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A Quarterly of the Commonwealth Educational Media Centre for Asia

From the Director's Desk...

During a recent address at a national conference on the use of ICTs in open and distance learning in the new millennium, the keynote speaker highlighted several aspects of the hot debate on human resource development and the critical role of open and distance education in bridging the gap between the demand and the supply of skilled knowledge generators and workers. He pointed out that while Europe and the West were going to suffer from severe shortages of human resources, such manpower, would be available in plenty in Asia, provided a concerted effort was made to empower Asia's youth with the appropriate knowledge and skills for the knowledge society.

Such empowerment goes beyond the craft of using ICTs. It relates largely to higher order thinking skills, those that enable the differentiation between workers and knowledge generators. It is the difference between job seekers and job makers and the development of such capacities among our future generations is both our duty and our responsibility.

To undertake this, one needs to combine the methods of science with the creativity of humanities and social sciences. One needs to go beyond scientific discoveries and technologies themselves in a search for the human spirit that enables the creative transformation of society.

It for this reason that present issue of *EduComm Asia* reflects an eclectic collection of articles, ranging from the needs for science education to the application of cable radio in a remote village.

We invited Prof. Suresh Garg, Science Educator and Pro-Vice-Chancellor, IGNOU to reflect on the agenda for science education in the 21st century. That he wrote of the scientific spirit and linked it with the kind of science education and societal needs sets the tone for the issue. He points out that institutions and individuals have to re-engineer and reposition themselves to

integrate work with knowledge, address local needs, apply the latest scientific knowledge to such needs, to internalize scientific spirit and skills while also providing space for innovation.

The profile on the Tamil Virtual University is a case in point. The successful use of technology by this fledgling university in its attempt to bring Tamil literature, culture and language to the global Tamil diaspora shows that it is possible, if the vision and will exist, to succeed in a short time.

Our case study highlights the efforts of villagers who have given voice to community needs through a unique cablecast community radio in Budikote, Karnataka. In an age of deregulation and consequent confusion about legislation in community radio, "Namma Dhvani" radio stands out as a soft, but effective voice.

Our book reviews also focus on two different aspects of technology applications. We review a UNESCO monograph on the state of global legislation on community radio as also a seminal volume, which brings together the finest minds in distance education to debate and discuss various aspects of planning and management.

We scan the Internet in our section on technology, review *WebCT* as a learning management system, and provide insights into five decades of research on learning from media. Our on going series on data mining and warehousing looks at different aspects of this new field.

Other features are also there, from regional news to news in brief. We look forward to your comments as we move to reinvent ourselves to be more timely and relevant to you. Do continue to write to us as you have always done.

Dr. Usha Vyasulu Reddi

Science Education Through Open and Distance Learning : Setting the Agenda for the 21st Century

Suresh Garg



Science may be regarded as an inseparable part of the human effort to understand nature and to use that understanding judiciously to satisfy human needs and curiosity. Today, science has evolved into a vast body of systematic and tested knowledge, and is now growing at a very rapid pace. The method of science,

together with its characteristics of objectivity, openness to change, self-correction, non-adherence to dogma, dynamism, and verifiability has given scientific knowledge or science a special status in society today.

In the second half of the twentieth century, many of today's nations emerged as democratic societies striving for progress and development for their peoples. Since education was considered the most powerful instrument for socio-economic empowerment in the international arena, it was only natural that the demand for high quality education escalated in all such countries in the Commonwealth. Despite tremendous growth in the number of educational institutions, the demand far exceeded the availability of educational provisions. Moreover, due to high dropout rate up to the secondary level, a backlog accumulated gradually over the years. Invariably, developing countries were confronted with the need for meeting further educational and training requirements of growing numbers in organised as well as unorganised sectors aspiring for a better quality of life, and distance education emerged on the educational scene with the laudable objective of 'education for all', i.e., to provide equal opportunities for education to all those who were otherwise unable to avail of them.

Distance education in varied forms has existed for long. But it was the Open University of United Kingdom, coming into existence in 1969, that legitimised open distance education for all, and dispelled the scepticism that structured teaching learning is just not possible in non-contiguous situations, especially over a longer period of time. Today, open and distance education system is now recognised as an innovative mode, which provides for open and flexible learning at one's place, pace and convenience, and consequently, there has been a rapid growth of distance education institutions and open universities at the post-secondary level (Dikshit et al., 2002). Open schooling as a viable alternative for open basic and open secondary/senior secondary education is also fast emerging in the Commonwealth developing countries (Panda and Garg, 2003).

The ICDL database until 1998, records that 1,117 institutions in 103 countries around the globe were offering distance education programmes at various levels; and nearly 3,431 courses were offered in areas of pure science and mathematics, and 4,432 courses in areas of technology, computers, environment and applied sciences (Kunlandai Swamy, 1998).

Open and distance education has now become a very powerful and innovative mode of education and is supplementing face to face teaching in developing countries. It is now being relied upon more and more by the policy makers, planners and stakeholders to meet the emerging educational demands of the knowledge based societies, because of its capacity and capability to impart high quality education (Dikshit, 2003). The phenomenal growth of distance/open education stands testimony to the fact that it has now overcome the scepticism characteristic of its early stages of development. Its methodology has attained a level of sophistication capable of sustaining the teaching and learning of any kind of skill, including those required for science and technology education.

“Science was not a pleasant diversion and abstraction, but was the very texture of life, without which our modern world would vanish away. Politics led me to economics, and this led me inevitably to science and the scientific approach to all our problems and to life itself. It was science alone that could solve the problem of hunger and poverty of insanitation and illiteracy, of superstition and deadening custom and tradition, of vast resources running to waste, of a rich country inhabited by starving people”.

This excerpt from Jawaharlal Nehru's address at the Indian Science Congress, held at Calcutta in December 1937 aptly sums up the vision of science and society that the political leadership and scientists of developing countries have articulated from time to time in the course of their freedom struggles and thereafter.

In the Indian context, the emphasis on the *study of science* led to a rapid expansion in science and technology research and with it science education, particularly after the passage of the Science and Technology Policy resolution. Today we have around 300 universities (including agricultural universities, engineering and medical institutions) and 4000 colleges, which offer science education to over 1 million students every year. Though as a nation we take pride in such an accomplishment, there is the other side of the coin representing a contrasting reality as reflected in data from India (Khosla, 1999) :

- Over 400 million Indians live below the poverty line;

- more than 300 million have no access to safe water supply;
- more than 700 million live without proper sanitation;
- over 150 million have no proper homes;
- more than 500 million have no electrical connections; and
- more than 400 million are illiterate.

The situation is only marginally different, in some cases even worse, in other developing countries. It is in the face of this stark reality that the leaders of developing countries turn to science and technology for lasting solutions to the multiple problems of poverty, illiteracy and under development. An analysis of science reveals that such an expectation is highly justified.

“**Science is a way of thinking**”, it is a worldview. It involves observation and insight, reasoning and intuition, systematic work and creative impulse. It gives rise to an attitude of mind, which is conscious of vast areas of ignorance and yet is optimistic about human ability to unravel mysteries around us and to solve problems of material existence. In effect, science gives many of us a culture and philosophy of life, which leads to the pursuit of truth without prejudice. When not inhibited by the limitation of its own methodology, when chastened and humbled, science commits human beings to an indeterminate range of yet undreamed consequences that may flow from it. The developing world has an entirely different set of problems and opportunities and is saddled with the tremendous problem of reconstructing the people. There exists a tremendous scope for putting science and technology in the service of national and societal development in an environmentally sustainable manner. Since the indigenous knowledge systems of these countries had been pushed irretrievably into oblivion, under colonial rule, these countries had to start almost from a scratch. Unfortunately, in their efforts, the ruling elite, instead of reviving their own knowledge base and integrating it with what was worthwhile in the new knowledge systems, imported structures, systems and ideas, including those of science and technology, from the developed world and applied them almost *in toto* (along with their failings acknowledged even in those societies) to their own conditions. In fact, a dominant critique has emerged even in developed countries vis-à-vis the way the scientific method has been used unimaginatively to take a fragmented view of knowledge and its applications in society. Such a wholesale import is partly responsible for the iniquitous distribution of income, resources, and knowledge.

It is now a globally accepted reality that science and technology are indispensable components of modern society and can be used as potent means for development. In the wake of the existing economic divide and the knowledge gap between the 'haves' and 'have-nots', the use of science and technology to ameliorate the existing conditions of its people assumes an added significance for developing countries. Within this perspective, **science and technology education** becomes imperative to create a scientifically literate citizenry that could influence the course of future

agenda of societal development on the basis of well-informed opinion. This is a formidable task, particularly, because the developing nations face a tremendous resource crunch for providing even 'basic education for all'. In this challenging scenario, the open/distance education system has to assume the tremendous responsibility of reaching out to and training large segments of population as well as servicing their needs through cost-effective use of multiple communication media options. Now that it is growing (in terms of its real potential) and is getting long overdue recognition, if effectively used, this mode of education has the capacity to minimise inequitable distribution of resources and opportunities offered by the existing conventional higher science education apparatus in developing countries.

Much of the success of open and distance learning system in expanding its outreach and diversifying its ambit in the last few decades has been essentially due to the application of information and communications technologies (ICTs) in the development and delivery of education programmes. ICTs have forced a sure, though silent, transformation; the 'ivory towers' were gradually thrown open, and education changed from 'craft to technology' with unlimited possibilities and immense potential for imparting uniform and high quality education for everyone at affordable costs in a networked collaborative environment. The point to note is that the application of information and communications technologies in education ushered in the 'third stage' of educational technology development.

The teacher gained access to a wide range of media print, radio, television, audio, video, audio/video conferencing; and tools computers, CD-ROMS, e-mail and Internet that enhanced the reach of the word of the mouth to such an extent that education at a distance became an enriching experience. It is because of this that, for instance, the University of the South Pacific, through its Satellite Tutorials, manages to reach its learners even on an isolated atoll in over 32 million sq. km expanse of the Pacific Ocean (Garg and Panda, 2001), and that the Indira Gandhi National Open University has reached the people in black hole districts and remotest corners of the North-East in India with much positive impact (IGNOU, 2004). Indeed, belying all imagination, the paradigm shift has facilitated the transfer of focus from the teacher to the learner, and the institution of instruction to the study-room/work place of the learner. However, this development has been accompanied by the twin phenomena of liberalisation and globalisation and in setting the agenda for the 21st Century, we must take cognisance of their impact on the education sector and future implications.

The phenomenon of globalisation has brought about tremendous changes the world over in the recent years. It has led to greatly increased access to markets, cultural practices and products, increased movement of people, money and *information* across national and cultural boundaries. Economic globalisation, in particular, has sought to constitute a global economy, where the political boundaries around nation states have been sought to be made more porous for increased

international integration of economies (Rizvi and Lingard, 2000). Systems of communication, nature of markets, capital, labour, production and distribution of goods and service have increasingly acquired a global character. National economies have arrived at international agreements to lower trade barriers and open up their markets to global players.

