focus.

What exactly happens in a tele-education scenario? A teacher gives lessons using a writing board or a computerized multimedia presentation. This is transmitted simultaneously to all centres

Vivekdisha tele-education programme in progress at Purulia



joining the programme at the university expert centre. In these branch centres the students are able to see and hear the teacher, the multimedia presentation, and other students participating in the tele-education class. Similarly, the teacher at the university can see and hear the students of all participating centres, though one centre at a time. It is a virtual classroom whose boundaries are not defined. It creates a vibrant interaction between the teacher and the students of several geographically isolated centres.

Promise of Tele-education: The Vivekdisha Experience

Students of classes six to twelve are taught physics, chemistry, mathematics, biology, computer science, value education, communicative English, and other subjects through multimedia presentations—texts, pictures, animations, visual clips, and video recordings from laboratories and operation theatres. All classes are conducted in an interactive mode in the local language. For instance, for centres in West Bengal, the language is Bengali. ICT tools like laptops, LCD monitors, and digital cameras are used to make the teaching-learning process not only more effective but also a joyful and fruitful exercise.

Interactions and discussions give the learners inputs that take them to a slightly higher level than the conventional classroom scenario. The technique of tackling questions and the art of writing precise and relevant answers are also highlighted with examples. Students are encouraged to ask questions till they attain a proper understanding of the topic. Teachers from different institutions including colleges and universities offer voluntary services with great en-

thusiasm. For instance, an eminent professor from the US conducts regular classes for students of undergraduate chemistry programmes. Constant feedback is received from the beneficiaries and the programme is continuously updated or modified based on student needs.

How does the use of ICT improve the quality of teaching in a virtual classroom? People working in the Vivekdisha project have experienced that ICT has the potential for increasing access to and improving the relevance and quality of teaching. This improvement in the quality of education and training is a critical issue, particularly at a time of educational expansion and rapid globalization. ICT-enhanced learning mobilizes tools for viewing actual events, analysis of information, examination, and computing, providing thus a platform for inquiry, analysis, and construction of new information by students. Learners study as they work, and learning becomes less abstract and more relevant to everyday life.

In contrast to learning by rote, ICT-enhanced learning promotes increased learner-engagement, as the student can view an experiment any number of times. This kind of study helps enrich the learning experience.

Engaging Lessons · A student of class eight, Noseda Khatun, says: 'I can now easily grasp the idea behind the topics and pictures, which I could not understand earlier.' ICT can be utilized effectively to make teaching more concrete in contrast to conventional learning through books, which often gives rise to abstract and vague ideas. Teaching of subjects like the anatomy and physiology of human organ systems or the preparation of laboratory gases and real-life situations are cases in point.

Vivekdisha programmes

- Participative education
- Skill development
- Communicative English
- Value education—basic humanitarian and social values
- Spreading literacy through formal and non-formal methods
- Indian cultural and spiritual heritage
 - Health awareness
 - Music and painting
- Information technology education
 - Multimedia education
 - Teacher education
- Imparting indigenous knowledge
- Generating awareness of e-governance

Motivation to Learn · ICT facilitates a high level of interaction among students and teachers with the aid of multimedia-based materials. Interactive multimedia engages students in the learning process, increases motivation to learn, and enables them to go deep into the subject with joy and enthusiasm.

A Picture Speaks a Thousand Words · Dipta Saha, a student of class eight, says: ‘I can understand a topic much more easily by seeing pictures.’ Colourful pictures can communicate a lot of information to learners and enable them to grasp ideas without much effort. Difficult concepts—the classification of plants, workings of the human heart, workings of different scientific instruments, atomic structures, and the like—are easily understood through pictures.

Achieving Visual Realism · Animation is an effective teaching tool, particularly in the life sciences and the physical sciences classrooms. It helps in achieving visual realism. Concepts like the cardiac cycle and chemical bonding and applications like the ECG are easily explained using animation.

Interactive Multimedia · ICT provides interactive multimedia as a new set of documents that can be read, written, and checked instantly. Ria Mondal, a regular student at Vivekdisha, believes that this platform provides her a better opportunity to interact with the teachers and the subjects taught.