The sphere of education has also been influenced by the twin phenomena of globalisation and liberalisation. This is essentially because the skills of a nation's people have progressively become an important factor in attracting global capital to the national markets. In fact, globalisation has impacted the higher education scenario at the level of policy as well as the institution. Higher education institutions are expected to do more with less. There is growing pressure for generating resources, emphasis on consultancies, *packaging and marketing various intellectual products*.

In such a scenario, an increased commodification of knowledge as intellectual property has occurred, particularly with regard to connecting the intellectual work of universities with commodity, business, government interests and priorities (Porter and Vidovich, 2000). As a result, education and training programmes using new forms of information and communication technologies, particularly through open and distance education assume great significance. Faced with increasing global competition, governments in developing countries, are relying heavily on the open and distance learning systems to meet the training needs suited for a globalised economy.

In the last couple of decades, developing countries have not only emerged as attractive markets for trade and global capital investment, but also as potential competitors in the manufacturing, industrial and services sectors due to their rich resource base, both material and human. Thus, we find that the issues of creating a high skill society and capacity building of the people in new technology based industries and services sectors have acquired tremendous importance in the national economic policy formulations of developing countries. These concerns also find expression in various Regional fora for economic and educational cooperation that all these countries share, the most notable being the Commonwealth and SAARC.

Challenges facing Science Education

First and foremost, a greater integration of the worlds of work and knowledge in the domain of education is needed so that science education becomes relevant to the immediate context of the learner. One way of effecting this integration at the national and regional levels could be that higher institutions of education *adopt the areas and communities* in their hinterland, expose their students to the realities and problems of these areas and address them through all available means. For example, students could study and research the historical conditions and material resources of that area, analyse the changing patterns of occupation and consumption (food etc.) vis-à-vis indigenous knowledge and society, monitor environmental changes, help in preserving biodiversity, improving agricultural methods

and yields with latest inputs by bridging the gap between the lab and the field, constructing appropriate energy systems, energy-efficient houses, and so on. The teaching of basic scientific principles (including psychology and social sciences) could be designed around a core of work experiences for the benefit of the adopted area.

But to do this, the institutions and practitioners have to re-engineer and reposition themselves; the curricular content would have to be radically redesigned, and the practice of reinventing the wheel and re-researching the problems of the developed world will have to be given up. The focus would need to shift to the real life problems and grass root innovations would need to be recognised when transacting such a curriculum. A pointer towards this has been shown to us in the recent times by the efforts of National Innovation Foundation sponsored by the Department of Science and Technology, Government of India. Academics and students have to change their mindset and be engaged in micro-level planning and development of rural areas of developing countries. Only then, will it be possible to make the educational content more relevant and meaningful to the people.

In order to be able to do this, the objectives, content, format and practices of science curriculum will have to be radically refashioned and reoriented to

- integrate work and knowledge;
- address local, regional and national problems and needs;
- apply latest scientific and technological knowledge and tools to solve real life problems and meet these needs;
- inculcate scientific attitudes and appropriate skills; and
- provide scope for innovation and creativity.

Needless to say, this is an extremely challenging task and calls for revamping, revitalising and reforming the entire higher education set up. Open and distance learning is well poised to take up this challenge as it is not beset with many of the problems arising from inertia and resistance to change. On the contrary, its characteristics of openness, flexibility and adaptability make it an apt choice to catalyse such renewals.

Secondly, funding and other resource allocation to higher science education has recently been highlighted as a big question. It is true only partly. Many issues associated with resource crunch can be overcome by shifting the focus from 'academic' to 'relevant', i.e., offering *what you need* rather than *what we have*, and by adapting to change. The ODL System is fortunate in that it has found some solutions for delivering cost-effective learner-friendly education by optimising resources. However, the challenges of generating good quality software suitable for emerging needs persist.

In the developed countries, research is promoted by the government as well as industry through integration of work environment of researchers from universities and engineers from industry. Since research in frontiers of every science discipline requires very sophisticated

instrumentation, there is a need for sponsored research in collaborative environment. Since input to research laboratories has to come from the university system, we can only afford to neglect research in basic sciences at our own peril. In fact, there is greater need than ever before to create university-industry and university-research laboratory collaboration and partnership, if effective answers to problems confronting the developing world have to be found faster. This is particularly urgent because rapid advances in the application of science and technology has already divided the world into blocks of 'rich' and 'poor' nations and any further neglect will push us far behind.

An equally important associated question is to *ensure that whatever funds are allocated are spent efficiently and for the intended objectives*. Towards this end,

- responsibility to promote and coordinate research and development should vest in an autonomous agency, which will also serve to produce the 'critical mass' needed to spark such activities;
- the proliferation of low quality educational institutions will have to be checked; all institutions should be accredited/ranked by a national body on the quality of education imparted and research undertaken;
- recruitment to the teaching profession should be very rigorous and quality-oriented so that only the best are recruited and retained;
- accountability should be introduced for teachers (in terms of doing their work, producing articles, research papers or books) as well as educational institutions (in terms of the difference their science education programmes make to the quality of life of the community/area it adopts). The point I wish to make is that the entire university higher (science) education system (teacher, students and administrators of science) should be made accountable and open to assessment by the society; and
- scientists should be encouraged to patent their research and acquire intellectual property rights.

The ODL system has to develop futuristic educational programmes, in areas like bio-informatics, biotechnology, environment and sustainable development, intellectual property rights, telecommunications, genetic engineering, etc. There is an urgent need to develop inter-disciplinary courses and programmes like science and peace, politics and technology, science and technology for conflict resolution and sustainable development.

Information and communication technologies have provided powerful tools to enrich the learning environment. Interactive multimedia (computers, CD-ROM, audiovisual aids) can be used successfully to provide teachers and students with the latest and most authentic information on difficult to visualise topics and to present learning experiences in interesting and stimulating ways. And, of course, the Internet is a rich source of information on training materials for teachers to improve their pedagogical skills for teaching creatively.

The guiding principle in harnessing ICTs should be to fashion teacher training programs in the light of the curriculum, which encourages learners to ask good questions and perform new 'thought experiment'. All stakeholders would have an equally share in the process. The governmental agencies responsible for educational planning and implementation would need to take up the task of generating learning resources and teacher training materials on a massive scale. The expertise of non-governmental organizations and individuals would need to be drawn upon within a country and across countries. The open system has several success stories in respect of developing and offering courses/programmes in regional collaboration and partnership under the aegis of COL and South-Asia Foundation to bring the best in South-Asian context. Such experiments should be extended to intra and inter-continental cooperation under the umbrella of COL and ComSec. Moreover, a prominent and active role for students, family, and community, as well as accountability to society, would need to be incorporated into any scheme that envisions radical changes in teaching-learning process. Of course, imaginative and innovative thinking and material resources will be required to make such a curriculum available in our universities. It is here that enhanced participation of the ODL system in the educational process becomes important. Society at large would throw up problems to be solved and the ODL system could generate the resources and use them effectively to help people resolve the problems through appropriate education and training. Perhaps, in this scenario, private enterprise could also rise to the challenge.

In developing countries, research is considered to be a post-masters degree activity. This delays research. There is a need to encourage research and innovation in science from the early stages of tertiary education. To this end, integrated research programmes should be initiated with multiple exit points. IGNOU has started an Integrated Doctoral Programmes in Mathematics and Physics in collaboration with a world famous Harish Chander Research Institute, Allahabad. Such experiments need to be considered seriously and extended to other disciplines as well.

To sum up, the 21st century shall witness a tremendous role for science and technology in developing countries for meeting multi-dimensional needs of different segments of their population in diverse areas. The ODL system has to position itself to address multipronged challenges likely to arise by

- the renewal of the existing education system to make it more relevant and responsive to people's needs;
- diversifying its offerings to address the educational needs of a wide variety of learners so that the 'critical mass' needed for quality research is generated;
- strengthening its infrastructure for effective use of information and communication technologies, to optimise costs, expand outreach and enhance quality.

With these challenges on its agenda ODL system can truly become an instrument of social change and a key to national prosperity as envisioned by the people who struggled to place the destiny of developing countries in their own hands. **ECA**

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Research shows...

The successful use of any ICT for education requires the optimal deployment of resources, comprising policy, structures, funding, human resources, production, research and evaluation, and quality assurance. Quality assurance is an ongoing process of establishing and following processes that maximize service to customers and in the case of education learners.

Such quality assurance is imperative irrespective of the medium chosen for delivery of education. Especially when it comes to delivery through electronic media, research shows that success or failure is often a result of an ability or failure to apply the processes of quality assurance. High order thinking skills are a challenge in technology based learning. "A persistent criticism of Computer Assisted Learning (CAS) and case based learning using intelligent agents and artificial intelligence algorithms has been their failure to move beyond mere identification and use of facts, to creative and synergistic linking of concepts"

We draw your attention to some findings from research that are particularly important for any

electronic media based learning that assumes interaction.

- There is no clear cut evidence to show that learning through electronic media is any more or less effective than conventional ways of learning. What is known is that learning through electronic media provides an alternate learning path. Success or failure is dependent on a large variety of external and extraneous factors impinging on the learning process.
- There is also no clear-cut evidence that distinguishes the content and format from the medium of delivery. Nor it is easy, in evaluation packages, to distinguish between learning from content or learning from the mode of delivery.
- Contents of learning packages are rarely, if ever, unique, to the medium of delivery. More often, the same content can be delivered in different ways, as print, on radio and television, online or in an offline mode.
- Attitudes and reactions toward learning from any media are varied. The novelty effect of first time experience wears off quickly; and general patterns of learning from media take over.

- Learning from electronic media is not instant, obvious, or linear in fashion. In real and voluntary situations, learning gains are non-linear, perhaps even incidental, and take place as dynamic activities within a social setting.
- Technology is no longer an issue. Access, content, and quality are.
- Learners are not passive; they are active participants in the process of learning they require to interact with either the teacher or the learning content. Interactivity is critical as is feedback which should be prompt, even if not immediate.
- Interactivity implies engagement with content. This calls for the inclusion of recaps and summaries, examples, activities and evaluation.
- Learners distinguish good and bad quality of content and delivery. Thus, there has to be a great deal of attention to detail in the planning, designing, execution, and evaluation of any form of electronic learning.

And finally, use of media in the learning process is not one-off. It has to be ongoing, regular, consistent, and of high quality to maximize learning benefits. **ECA**

*Culled from various sources by
Dr. Usha V. Reddi*

Spotlight on...

TAMIL VIRTUAL UNIVERSITY

Introduction

Tamil Virtual University (TVU), as the name suggests, is a University that offers Tamil courses over Internet. Tamil Virtual University is an autonomous organization established by Government of Tamil Nadu, India, with primary function to provide e-learning materials for acquiring academic qualification from Virtual University. It offers web-based education from alphabet to advance research. The TVU was established in 2000 and launched its website in February 2001.

Vision

The Tamil Virtual University aims at providing Internet based resources and opportunities for the Tamil Communities living in different parts of the globe as well as others interested in learning Tamil and acquiring knowledge of the history, art, literature and culture of the Tamils.

Mission

TUV has mission fostering

- to develop and deliver Internet based learning material in Tamil language, literature and culture to global Tamil Communities and others interested.
- to develop and deliver customised programmes to meet the cultural needs of the Tamil Communities in different parts of the world and help them retain contact with their heritage.
- to initiate and continue necessary measures to coordinate and pool together knowledge resources, developed in Tamil in different parts of the world for wider dissemination.
- to offer academic programmes in Tamil language, literature and culture to audit or credit and to award appropriate

certificate/diploma/degree through Tamil University, Thanjavur, India on completion of prescribed requirements.



Basic requirements of e-Learning

The four requirements of any learning process are lessons and discussions, exercises and self-evaluation tests, library for reference and final examination. These four processes implemented with the Internet technology for e-Learning at TVU. Discussion groups are created for each curricula registered by the candidates to have chat and discussions among group members and coordinator. Each lesson has self-evaluation tests. All those registered for courses can access the digital library and the examination module provides on-line and off-line questions for examination. A very significant feature of this Internet implementation is that the whole software and database are in standardized Tamil font, viz. TAB-Bilingual coding.

Academic programme

With objective to reach globally the Tamil diaspora of all ages, learning of all stages, kinder garden to research, TVU has launched four level programmes : Certificate programmes at basic to advance levels for classes 1 to 6; Advanced certificate programmes for classes 7 to 12 (yet to be launched); Degree programmes at diploma, higher diploma and degree levels where end

exit point is BA in Tamil and Postgraduate programme MA in Tamil.

E-Lessons for the academic programmes

To start with, the lessons on various topics and titles are prepared by eminent Tamil scholars in accordance with the recommendations of the Academic Council and under a web amenable framework. The design of the e-lessons for the Certificate as well as degree programmes are influenced primarily by three factors :

- The learner characteristics like the age group, language back ground, learning skill, etc.
- The subject characteristics like technical, science, analytical (problem solving), language, mathematics, etc.
- The nature of exam and certification requirements.

Certificate course e-lessons and exam

The Basic Level Certificate Course assumes no knowledge of Tamil for the students. Hence, the explanation is in English. However efforts are also on to include languages, like French and Malay. The courses are aimed at children and hence, the animation and pictures are cartoon based.

Since the subject involved is a Language Tamil, each lesson is designed with sections, intending to develop one of the faculties of the language learning, viz., listening, spoken language, reading, writing, grammar and dictionary of vocabularies used in the lessons. Rich navigational aids to access any focused information and switching from one section to another for any cross-reference is implemented with learner friendly elegance.

Since the age group of the target learner is around 5 to 12, the lessons are implemented incorporating rich graphics, animation and audio support wherever required. The examination is designed to work closely with the structure and

content of the lessons. It supports the selection of questions from a built in question bank, automated preparation of a question paper for both online and offline examinations and the conduct of the online exam through Internet.

Degree programme e-lessons and exams

Though this programme assumes knowledge in Tamil, each lesson will have its summary given in both English and Tamil. Here again the age group and other learner characteristics are taken into account in the e-implementation of the lessons and exams.

The lessons will be basically in Text mode with a modular structure permitting access to any desired portion of the lesson and includes photographs and video clippings wherever needed, to break the monotony and make a lasting impression. Another important feature is the rich voice support for a significant portion of the poems/songs with a selectable audio trigger. The e-learning is further supported with an enhanced feature of a chat-session among the e-groups with the participation of the lessons coordinator, and an e-mail support for further clarifications. The exam module supports all features as in the case of certificate programme.

As usual each subject will have its continuous assessment by on line examination and a final written examination.

Student support system

Digital library

A large digital Library has been created to help students in (i) The academic program to refer to text books and reference books included in the syllabus, (ii) Tamil literature sangam age to modern age, (iii) Tamil heritage video clippings of Temples in Tamil Nadu, Tamil art dance and folklore, (iv) Technical glossary in Tamil for various fields of Science and Technology, and (v) Dictionaries in English and Tamil.



In contrast to a normal library, the Digital Library can provide features to support instant selection and reading of a book, instant access to any focused information on a book, simultaneous and ready access to multiple related information across different books, etc. To exploit these features and to keep the search time to a minimum, the contents housed in the library are structured and classified into Tamil Literature, Tamil Literature in Romanized form, Dictionaries, Science Books, Technical Glossaries and Video Clippings and Photo Gallery.

The database design and search mechanism have been optimized to give a fast response and the user interface extremely web friendly, e.g. features to access explanatory notes for a poem by different authors available on different books.

The Sangam literature is put in an Oracle Data Base facilitating the researchers for searching various attributes that occur in that literature. The Digital Library is a rich collection of books housing about 85,000 pages of text, and photographs and video clippings.

Study centres

With aim to provide contact sessions for counseling, TVU has initiated establishment of its study centres across the World. The locations of study centres shall cover California, New Jersey, New York, Fremont, Philadelphia, Canada, Sri Lanka, Mauritius, and Malaysia.

Conclusion

We strive hard to create content for lessons and try to provide academic content at all levels. A Post Graduate Programme (M.A. Tamil) has also been finalized. The library can also serve the research scholars in Tamil and more and more books are being added. Efforts are also being taken to include a catalog of Palm Leaf Manuscripts available at various Libraries. **ECA**

You can visit
<http://www.tamilvu.org>
for further details.

*Compiled from the presentation of
Dr. V. Sankaranarayanan at ICDL, New Delhi
and from the website of TVU.*

Educational Media Database

As an ongoing project CEMCA has been developing and maintaining a database of educational audio and video programmes produced in the region. The database currently has more than 6000 records. The purpose of the database is to act as a reference point for sharing of information and resources. Educational institutions in the region are requested to continuously send us list of audio and video programmes produced by them for updating the database. By submitting information for inclusion in the database you are actually making it available to a wider community of users through our online website and the offline CD ROM. Now, it has also been decided to supply the database and its regular updates to participating institutions. Therefore please share information about your audio and video programmes and co-operate in updating this database. For further details contact: *Director, CEMCA.*

Educational Media Consultants

CEMCA is in the process of developing a database of Educational Media Consultants in the region to promote the exchange of professionals and utilise the expertise available within the region. For inclusion in the database send your resume to Director, CEMCA or register online at <http://www.cemca.org>.

Case Study...

I can hear you, loud and clear... Community Cable Audio, "Namma Dhwani"

"A few minutes after our first cablecast we got our first phone call from a villager informing us that he was listening to the programme and that it sounded clear and great. After that we have received a flood of requests and advice on what kind of programmes to make. With such an impromptu success, the light at the end of the tunnel now only looks brighter!"



"Namma Dhwani", a Kannada (the state language of Karnataka, India) word meaning Our Voices, probably first Indian Community Cable Audio, came in to existence by a combined effort of people of Budikote Village, Kolar District of Karnataka in India, Myrada and Voices, both NGOs.

Based at Budikote, a village about 100 kms from Bangalore it is a partnership between the community of Budikote, VOICES, and MYRADA with support from UNESCO. This partnership is unique because of the skill sets that each of the stakeholders bring in. VOICES is an NGO that looks at using media for social change and has been actively lobbying for community radio in India. MYRADA has been working in the Kamasamudram area for over 10 years towards integrated rural development. UNESCO has a history of supporting projects of ICT's and development.

What is community radio?

A small radio station managed (with respect to joint ownership and it being participatory) by and set up with the interests of particular local communities in mind, is referred to

as community radio, with communities being defined as people living in a geographically defined area so that access to the radio station is easy.

Budikote

Just to paint a picture of Budikote for you, it has a population of about 3,020 people and is the Panchayat headquarters for 8 surrounding villages. The overall literacy is about 55% and the village has 1 high school, 3 primary schools and 2 Anganwadis (Crèche). Most people speak both Kannada and Telugu (South Indian Languages) and the main occupation is agriculture and coolie labour. One of the outstanding features of this community is the presence of 13 Women Self-Help Groups (SHGs) who meet every week to engage in micro credit management.

PARTNERS:

MYRADA: a grassroots NGO that has been working in the Budikote sector for over 10 years in the area of integrated rural development.

VOICES: A Bangalore based NGO that aims to use ICT & media for social change and is a leading advocacy agent for legislation supporting community radio.

UNESCO: A leading UN arm that supports ICT and rural development.

FUNDING: UNESCO

Project objectives

The goals of the Project is

- to bring the voices of the marginalized from the periphery of information and awareness to the center and give them the opportunity to make informed choices and decisions;
- to foster a sense of ownership and enthusiastic participation by the community;
- to be able to encourage a casteless, women empowering, value based environment;
- to make technology accessible and relevant to rural settings;

- to act as a legitimate case to make way for legislation conducive to the opening up of community radio in India; and
- to investigate whether Information and Communication Technologies can help reduce poverty gaps.

That is how it started VOICES and MYRADA began work in Budikote as early as 1999 with a needs assessment study, findings of which revealed that the community did want an information centre, which would give them timely and locally relevant information, through audio, a medium which they were comfortable with. Keeping this in mind began a series of training sessions for volunteers conducted by experts from All India Radio on techniques for audio program production. As an outcome of the training sessions, volunteers began to make programmes on topics, such as sericulture, organic farming techniques, child and reproductive health, insurance, etc. The next challenge was to devise an outlet of getting people to listen and respond to the produced programmes. This is when the NGOs started narrowcasting in Self-Help Group meetings. They extended this network of narrowcasting to 60 SHG's belonging to 35 villages in the Budikote Sector. This system worked well because the Self Help Group mainly consists of women members who belong to poor families and have less access to crucial information. It also ensured immediate feedback from SHGs that could be incorporated into future program productions.



And today...

Till date 300 programmes have been made by the volunteers of Namma Dhwani. In September 2001, with funding from UNESCO, an audio production centre was established. With a physical space, the need to

put in place a management system was imperative. The management committee of Namma Dhvani describes best the core philosophy of the audio station.