Harnessing Student Potential · ICT allows learners to make full use of their own multiple cognitive and conative abilities. ICT-enhanced learning promotes a thematic, integrative approach to teaching and learning. This approach eliminates the artificial separation between different disciplines as well as between theory and practice, which characterizes the traditional classroom approach. The transmission of fundamental skills and concepts that are the foundation of higher

order thinking skills and creativity can be facilitated by ICT.

Practical Demonstration · Video clippings help students have a vivid idea of the workings of scientific principles, machines, and actual events like Newton’s laws of motion, automobiles and computers, chromosomal movements, and DNA replication.

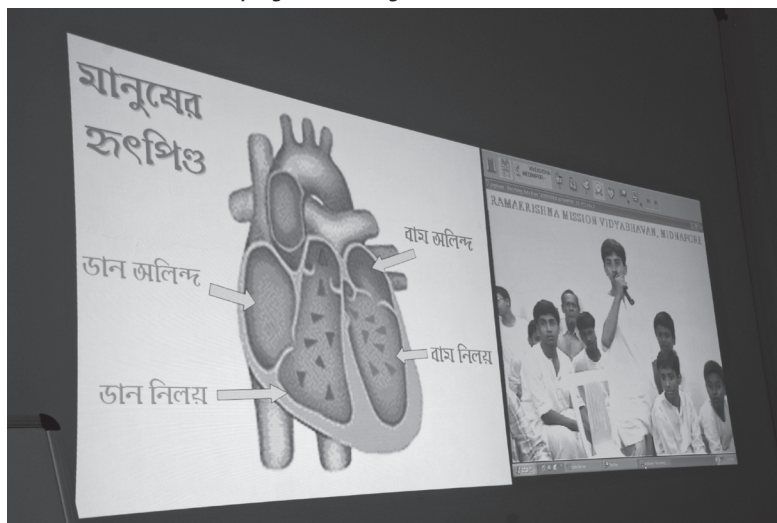
Virtual Dissection Lab · Virtual dissections of plants and animals can be carried out through computer simulation. This enables students to have a sufficient number of practice sessions without disturbing the ecological balance by killing animals or plants.

Revising Lessons · Digital cameras and videos assist students to go through their lessons as many times as necessary to clearly grasp ideas presented in the classroom. The learner is able to learn at one’s own pace.

Generating Multimedia Content for Tele-education

Content generation is one of the key components of tele-education. Publications in print cannot be updated quickly while ICT-based material can be easily revised and updated, based on the feedback from learners and professionals engaged in teaching or on the actual teaching experience.

Vivekdisha tele-education programme using multimedia



At the expert centre in Vivekananda University, multimedia presentations are mostly developed in local languages to best fulfil student needs. The syllabus closely follows the curricula of local school education boards or universities. Care is also taken to motivate all categories of students to develop an inner urge to learn more and grasp the ideas presented after careful thought.

The vocational training programmes of Vivekdisha are so designed that the information provided is demand-driven and pertinent to the day-to-day life and work of rural people. This value-added information is specific to the times and geographical locations. Documentary video films in local languages on different vocations relevant to rural life—horticulture, mushroom culture, dairy, and fishery, and the like—are screened occasionally.

Telemedicine Initiative

Telemedicine technology makes it possible for doctors to examine, advise, and direct the treatment of patients in remote healthcare centres from a hospital or other established healthcare settings. This technology gives rural residents access to medical specialists who are often unavailable in remote areas

and saves the patient the cost of travelling to urban centres. The specialist service could involve general diagnosis of diseases, expert pathological opinion, as well as treatment in specialized fields like dermatology and orthopaedics. This technology can also be used to provide follow-up care for patients who have had surgical interventions. Further, it can help local doctors and non-specialists gain advanced knowledge that would enable them to offer better treatment.