The management

The committee consists of 10 women members who represent their SHG's, the staff and volunteers of Namma Dhvani and representatives of MYRADA and VOICES. The vision is to work towards making this committee completely independent as far as Namma Dhvani management goes and also, to take the initiative forward in a sustainable manner. This committee meets regularly to evaluate programmes produced, to provide feedback on them and to discuss management issues. On a regular basis, vision building exercises and stocktaking training sessions are conducted. During their last five years vision building training session, the committee came up with a wish list. Some of the items were :

- to cable the entire village so that everyone could listen to Namma Dhvani Programmes;
- to make sure that every eligible child attends school;
- to educate every household about indigenous medicine;
- to make sure that every household has contributed to the making of at least one programme;
- to work towards making the youth of Budikote computer-literate

Pilot experiment

To make these dreams come true, an audio cable connection was established to the tenth standard classroom of the high school of Budikote in July 2002. With the co-operation of the Block Education Officer, staff, parents and children, the students now listen to 2 hours of programmes every week. The format of the programmes consists of newspaper reading, local news, general knowledge, music, model lessons, and social programmes about issues like dowry, environment preservation, etc. The cable connection became very popular with the children and as a result, a children club has

conceived, called *Hosa Belaku* (meaning "New Light"). The club has about 60 children from Budikote and the neighboring villages. They dabble in drama, poetry, music and are fast learning audio production techniques.

Computer literacy

In April 2002, two computers were installed at Namma Dhvani and training sessions in basic computer literacy were conducted. The



training was imparted by some of the more literate community members for the computer illiterates. Adding to the value of the partnership is the collaboration of Namma Dhvani with MYRADA's local Resource Centre. The objectives of this Resource Centre are :

- to help the community and to train Community-based Organizations (CBOs);
- to provide information linking CBOs, Government and Private institutions;
- to resolve conflicts and provide counselling services;
- to provide Computer based services;
- to establish financial service linkages;
- to conduct regular monitoring and evaluation of CBO's; and
- to provide internet services

The partnership has yielded a good example of collaboration where the Resource Centre serve as an information collection centre and Namma Dhvani disseminates the collected information.

The cablecast

In the absence of legislation that allows for use of airwaves, cable audio system has emerged as best alternative. With support from UNESCO, ICT is used as a tool for

poverty reduction. Namma Dhvani has begun the cable installation process in collaboration with the local cable operator. The first phase of the installation became operational in March 2003.

March 28th, 2003 was a red letter day for the community of Boodikote village in Kolar. On that day, Namma Dhvani operationalised the first phase of its cable audio initiative and cablecasted its first programme. The process was collaborative and in conjunction with the local cable operator which enabled 200 of the 650 households in the village to listen to the programme on their TV sets.

As a part of the trial run, it was decided not to make a public announcement of the telecasts. But, a few minutes after first cablecast, first phone call from a villager informed that the he was listening to the programme and that it sounded clear and great. And then a flood of requests and advice poured in on the kind of programmes and what is needed. With such an impromptu success, the light at the end of the tunnel now only looks brighter! Namma Dhvani as of now produces two hours of programmes every day and cablecast between 6.30 -7.30 in the morning and again, in the evening.

By August 2003, the remaining 450 households were also cabled. Since these households do not own television sets, they receive the cable channel on modified radio sets, which were sold to them on subsidized rates.

NAMMA DHWANI programming contains a rich mixture of music, devotional, classical, folk and popular for both children and adults. Basic education content on environment, health, agriculture, management of self help groups, education and bus timings, market prices, and form part of the morning schedule.

The Budikote model is an example of innovative use of cable at a time when wireless community radio is yet to take roots in a country and in situations where regulatory practices can hamper, rather than promote the use of radio for development. **IECA**

*Compiled from
www.voicesforall.org/communityradio/
namma_dhwani.htm by Pankaj Khare.*

Regional Roundup..

Using ICT in ODL in the New Millenium the Netaji Subhas Open University

A two day conference on "Use of IT in the Distance Education System Mapping in the New Millenium" was organized by the Netaji Subhas Open University at Kolkata on March 3rd and 4th, 2004. The conference brought together about 100 participants from different educational, IT and private sectors institutions from West Bengal, as well as speakers and participants from IGNOU, YCMOU and other ODL institutions in the country.

Mr. Kiran Karnik, President NASSCOM, India inaugurated the seminar. He pointed out that global demographic patterns for the 21st century show that while there will be shortages of skilled workforces in most of the developed countries, including China, India will have large pool of people in the working age group. Such demographic patterns underline the importance of developing, in the knowledge society, this pool of workers so that they are productively employed as knowledge generators and workers. The migration of people will be less important than the migration of work from one part of the world to another. The challenge and the opportunities exist for today's open and distance learning institutions to use ICT to enable India's learners to grow and fill the gap between demand and supply.

The conference provided a platform for displaying the directions in which West Bengal's IT initiatives were moving and an opportunity for both public and private sector to share common ideas and concerns on the use of IT in education.

The NSOU Vice Chancellor, Prof. (Dr.) Surabhi Banerji, also used the opportunity to announce forthcoming launch of the *Online Bangla* portal, intended to address the Bengali *diaspora* in the world. **ECA**

NAAC-COL Round Table on Innovations in Teacher Education: International Practices of Quality Assurance

National Assessment and Accreditation Council (NAAC) and Commonwealth of Learning jointly organized three day Round Table between 17th and 19th of March 2004 at Bangalore, India to explore Innovations in *Teacher Education: International Practices of Quality Assurance*.



"Teacher needs to function as an effective facilitator" in the process of education, said Prof. Arun Nigavekar, Chairman, University Grants Commission, India while inauguration the seminar on Round Table on. He emphasized on the professional development of the teacher and teaching skills for educating the pupils.

Indian model of quality assurance- National Assessment and Accreditation Council (NAAC) has made impact for promoting the educational standards in the higher education. Quality assurance and

accreditation is a tool with great potential, and appropriate use of it, would make quality an institutional and educational value.

Prof. G. Dhanarajan, President and Chief Executive Officer, COL while emphasizing on intense interaction between trainees, trainers and academic programmes, showed his concern on non-participation of children in primary education. Prof. V.S. Prasad, Director, NAAC, described the Round Table as a



platform for sharing the best practices in teacher education in other countries and planning and networking for enhanced quality assurance.

Experts from Nigeria, Tanzania, Bangladesh, Sri Lanka, Australia and India participated and presented papers at the Round Table. **ECA**

Encouraging Doctoral Research in Media

In order to promote doctoral research in educational media, CEMCA invites research scholars to undertake research on utilization of educational media, and in various other areas of media and learning. A modest funding will be given to cover survey and report writing work. Registered research scholars are requested to apply in the application format, which can be available from the **Director, CEMCA**.

Worth While Web...

We have introduced the topic **Data Preparations and Data Warehousing** in this issue as SMART Tips. For additional resources that one can get from the Internet for strengthening on the concepts and can also go through related case studies, we explored the World Wide Web and compiled some useful links. We hope that these links, which are in the form of PDF documents, would be useful to you in reading much more about the topic. All the links were working fine at the time of compilation.

What Academia can gain from building a Data Warehouse.

www.educause.edu/ir/library/pdf/eqm0316.pdf

Politics of Data Warehousing : A White Paper published in DM Review.

www.dmreview.com/whitepaper/wid293.pdf

The Challenge of Process Data Warehousing :

www.vldb.org/conf/2000/P473.pdf

Data Warehousing : Concepts and Mechanisms :

www.svifsi.ch/revue/pages/issues/n991/a991Gatzju.pdf

Data Warehousing : to buy or to build a fundamental choice for insurers :

www.datawarehouse.com/iknowledge/whitepapers/SQLiaison_1186.pdf

Tools for Data Warehouse Quality :

<http://maximus.uvt.nl/~jeusfeld/ssdbm98.pdf>

A Data Warehouse for policy making : A case study:

www.computer.org/proceedings/hicss/0001/00017/00017010.PDF

Data Warehousing Development Methodologies :

A Comparative study :

[www.sims.monash.edu.au/dsslabs.nsf/0/bdad537fdeecc5ca256c2b002528fa/\\$FILE/wp200202.pdf](http://www.sims.monash.edu.au/dsslabs.nsf/0/bdad537fdeecc5ca256c2b002528fa/$FILE/wp200202.pdf)

An Overview of Hyperion's Data Warehousing Methodology :

www.dmreview.com/whitepaper/wid349.pdf

An Overview of Data Warehouse Design Approaches and Techniques :

www.fing.edu.uy/inco/pedeciba/bibliote/reptec/TR0109.pdf

Compiled from the World Wide Web by Pankaj Khare. 

CEMCA News...

CEMCA Partners in International Conference on Digital Libraries

Policy and decision makers; Educators of conventional and distance education systems, Library and information science professionals, Information technology professionals, Archivists, Content and knowledge managers, IT service providers, Information providers and vendors, Museologists, Electronic publishing and virtual electronic communities, Stakeholders in the digitization and knowledge business were among the galaxy of participants who listened in rapt attention to the highly articulate vision of Dr. A.P.J. Abdul Kalam, during his inaugural address at the opening ceremony of the International Conference on Digital Libraries (ICDL2004) on February 24, 2004 in New Delhi.

More than 650 international speakers and participants attended


the academic rich International Conference on Digital Libraries (ICDL2004) organized by The Energy Resources Institute, in partnership with Department of Culture, Ministry of Tourism and Culture, Government of India from February 24 to 27, 2004 at New Delhi, India. CEMCA was a major associate of the conference that focussed on knowledge creation, preservation, access, and management.



At the core of the discussion was the revolution in information and communication technology in the last couple of decades and its drastic and far-reaching impacts on all aspects of human life. The management of learning has now developed into a major discipline

and digital libraries are fast emerging as a crucial component of global information infrastructure, adopting the latest information and communication technology to promote an organizational structure that encourages communication between scholars, cross-national communities, and helps skirting disciplinary boundaries.

The programme included plenary speakers on each day, followed by parallel sessions on various aspects of organizing and maintaining digital resources. A unique feature was the full day spent on tutorials to familiarize knowledge workers with the different pedagogies and issues that are involved in the development of digital libraries. Lighter programmes in the evenings supplemented the hard core discussions of the day.

In partnering with different organizations to make the conference a success, CEMCA supported the participation of two Asian and ten Indian knowledge managers from conventional, dual mode, and open and distance learning institutions at the conference. 

Technology Tracking...

All about Internet Operations

Sanjay Jasola

Computer network facilitates sharing of resources among computers. The important feature of a network is that it allows data transfer in the form of files between two particular computers. But how does transmission of data takes place? Transmission of data on a network requires a secure mode of transferring data in the form of electronic signals, the address of the source and the destination computer. Before we proceed further with the explanation have the above two requirements, let's first familiarize with some terms that are commonly used in the Internet scenario : *the client, the server, and the client/server network*. These three terms will lay the foundation for understanding that how data is transferred over a network.

Client

A client is a destination computer on the network that requests services from another computer on the network. This computer requires adequate access permissions to be able to request services and access resources from other computers.

Server

A server is a source computer that receives requests from the client computers, processes these requests, and serves the requested information and/or the data to the client computer. The server computer has a range of services to offer to a client; for example, a server computer can offer information, software, games, music, and print services. However, the client can access these services only if it has adequate permissions. The server computer delineates these permissions for the client.

The client/server network

The client/server network forms the basis of computer connectivity on a

network. This network consists of several client computers that are connected to the server and also to each other. Let's discuss the request/response cycle in a client/server network. The client computer sends a request to the server computer. The server computer accepts the request if the client has necessary permissions. Assuming that the server computer accepts the client request, the server then serves the requested information to the client computer. The Internet also follows the client/server architecture where several clients and servers interoperate with each other. In the Internet scenario, a server is also termed a *Web Server* or the host computer, which provides Web services to clients on the Internet. However, a client as well as a server can also host information to another computer, and thus act as a client and a server. Let's see the requirements of data transmission on a network.

Mode of data transmission

The Internet is an open network that is prone to a large number of network attacks, such as intrusions and hacking. As a result, to transmit data over the Internet, one needs to follow certain rules and/or protocols that can help in transmitting the data in a secure manner. These rules are implemented in two sections on the network and are known as Transmission Control Protocol (TCP) and the Internet Protocol (IP), or collectively as TCP/IP. TCP is used to divide data into smaller data packets, also called *datagrams*, before data is transferred over a network. To ensure that packets are reassembled without any data being lost or damaged in transit, TCP also attaches special information to the packets, such as the packet location and error rectification code. The role of IP is to attach the destination address information (client/address information) onto packets. The packets on the Internet are passed

through various paths on a network to balance the load. After passing through various network paths, the packets reach the destination address and TCP reassembles the packets using the attached information. This is how the data flows from one computer to another.

There is another vital ingredient in data transmission, that is, the address of the source (server) and destination (client) computer. These addresses are called IP addresses. It is important to know that each computer has a unique IP address assigned to it. Now to facilitate communication between the client and the server on the Internet, it is essential for the client computer to know the address of the Web server from where it extracts the information. In the same manner, it is also essential for the server computer to know the address of the client computer(s) to which it has to route the data packets.

High-speed connections form the backbone of the Internet

The high-speed connections are capable of transferring large volumes of data between strategic locations. Many such high-speed connections are owned and operated by different telecommunications companies and are known as service providers. For example, in India, VSNL (Videsh Sanchar Nigam Ltd.) is a service provider.

Local access Points or Points of Presence (POP)

POP is an access point that enables users to access the Internet provider's services. These POPs are run by phone companies and local Internet Service Providers (ISPs). Corporate Local Area Networks (LANs), Wide Area Networks (WANs), and even individual users with dial-up modems can connect to these points.

Transmission Control Protocol/Internet Protocol (TCP/IP)

The TCP/IP acts as the common set of rules for the Internet.

IP addresses

IP addresses are used to uniquely identify computers on the Internet. No two host computers connected to the Internet can have the same IP address.

Connecting to the Internet

When we summarized the guiding factors of the Internet, we stated that high-speed connections are the backbone of the Internet. However, how exactly can you connect to the Internet? You can connect to the Internet by several methods: dial-up connection, leased lines, ISDN Lines, VSAT, etc .

Dial-up connection

To connect to the Internet through dial-up connection, the essential components required are telephone lines and a modem. A *modem* is a hardware device that transmits data using telephone lines. It converts analog

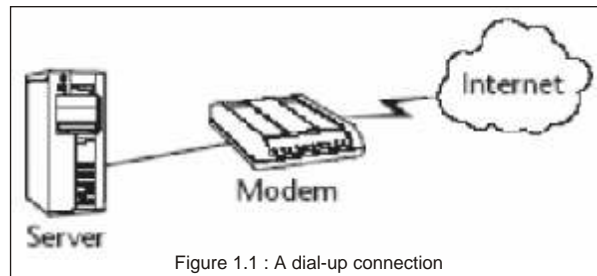


Figure 1.1 : A dial-up connection

signals that are transmitted through telephone lines to digital signals that can be interpreted by a computer. In the case of a dial-up connection, whenever a user wishes to connect to the Internet, the user must specify a user name, a password, and a telephone number. The user name and password are a means of authenticating a user on the Internet and are provided to the user by ISPs. Internet Service Providers are companies that provide access to the Internet and other related services, such as Web site building and hosting.

Digital Subscriber Line

Digital Subscriber Line technology can be used to deliver bandwidth-intensive applications like high-speed access to the Internet, streaming audio/video, videoconferencing, online games, application programs, telephone calling and other high-bandwidth services. This digital broadband line directly connects users premises to the Internet, via the existing copper telephone lines. This gives "*always-on*" Internet access and does not tie up the phone line. No more busy signals, no more dropped connections, no more waiting for someone in the household to get off the phone. DSL offers users a choice of speeds ranging from 144 Kbps to 1.5 Mbps. This is 2.5x to 25x times faster than a standard 56 Kbps dial-up modem. DSL technology uses existing 2-wire copper telephone wiring to deliver high-speed data services to homes and businesses.

Over any given line, the distance between the customer site and the Central Office (CO) determines the maximum DSL speed. Most ISP's offer Symmetric DSL (SDSL) data services at speeds that vary from 144 Kbps

to 1.54 Mbps, and now even faster up to 6.0 Mbps--so customers can choose the rate that meets their specific needs. At the customer premises, a DSL router or modem connects the DSL line to a local-area network (LAN) or an individual computer. Once installed, the DSL router provides the customer site with continuous connection to the Internet and use of the telephone at the same time.

Leased lines

The wires used to carry telephone traffic are designed to be low cost and low quality and hence cannot carry the traffic beyond a particular bandwidth and speed. Leased lines are dedicated copper wires or fiber cables coming from the public telephone exchanges to the customer premises guaranteeing the customer a certain speed of access to the internet or to another peer present at a distance. The access speeds are specifically high and give an as-good-on-LAN feel to the user. The leased line technology is mature enough to support all types of protocols and quality of services on it. Though the technology still falls under the same umbrella of public switched networks and any guarantee to its capabilities cannot be justified by the nature of the network itself.

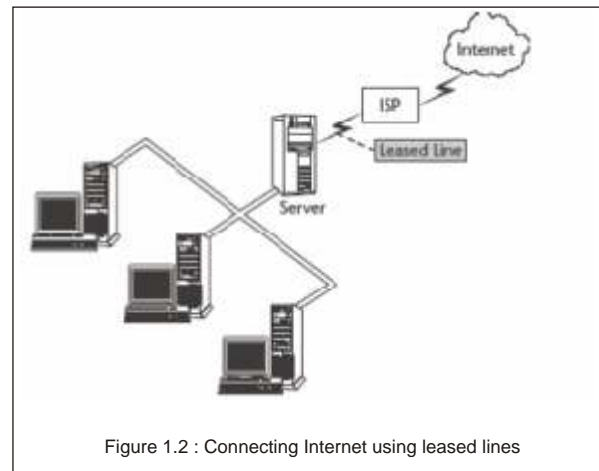


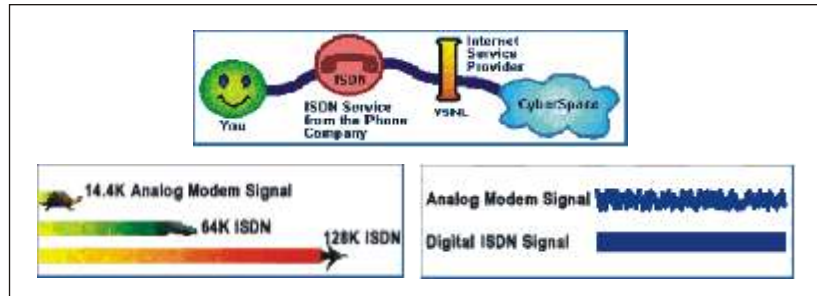
Figure 1.2 : Connecting Internet using leased lines

In the case of leased lines, a dedicated connection is maintained with the Internet. A dedicated connection allows the client or the user computer to remain connected to the Internet 24 hours a day. Unlike a dial-up connection, with leased lines a user need not connect to the Internet through a modem. Leased lines are faster than dial-up connections because they can handle higher data transmission speed. Figure 1.2 illustrates how a corporate network is connected to the Internet using leased lines.

ISDN

ISDN is currently the fastest and most reliable method of connecting small computers to the Internet, and now there is a complete end-to-end solution at a very affordable price. First, the data rates of fast modems that can connect to the Internet are typically 14,400 or maximum 56,000 bits per second (bps) or baud, while ISDN allows up to 1,28,000 bps.

A comparative speed illustration could be as under.



It doesn't take much math to see the rate increase ISDN provides. Second, analog data is subject to noise interference, such as static on the line, which can cause data corruption.

ISDN provides digital data service over traditional analog telephone lines. It allows users to carry both voice and data transmission on the same line. Instead of a modem, ISDN users as well as their service providers need an adapter.

There are several elements involved in installing ISDN. First, the phone company must set up a network interface device box in your basement or on an exterior wall, then ISDN wiring needs to be run from the box to the analog phone line. The ISDN adapter needs to be put into the computer and the appropriate software needs to be loaded onto the computer. A connector plugs into the adapter on one end and into traditional phone line on the other, instead of a dial up modem the computer uses the ISDN line.

Radio Frequency Network

A radio link is established between two stations through relaying the radio frequency signals from one antenna to another, propagating the signal through long distances while keeping the integrity of the signals by regular amplification of and noise removal from the signal. The radio frequency uses the frequency range of less than 3 Giga Hertz, wavelengths greater than 0.1 meters and signal energy less than 2×10^{-24} Joules. The lower frequency and higher wavelengths cause the signal to be prone to various sources of noise and greater de-amplification

on transmission through comparatively smaller distances in

air or any other medium. The signals are generated from one station and carried along a chain of antennas, mounted on high platforms. The signals are finally received at the other end of the transmission and amplified and suitably de-noised before putting to any use. The technology is a line-of-sight (LOS propagation) based technology where the transmitting and receiving stations both need to have a clear visibility of each other.

VSAT

VSAT is a secure and reliable medium to connect geographically dispersed locations. In a situation where other connectivity options are not feasible, VSAT offers two distant advantages: less deployment time and easy manageability. VSAT stands for "Very Small Aperture Terminal" and refers to receive/transmit terminals installed at dispersed sites connecting to a central hub via satellite using small diameter antenna dishes (0.6 to 3.8 meter).

A VSAT is a small fixed earth station that provides a communication link required to setup a satellite-based communication network. It represents a cost-effective solution for those who want an independent communications network to connect a large number of geographically dispersed sites, especially sites where any other connectivity options are not possible to implement.

VSAT networks offer value-added satellite-based services capable of supporting the Internet, data, LAN, voice/fax communications, and can provide powerful, dependable,

private and public network communications solutions. A VSAT has certain clear advantages over leased lines and other wireless communications media. A satellite network can be installed and made operational within a week since miles of cable need not be installed. And VSATs are available in remote locations since it doesn't need the infrastructure of a telephone exchange to be present.