The Vivekdisha telemedicine programme regularly provides treatment to patients coming to its centres in far-flung areas like Khanakul and Sandeshkhali, and occasionally to Purulia and Cooch Behar, through doctors at the Vivekananda University. The patients can talk to the doctors and explain their ailments through video-conferencing. The doctors at the university can view close-up images of the patient's affected body parts and examine them at close quarters. Most patients receive their medicines from the local Vivekdisha centres.

25 May 2009 is an unforgettable day for residents of the Sunderbans. It was on that day that Cyclone Aila struck. It devastated the land with

its cyclonic winds and high tidal waves. The cyclone left countless homeless and forced them to take shelter in relief camps to somehow survive the aftermath. Fields in low-lying regions were flooded with contaminated saline water for months. For some time it seemed as though the afflicted had nothing to eat and not a drop to drink.

On 27 May a large number of patients affected by Cyclone Aila came to the Vivekdisha centre at Sandeshkhali, Sunderbans, for treatment. All the patients interacted with doctors and received medical advice. Most of them were suffering from bruises,

A session of the Vivekdisha telemedicine programme from Belur Math



cuts, cold and cough, diarrhoea, and stomach ailments. The required medicines were sent immediately to Sandeshkhali. Apart from other relief services provided by the Ramakrishna Mission to the victims of the cyclone, Vivekdisha provided a virtual hospital for the afflicted. This is also a striking example of the usefulness of telemedicine.

Other Services at Vivekdisha

The scope for developing quality of life and rendering services to that effect is virtually endless. Besides its tele-education and telemedicine services, Vivekdisha has also taken up other programmes at its various centres. These include the following:

Vocational Training · A self-help group comprising women and a batch of enthusiastic young girls has been trained in basic computer operations to enable the members manage their own farms in a professional manner or to equip themselves for future jobs. They are receiving theoretical lessons through videoconferencing from the university expert centre, while practical training is being imparted through the computers present at the remote centre. Students of different classes are also having the opportunity to learn the basics of computer operations at different remote centres in the same manner.

Advisory Services · Experts in the fields of agriculture and animal husbandry give advice on improving cultivation methods and agricultural yield under the Vivekdisha programme to the remote villages of West Bengal and Jharkhand. A few awareness programmes have been conducted from the expert centre at Morabadi. The villagers are also made aware of modern organic farming methods and their effectiveness. During the recent attack of late potato blight in West Bengal, the farmers received timely help under this programme.

Value Education · Inculcation of higher human values, particularly in the youth, is an important objective of the Vivekdisha project. Values imbibed and practised in one's own life make life worthwhile and joyous. To inculcate

the attitude of practising higher ideals in life and to sensitize young minds right from their school days, Vivekdisha's value education programme provides multimedia presentations on the teachings of the Ramakrishna-Vivekananda tradition to students of various age groups, followed by lively interactive sessions. Emphasis is laid on placing values before students during the discussions on different topics instead of treating value education as a separate subject.

Interaction with Self-help Groups · Following Swami Vivekananda's call for self-reliance assistance to self-help groups is offered for livelihood generation and developmental projects. Expert advice on better skill development and marketing strategies are provided to members of the self-help groups.

Expert Services · Scholars and technical experts from around the globe are marshalled by Vivekdisha to enrich the project with a diverse wealth of expertise, ideas, and networks.

Indian Youth Science Congress · This conference was held from 5 to 7 June 2009 at the Rajiv Gandhi National Institute for Youth Development, Sriperumbudur. On 6 June 2009 the Khanakul centre of Vivekdisha joined in the technical session of this conference through videoconferencing. The centre made a presentation on different aspects of agricultural prosperity and food security such as home gardening for nutritional support, use of wild fruits and vegetables, and mixed cropping.

Light in the Darkness

The various remote centres suffer power cuts, especially during summer days. The classrooms in these centres are enveloped in darkness during such times. But that darkness is immediately dispersed by the glow of emergency lamps. The students still have the opportunity to study in their tele-education classrooms, interacting with teachers miles away, looking at a screen for a board. Darkness is being dispelled by the light of knowledge. Swami Vivekananda would surely have been delighted to see this dissemination of the light of knowledge that knows no bounds.