Traditionally, VSATs had a few disadvantages: VSAT bandwidth was not very high and restricted to a few 100 Kbps. There was also certain amount of latency (the time between initiating a request for data and the beginning of the actual data transfer) between nodes. But these limitations have been overcome to a large extent due to advancement in technology. Nowadays, VSAT providers offer up to 52.5 Mbps out route (from hub to VSAT) and 307.2 Kbps in route (from VSAT to hub) data rates, and only 270-millisecond latency.

The frequencies chosen for this transmission are particularly higher (C-band, ext C-band or Ku-band) reducing the overall de-amplification and noise sensitivity of the signal. The signal travels long distances before reaching the satellite, which is usually present in the geo-stationary orbit. The satellite has frequency space dedicated for a particular signal (which needs to be bought from the service provider) picked up by dedicated transponders and amplified and de-noised before beaming it to the ground again through dedicated antennas on the satellite. While the service provider manages the equipment at the satellite side, those at the user premises are to be maintained by the user. The premise equipment consists of Indoor units (transmission unit, ITU and reception unit, IRU) and the Outdoor units (LNB and radio unit). Both these bundles are very expensive and tough to maintain. **ECA**

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SMART Tips...

Building a Data Warehouse

Anurag Saxena
Pankaj Khare

In EdComm Asia December 2003 issue, we introduced data mining tools with educational applications. In the present write-up we intend to explore the method of data preparation and its conversion as a data warehouse.

The need

For any institution, inputting the details of specific information in a sequential form (source of data) creates a database. The record keeping, either manually or through computers, preserves the details for future referencing. With large amount of data, it may not be economically viable to use manual data records for identifying the preserved information and over the period the information becomes redundant. Still, institutions maintain manual records and carry forward the work with this method, but for a shorter span of time. These efforts take time and space. With advent of computers, problem of space was reduced to a greater extent, but unsystematic record keeping left the database as a raw repository of information. The time slab also decreases in retrieving the information, though the information was available only on demand. The gap between database and Decision Support System (DSS) or Management Information System (MIS) or Executive Information System (EIS) remained as wide as it was with manual system.

Tracing history

A good database is one, from which information can be retrieved in shortest possible time. Interactivity, systematic sequential information and enhanced inter-linking are the key features of a good database suitable for analysis and knowledge discoveries. This gave birth to a *Data Warehouse*. *A data warehouse is a repository of subjectively selected and adapted operational*

data, which can successfully answer any ad-hoc, complex, statistical or analytical query (Prabhu, 2002). W. H. Inmon (1993) defines data warehousing as, "A data warehouse is a subject-oriented, integrated, time-varying, non-volatile collection of data in support of management's decision-making process".

The history of decision support systems can be traced back to 1960s. A data warehouse is often also called as a repository of data integrated from different heterogeneous sources to support decision-making. The construction of the first data warehouse was initiated by Codd et. al. (1993) who gave a proposal of the construction of large data warehouse for multidimensional data analysis. The construction of a data warehouse requires data integration, data cleaning and data consolidation. Data warehousing systems are basically online analytical processing systems (OLAP) discussed later, as they can organize and present data in various formats. They are different from online transaction processing systems (OLTP), which does online transaction, and query processing only.

In corporate sector

A data warehouse provides competitive advantage as it generates relevant information for decision-making. It enhances business yield by quickly and efficiently assembling information typical to the organization. A data warehouse provides a steady view of customers and products across all dimensions, thus proving an aid to customer relationship management (CRM). It also aids in cost reduction as it identifies hidden information like trends, patterns and outliers from the database in a steady manner. Raizada (2003) stated, "More and more companies are using data warehousing as a strategic tool to help them win new customers, develop new products,

and lower costs. Searching through mountains of data generated by corporate transaction systems can provide insights and highlight critical facts that can significantly improve business performance.

Design of a data warehouse depends on the typology of the activity for which it is designed. There are four different views regarding the designing of a data warehouse. The top-down view (which allows selection of the relevant information); data source view (which visualizes the documentation of the data); data warehouse view (which represents the information stored inside the data warehouse e.g. counts, percentages, data-source, date and time etc.) and business query view (which represents the data from the viewpoint of the end user). A data warehouse can be represented as a three-tier architecture. The bottom tier is the relational database system; the middle tier is an online analytical processing system (OLAP). It could be a relational online analytical processing system (ROLAP) or a multi-dimensional online analytical processing system (MOLAP) or a hybrid online analytical processing system (HOLAP). Finally the top tier is the client-containing query, reporting and analytical tools.

The techniques...

The core of the design of the data warehouse lies in multidimensional view of the data model. Traditionally, for statistical data analyses, two dimensional tables are used. The columns and rows in the table could represent two distinct dimensions having two different item values.

Data cube

The concept model of data warehousing could be presented through Data Cubes (Fig 1). These data cubes are capable of presenting data in three dimensions and each

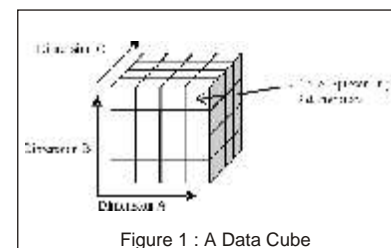
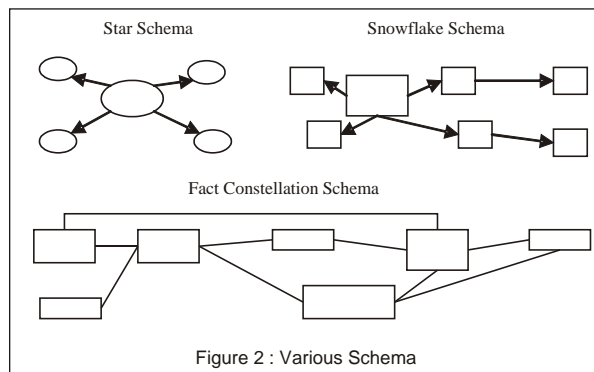


Figure 1 : A Data Cube

dimension can be divided into sub-dimensions. A data cube consists of a lattice of cuboids, each corresponding to a different degree of summarization of the given multidimensional data. The numbers of dimensions of a data cube are organized with the help of concept hierarchies.

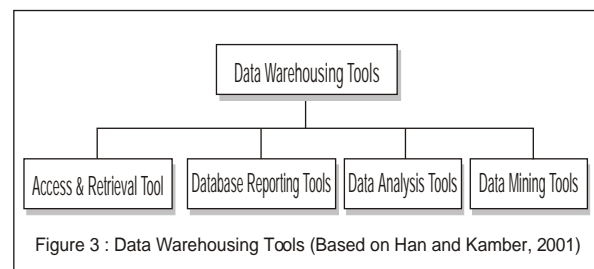
Dimension schema

A lot of semantic information can be obtained from the dimensional sketches. A multidimensional model for a data warehouse can exist in the form of star schema, a snowflake schema or constellation/ galaxy schema (Fig. 2). These multidimensional warehouse models can yield various summary measures with summary functions in different dimensions and hierarchy.



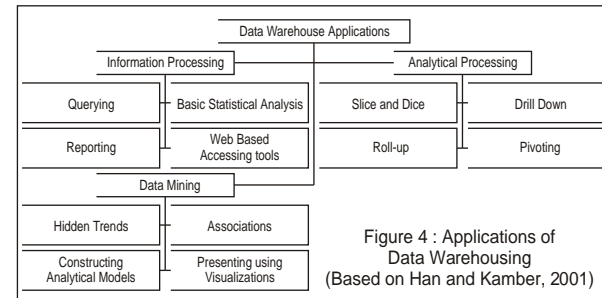
Metadata

Another important concept is the data warehouse metadata. These are the data defining the warehouse objects. The metadata repository provides details regarding the warehouse structure, data history, and the algorithms used for summarization, mappings from the source data to the warehouse form, system performance, and business terms and issues (Han and Kamber, 2001). A data warehouse's effectiveness increases with the time since it has been used. Actually a data warehouse evolves with time of usage. If initially a data warehouse is used to generate reports and resolving simple predefined queries, then after evolution it may be used for analyzing summarized data and subsequently for strategic purposes by performing multi-dimensional analysis. Further to it a data warehouse is used for discovering knowledge and tactical decision-making using data mining tools (Fig.3).



The more the user knows about the data warehouse the more effective would be the usage. Metadata often provides all information regarding what exists in the data and how it can be effectively utilized by using

appropriate analysis tools. The applications of a data warehouse can be summarized in the form of the chart provided at Fig. 4.



Data warehouse classification

Data can be classified as

- 1. Reference and Transactional data :** The data, which originates from source systems and predetermined periodically, and cannot be modified, are put in this basic category. For example, the admission data of students that is inputted from the application form of the student. The process is governed by the schedule of academic activity and application forms becomes source of data. The information provided by the student in the application form does not have scope of modification, as far as source is concerned.
- 2. Derived data,** which originates from reference and transactional data and can be derived again on fresh or modified derivations. Extending the previous example, the inputted data may have inputting errors, missing fields, incorrect course options or wrong information. Thus, it calls for corrections in the source by re-inviting the relevant information. The database thus, goes under changes and corrections.
- 3. Denormalized data,** which is the basis of Online Analytical Processing (OLAP), prepared periodically but directly based on reference data. This data is capable of summarizing the information available in reference (transactional) data or derived data. The degree of correctness remains more in derived data.

The data warehouse keeps all historical and archival data and is capable of producing needed interpretations for DSS and MIS. The interactivity remains very high in data warehouse. The data flow from source passes through the refining process and adds on to the warehouse. This increases the potentials of a data warehouse in terms of latest information, knowledge and trend patterns.

Data updation

Interestingly, the periodicity of accuracy of the information is very low in data warehouses. The reason may be the housing of data away from the operation environment. Any policy change may not have immediate effect on the archival data information till it continues for a longer period. This can be elaborated with an example from Open and Distance Learning

Institution. An institution has to prepare itself by preparing the admission of students in an academic programme. The application forms are to be printed beforehand and are to be distributed at the sale nodes for timely circulation among the prospective students. Now, how much should be the quantum of print ? This can be determined by summarising the available database information on previous year sale, number of applicants and balances of unsold application forms. Let us presume that the cost of the form was only Rs. 30.00 in last 4 years and average sale was approximately 10,000 copies each year. Suppose the institution enhances the cost of application form to Rs. 100.00, the sale comes down to 6000 copies. This information also gets accumulated in the database on form sale. In subsequent year, while making the decision on the quantum of print, the database information shall have very little change in the trend the averages may not have greater impact, i.e. average sale shall reduce to 8,000 only $((10,000 + 6000)/2)$. The print-run may thus be an enhanced quantum and may lead to more numbers of unsold forms. That is why, while retrieving the knowledge, one has to be cautious of the latest developments and policy changes to avoid unnecessary discoveries.

Data marts

From the data warehouse, data flows to various departments for their customized DSS usage. These individual departmental components are called Data marts (Prabhu, 2002). A data mart is basically a component of data warehouse where multiplicity of the data not relevant to an individual department is avoided. The genesis of data mart is due to heavy structure of a data warehouse where processing time increases substantially for specific customized information retrieval as the database starts interacting with all the information at the same time. For example, while obtaining of students' performance in term-end examination, the warehouse may analyse sequentially the information from all the fields, like their region,

study performance and continuous assessment in an academic cycle before reaching to targeted query.

Online analytical processing (OLAP)

The information retrieval from any database management system (DBMS), the created data mart is called online analytical processing (online, as it is integrated analysis from the data warehouse) which is abbreviated as OLAP. Prabhu classified the data marts into two :

1. Multidimensional Database Online Analytical Processing (MDDDB OLAP or MOLAP), and
2. Relational Online Analytical Processing (ROLAP)

In a multidimensional data mart, the numeric data, which is multidimensional in its original nature, can be sliced and diced in a free fashion, i.e., free from data modeling constraints of a DBMS.


The ROLAP or relational OLAP data mart may contain both text and numeric data and are supported with RDBMS.

The analysis process is also defined as "drilling process" to abridge and secure the important hidden knowledge. It implies various mining techniques, like open cast drilling or mining without removal of overload of data or mapping/contouring of data mart to surface the information hidden in deep.

Data mining covers a broader spectrum than the data warehouse, as it is not confined to analyzing the data stored in a warehouse. Data mining can utilize data sources and data types like transactional data, spatial data, textual data and multimedia data. These data types are difficult to model with the current database technology. There is a new concept that has been introduced recently and that is the on-line analytical mining (OLAM). It is data mining based on on-line analytical processing. OLAM emphasizes the interactive and exploratory methods to extract information.

Raizada (2003) elaborated eleven steps to success in data warehousing :

1. Recognize that the job is probably harder than you expect
2. Understand the data in your existing systems
3. Be sure to recognize equivalent entities
4. Use metadata to support data quality
5. Select the right data transformation tools
6. Take advantage of external resources
7. Utilize new information distribution methods
8. Focus on higher payback marketing applications
9. Emphasize early wins to build-support throughout the organization
10. Don't underestimate hardware requirements
11. Consider outsourcing your data warehouse development and maintenance.

In summary, the databases yield instantaneous online system knowledge for decision support system if they are converted into a systematic databases as data warehouse. This section on data warehousing shall follow statistical methods as basic research tool for data mining in forthcoming write-ups. 

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Book Review...



'Planning and Management in Distance Education', edited by Santosh Panda, RoutledgeFalmer, London and New York, pp.+288, 2003, price £22.50 (pb), £40 (hb).

Dr. C.R.K. Murthy

Distance education is undergoing a period of rapid change. Enter the ICTs and the change is not merely in the means of delivery, but also in the pedagogy of learning. For such changes, there have to be parallel shifts in planning and management of distance education. Santosh Panda's edited book provides both an overview and insight for all of us involved in the field, contributed by experts *who's who* in the field at the global level.

This collection of articles from renowned distance educators across the globe covering areas/issues that represent all generations of distance education is a tremendous effort, and deserves both careful reading and appreciation.

The book has six parts, each representing one thematic area

associated with planning and management of distance education.

Part 1 is anchored by a seminal article on models of distance education models by Otto Peters.

Part 2 focuses on 'Policy and Planning' in developed countries (by Terry Evans), developing world (by Hilary Perraton). In the last chapter by Margaret Haughey discusses various dimensions of planning in open and flexible learning, focusing especially on holistic planning.

Part 3 has five chapters examining issues related to institutional management and various components, such as, leadership and change, management of academic development, research and development, and resources. Powar analyses various sub-systems and cultures involved in management of distance education systems. Ross Paul in the sixth chapter highlights the need for change in the existing institutions and the need for such leadership that is necessary to carry out the change by bridging the gap between the vision and the reality. Graham Webb in Chapter 7 reviews various aspects of academic development with academic staff as the central concern, since they initiate curriculum development, develop course materials, identify delivery and evaluation strategies, among others.

David Kember presents an exhaustive account of action research and development projects that had been operationalized on a large scale through the Action Learning Project in Hong Kong and Greville Rumble discusses at length the budget structure in a distance teaching organization and the effective management of resources to achieve economies of scale.

Part 4 details the management of various processes: instructional design and development; media development and production; material production, distribution and operations management; services to students; planning and management of networked learning; managing tele-learning centers; and planning and management of student assessment. Authors from different parts of the world contribute knowledge gained from experience and valuable knowledge can be gained by reading through the contributions of Jegede, Panda and Chaudhury, Khan and Garg, Tail, Inglis, Latchem, Gunawardena, and LaPointe and others.

Though educational institutions are continuously trying to adjust and adapt to the changing situations in their own ways, in the back of their minds are a few questions: Are the efforts of required quality? Are standards of ours matching with those of others? Keeping these concerns in view, **Part 5** is devoted to the theme 'Quality Assurance and Accreditation' with five chapters.

Part 6 is the last part of the book, and has one chapter written by Glen M Farrell on internationalization of open and flexible learning in a global environment a highly relevant and crucial issue at this juncture. Farrell examines the forces of globalization and identified various push and pull factors in this regard.

Any book in an area is useful to one or two or a few categories of users. However, as a distance teacher, I think this book is useful to all categories of personnel involved in distance education: to name a few teachers, researchers, media specialists, policy makers, planners and managers at various levels, students. Every institutional library should have a few copies available for reference. **ECA**

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murthycrk@hotmail.com*



Legislation on Community Radio Broadcasting : Comparative study of the legislation of 13 countries. Paris : UNESCO Division for Freedom of Expression, Democracy and Peace, Communication and Information Sector, 2003.

Usha V. Reddi

I found a simply bound yellow covered monograph on my desk one morning about two months ago. It looked like a compilation of legislation only.

I started reading the monograph, interested as I had been in the potential and the implications of the use of community radio for educational purposes, and the fact that I needed to be informed about what was happening in different parts of the world. A wealth of information and analysis was hidden between the two covers.

As countries rediscover the potential of radio for education and development, it is important that those involved in promoting, designing and implementation understand what can be done within the country and what remains outside the legislative process. The monograph addresses these questions through five sections.

The introductory chapters defines community radio as a medium that

gives a voice to the voice less and serves the marginalized communities helping to integrate them into the mainstream of democratic processes. A brief history of community radio initiatives follows.

Governments in the developing countries, particularly keen to maintain a certain degree of political and operational control, were late to wake up to its potential and legal frameworks hindered rather than promoted its growth. By the time its potential has been realized, the advance of community radio has been slowed by the absence of a systematic regulatory framework.

Chapter I provides a listing of the legislation governing community radio in thirteen countries in different parts of the world. Broken up in categories of norm, main provisions, and application, a description of the laws as they are found is presented in this chapter. Very valuable as a reference guide for those engaged in developing community radio systems.

A consolidated analysis of the legislative situation is presented in Chapter II. What emerges is a picture, not merely of community radio, but also of the strength or weakness of civil society in the thirteen countries studied. For instance, in countries such as Australia and Canada, community radio broadcasting is fully recognized, protected and even subsidized. There is a clear division between community, campus and ethnic broadcasting. Similar recognition also exists in Colombia

In many other countries in the developing world, community radio remains a '*clandestine activity*', somewhat outside the system and although there is recognition of the importance of freedom of expression and of the need to provide some regulatory frameworks; there is hesitation to approve legislation. Take, for instance, Argentina; where attempts

to legislate community radio have yet to bear fruit.

Countries of Asia and Africa also present contrasting pictures. In South Africa, community radio (which had existed for decades) has grown into a movement with the blessings of the government. Contrast this with Ghana where community radio falls within the purview of private broadcasting.

Asia also presents a contrasting picture, with community radio initiatives yet to grow in India, but flourishing in countries such as Sri Lanka and Nepal. Unfortunately the monograph does not provide either a description or an analysis of any initiatives outside of India could it be because of the paucity of information available?

Chapter III analyzes the current situation highlights various features of current community radio worldwide. For instance, there are no specific standards governing this form of broadcasting; and the stations come under the general umbrella of private broadcasting. Content of community radio also merits further clarity is it religious or educational or political? Clarity of definition of content may remove doubts about the content and facilitate legislation.

Community radio as a movement is yet to grow. For that, we are in need of much more information. It would be very helpful if this small study of thirteen countries were expanded to include more countries in different parts of the world. A composite picture would then emerge, enabling both comparison and understanding of the potential and problems of community radio broadcasting.

Until such a broader volume is available, this small monograph, which provides a bird's eye view, is very useful as a ready reference of initiatives and issues. **ECA**

Dr. Usha V. Reddi is Director, Commonwealth Educational Media Centre for Asia (CEMCA), New Delhi

News in Brief..

Sir John Daniel appointed President of the Commonwealth of Learning



The Commonwealth of Learning (COL) appoints Sir John Daniel, a world-renowned authority in open and distance

learning and currently Assistant Director-General for Education at UNESCO, as President and Chief Executive Officer of COL. He succeeds Dato' Professor Gajaraj (Raj) Dhanarajan who retires in May.

A graduate of the universities of Oxford and Paris, Sir John began his academic career at École Polytechnique in Montreal. He has held several important and

prestigious positions at Athabasca University (Alberta), Concordia University (Montreal) and Laurentian University (Ontario). Sir John was Vice-Chancellor of the UK Open University (UKOU) from 1990-2001 and since has been Assistant Director-General for Education at UNESCO. He has also held various non-executive posts in education, notably the presidency of the International Council for Distance Education and the vice-presidency of the International Baccalaureate Organisation.

Knighted by Queen Elizabeth for services to higher education in 1994, the honour recognised the leading role Sir John has played internationally, over three decades, in the development of distance learning in universities.

Commenting on his appointment, Sir John said, "Having chaired COL's original planning committee in 1988, I am delighted by the strong reputation it has so quickly established. Governments now realise that open and distance learning, using appropriate technology, can transform

education by extending access, raising quality and cutting costs - all at the same time. COL is there to help the developing countries of the Commonwealth make this possibility a reality. I greatly look forward to seeing COL achieve even greater impact."

Sir John will take up his new post in Vancouver in June. **ECA**

IGNOU's 15th Convocation

Indira Gandhi National Open University's 15th Convocation held on 21st February 2004 where 74,603 students were awarded certificates, diplomas and degrees.

The convocation held simultaneously at main campus and at various regional centers of IGNOU. The chief guest at the main campus was Dr. K. Kasturirangan, former chairman, Indian Space Research Organisation. IGNOU conferred Degree of Doctor of Letters (*honoris causa*) to Field Marshal S.H.F.J. Manekshaw and to Prime Minister of Kingdom of Bahrain, Mr. H. H. Shaikh Khalifa Bin Salman Al-Khalifa at the convocation. **ECA**

BiblioFile...

Porter, Lynnette R. (2003), *Developing an Online Educational Curriculum: Technologies and Techniques*, Paperback, IDEA Group : Hershey, ISBN : 1591402263

This is a comprehensive, easy-read that brings every aspect of online curriculum development into focus before it marches into the details of practical, successful class management. Through it all, Lynnettes constant thread is defining the role of the teacher in creating an online community that works. She is an excellent guide. Whether your target is an online class or a curriculum, read this one. For the technically challenged, it covers all the tools. For the technology-savvy, it draws attention to the human element. Even if you are already involved with online education, you will find fresh ideas here.

Conrad, Rita-Marie and Donaldson, J. Ana (2004), *Engaging the Online Learner : Activities and Resources for Creative Instruction*, Jossey-Bass : San Francisco, ISBN : 0787966673

Engaging the Online Learners includes an innovative framework, the Phases of Engagement that helps instructors become more involved as knowledge generators and co-facilitators of a course. The book also provides specific

ideas for tested activities (collected from experienced online instructors across the nation) that can go a long way to improving online learning. The book offers the tools and information needed to: convert classroom activities to an online environment *and* use online activities in a classroom-based course; assess the learning that occurs as a result of collaborative activities; phase-in activities that promote engagement among online learners; help online learners use online tools; build peer interaction through peer partnerships and team activities, etc.

Medel-Añonuevo, Carolyn and Mitchell, Gordon (2003) *Citizenship, Democracy and Lifelong Learning*, UNESCO/UIE, ISBN : 9282011283

This publication contains a selection of papers representing key issues that were addressed during the seminar. It does not claim to contain an exhaustive discussion on citizenship, democracy and lifelong learning but it aims to highlight questions that are not often raised. With this publication, UIE hopes to contribute to a deeper understanding of the relationship between democracy and education in the context of lifelong learning. **ECA**

Software Review...

An Overview of WebCT

Akshay Kumar

In this section of Software Review, we present to you an overview of a Learning Management System (LMS), *WebCT*, which can be reached at www.WebCT.com/products. The Virtual learning environment supports tools for Course content delivery, assessment and online and offline communication. This unique environment enables teaching-learning by way of e-learning.

Introduction

WebCT was developed initially at the University of British Columbia. It is an abbreviation of Web Course Tools. It is a platform that can be used for the delivery of online courses having the features of managed Learning environment. Let us look at the features available in the *WebCT* to support online learning and Managed Learning.

The Evolution of Learning Paradigms through Web

The concepts of Computer Assisted Learning (CAL) were popular in 1990's. The basic objective of such an environment was to develop

platforms that support individual learning. The material was generally put on the CD's or delivered online with lot of freedom to the individual, but working in a controlled instruction style. This style was further enhanced to support student model and provide information as per the level of the students. The courses were available online as per the needs of the individual organizations. Such platform has found good application in the training programs that involved lot of resources. The development of the material was resource intensive, but reusable. With the expanding reach of Internet, the web communication tools, such as email and bulletin boards, have gained popularity. Thus, the CAL platform was enhanced to support a broad spectrum of activities, including online student support, thus, making available a complete learning environment, *the Virtual Learning Environment*. A Virtual Learning Environment supports tools for online Course content development, delivery, assessment and online and offline communication along with teacher-student, student-student interactions.

An online platform has more potential and benefit. With such a platform a teacher can do better

content management, student monitoring, and can improve interactivity and feedback. One can look into the needs of individual learners to provide learning support and privacy to individual students. In another words, a Virtual-learning Environment is integrated with other systems of pedagogy. This collection of processes and systems is called as the Managed Learning Environment.

The software under review, *WebCT*, is a Virtual Learning Environment. In addition to its basic capabilities of e-learning, it supports many features of Managed Learning Environment.

Features of *WebCT*

WebCT is equipped with many excellent features that can be used for development and delivery of courses, course management including individual performance



monitoring and online examination system. Broadly, the features of *WebCT* include

Media Rich course Delivery

WebCT allows creation of course materials in Multimedia rich format. One can include text, graphics, audio and video in the course material using *WebCT*. It supports controlled delivery of course material to the students. For example, one can open some material available only for specific dates for the purpose of study or one can open specific material to be read by specific target students only. An interesting feature provided by the LMS is the compilation of material into a set of printer-friendly notes. Thus, allowing formatted printing of materials for the learner.



Enhanced Course Material Organisation

WebCT allows the course material creators to create course material into content modules and attach them to tables of contents. It allows enhancement of course material by providing features, such as creation of Glossaries, search facilities, indexing, calendars, etc. In addition, one can link a course to other resources of information that may be useful to the students for the purpose of references or further reading, allowing enhanced learning points. These features are quite useful from the viewpoint of Virtual Learning environment; in fact, this is one of the strengths of Virtual Learning Environment as it provides lot of homogenous information under one learning environment facilitating the availability of information.

Communicate

One of the major advantages of using Virtual Learning Environments is to allow communication between teacher and the students. Some of the common tools supported in *WebCT* are Chat and chat-rooms, mail among participants, discussion groups and whiteboards. This allows interaction among students and students-teachers. An interesting feature here is that students can create their own home page while working in a course.

Monitoring Student's Progress and Providing Feedback

WebCT provides tools for including quizzes, assignments and self-tests in a course, thus, allows student to get instant feedbacks. In addition, it provides all the statistics about page and site usage to the teachers.

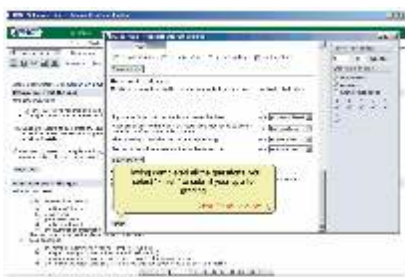
Thus, *WebCT* enables teacher to counsel the student more effectively.

Student self-monitoring

Students can add their own notes to course material. A student also can monitor his or her own progress and grades.

Use of *WebCT*?

WebCT is an excellent teaching support tool that allows embedding of academic courses to a rich, interactive, collaborative teaching-



learning environment. Students through *WebCT* can participate in a course, create their course notes, test themselves, submit assignments, communicate with other participants and can do many other academic activities. One important advantage of *WebCT* is that it keeps information relating to a course at a single location, rather than across a multitude of diverse media, thus, facilitating information transfer.

Where *WebCT* is being used?

WebCT is one of the most popular managed learning environment. It is in use in about 2,500 institutions spread over 100 countries. One can obtain the list of institutions who are using *WebCT* from the website <http://www.wevct.com/products/vie/wpage>.

To Get more information on *WebCT*

Please visit the website <http://www.WebCT.com/> 

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Forthcoming Events...



SEAMEO-UNESCO Education Congress and Expo, Bangkok, 27th - 29th May 2004

Theme : Adapting to Changing Times and Needs

Emphasis : Equity of access to quality education : road to poverty alleviation, openness to change and respect for diversity and technology advancement : impact on culture, peace and environment.

Organizers : Southeast Asian Ministry of Education Organization (SEAMEO) and UNESCO.

Venue : Queen Sirikit National Convention Centre, Bangkok, Thailand.

Web Address : <http://www.seameo-unesco.org>



3rd International Lifelong Learning Conference 2004, Yeppoon, Queensland, 13th - 16th June, 2004

Theme : Lifelong Learning: Whose Responsibility and What is Your Contribution?

Emphasis : . Learning and Teaching issues within universities, TAFE and schools, problem based learning, assessment strategies, flexible delivery, technical literacy, promoting and defining graduate attributes, teaching and learning graduate attributes, etc.

Organizers : Central Queensland University.

Venue : Rydges Capricorn Resort on the Capricorn Coast, Yeppoon, Queensland

Web Address : <http://www.library.cqu.edu.au/conference/2004/>



International Cooperation in Education Conference (IASCE 2004), Singapore, 21st - 25th June 2004.

Theme : Cooperation and Collaboration :Diversity Of Practice, Cultural Contexts, and Creative Innovations.

Emphasis : Cooperative Learning in Content Areas, Assessment, Technology Supported Cooperative Learning, Equity Issues, Creativity and Innovation in Cooperative Contexts, Cooperative Learning and Teacher Education, Building Cooperation in Schools and Communities.

Web Address : <http://www.arts.nie.edu.sg/iasce/>



13th Asian Media Information and Communication Annual Conference, Bangkok, Thailand, 1st - 3rd July 2004

Theme : Impact of New and Old media on Development of Asia

Emphasis : New technologies and conventional media in development, use of ICT.

Host : Asian Media Information and Communication Centre, Singapore.

Venue : Miracle Grand Convention Hotel, Bangkok, Thailand

Web Address : <http://www.amic.org.sg>



2004 HERDSA Conference, Miri, Malaysia, 4th - 7th July 2004

Theme : Transforming Knowledge into Wisdom : Holistic Approaches to Teaching and Learning.

Emphasis : How can higher education contribute towards the development of a knowledge-based society of high ethical standards, holistic approaches to teaching and learning to cater for students' future needs, the role of transnational education, cultural inclusiveness, and corporatisation in universities to act as initiators of change.

Organisers : The Higher Education Research and Development Society of Australasia (HERDSA)

Host : Curtin University of Technology.

Venue : Sarawak Campus, Curtin University of Technology, Miri, Malaysia.

Web address : <http://herdsa2004.curtin.edu.my/index.htm>



3rd Pan Commonwealth Forum, Dunedin, New Zealand, 4th - 8th July 2004

Theme : Building Learning Communities for Our Millennium : Reaching Wider Audiences through Innovative Approaches.

Emphasis : Education, health and local government.

Organisers : Distance Education Association of New Zealand and Commonwealth of Learning.

Venue : Dunedin, New Zealand

Web address : <http://www.col.org/pcf3/>



Association of Learning Technology (ALT) C 2004, Devon, 14th - 16th September 2004

Theme : Blue skies and pragmatism - learning technologies for the next decade

Emphasis : Knowledge management, technical infrastructures, new technologies for learning, the impact of wireless, ambient, smart and other forms of technologies, media and communications, tools and strategies for effective use of technologies; pedagogy and the social implications of the new forms of communication; and organisational, strategic and management issues.

Host : University of Exeter, Devon, England

Venue : University of Exeter, Devon, England

Web address : <http://www.alt.ac.uk/altc2004/> 

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diverse. You can help to do so by becoming a contributor. Write to us about educational media news and other events that you would like to see in the newsletter. All contributions shall be duly acknowledged and appreciated.

-Editors