

Information Technology and it's applications towards excellence in remote academics

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ABSTRACT

Rapid growth in information technology, computer literacy and access to internet has resulted into immense opportunities for on-line delivery of distance education and training. The top managements of the institutes, content developers and even academicians are doubtful about the effectiveness of on-line mode of delivery of distance education programs. Contact learning emphasizes more on group-based approach of teaching-learning whereas on-line mode believes in individualized approach. Paper discusses some issues in deployment of Groupware and e-learning softwares for better content delivery of distance education programs. It also highlights some basic considerations while designing on-line courses.

Introduction:

Since the 1990s, many universities and colleges have begun to explore the use of networked learning strategies such as computer conferencing and web-based resourcing as part of regular courses which can be taken by on or off campus-based students. There has been a rapid growth in Internet based courses. Today in India there are four types of institutions offering programmes through distance mode: National Open University, State Open Universities, Directorates of DE functioning under conventional universities i.e. Dual Mode Universities (DMUs) and private professional institutes. However, only the National Open University namely, IGNOU uses third generation tools and has made a modest beginning with Internet based education, by offering few online courses, thereby claiming to have graduated into the fourth generation, i.e., the flexible learning model. The Directorates attached to conventional universities are still at the first-generation level i.e., correspondence model. However, some of the private contenders too are functioning in the fourth generation, but majority are at the first generation only.

Objectives of study:

1. To identify the areas which need support of IT in distance education programs
2. To suggest a model for deployment of Information Technology for distance education programs.

Methodology:

Study is based on secondary data in the form of books and previously published papers and URLs in the above area.

Table below shows statistics about growth of distance education in India.

Year	Universities	Students (millions)	% of DE in total HE system (Total enrolment in HE) in millions
1975-76	18	0.06	2.3 (2.49)
1981-82	22	0.19	5.7 (3.34)
1990-91	40	0.56	10.1 (5.55)
1999-2000	74	1.58	17.0 (9.31)
2000 - 2001	74	2.00	20.0 (10 approx)

Source: Kulandai Swamy (2002):18

Information Technology support:

Rapid advance of the Web technology has changed not only the initial role of the Web as the medium of information communication but also the ways of life in different ways. Because of the Web and multimedia technology, the distance learning becomes one of the hottest research areas in recent years. Many Web-based education application systems have been established and affected the traditional teaching-learning methods. Without the limitations of the time and geographic location, these systems provide synchronous or asynchronous interactive learning environment between the teachers and students as well as among the students themselves.

However, most of the Web-based learning has its drawbacks due to the lack of face-to-face communication. For the personalized demands from different members, senior members can create some special issue forums for difficult lectures or fields in the course study, and invite tutorial discussions. As an open forum, any visitor on the Internet can also use a Web browser to view the contents in the Q/A Forums and join the discussion and exchange information with others after a registration. Such an open design may attract more users around the world to create a wider collaboration in the domain knowledge covered in the teaching course.

Researchers suggest following system design to achieve the above operations:

Learners:

In recent years it is being increasingly recognized that learning is not a one-time job it continues throughout one's life. This concept of life-long learning has changed the educational paradigm within the conceptual framework consisting of three models of student learning: (i) the independent learner, (ii) the interactive learner, and (iii) the collaborative learner.

Independent Learner

Independent study was introduced at the London polytechnics in 1974. In its purest sense it means no syllabus or curriculum. In distance learning environments the word independent learning means studying alone at home. Where there is no interaction. According to Moore distance education is essentially a form of independent study. It has two characteristics: (i) Dialogue (ii) Individualization (Lack of structure). Various combinations of dialogue and structure can occur in different categories of programme. Generally, in independent study there is absence of both i.e.

no dialogue and no structure. Where as other models can use combinations of these two as per the objective and requirement of the programme.

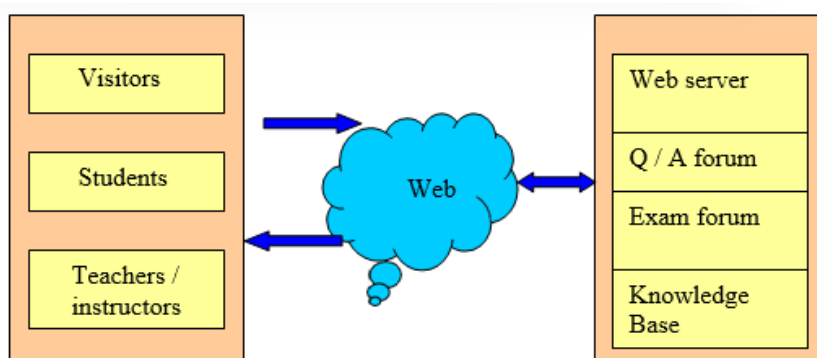
Interactive Learner

Interactive learner has been classified interaction in context of open and distance education in three types of learners – content interaction, learner-teacher interaction and learner-learner interaction. The use of Communication technology has added learner – interface interaction to this list. The interactive radio counseling, video conferencing, LAN/WAN linkages among institutions and their respective Regional Centers and cable network enhance interaction level in distance education.

Collaborative Learner

Collaborative learner model acknowledges the importance of co-construction of knowledge through collective learning and peer exchange. Paulsen (1995) refers to this as a many to many 3 online experiences with less of a focus on instructor contribution. Collaborative learning requires an active sharing of information and intellectual resources among members of a group. The web-based educational designers need to consider all the three models of learning in an integrated manner. Internet technology enables independent, interactive and collaborative learning and an opportunity for intellectual and social interaction that has not been possible in traditional print-based distance learning

System design:



System Architecture: A server class machine to sustain large number of hits on daily basis will be more suitable. A database server for managing database with RAID 5 controller will ensure backup of valuable data on a routine basis, which can be recovered in case of emergency. Power backup in the form of UPS is of essence to operate in 24 X 7 mode, which is a must for on-line distance education.

System security: Basic level security to avoid unauthorized access on the client side, the software should be provided with authentication procedure that may include entry of login and password of the user. Second level security can be in the form of deployment of Data Encryption Standards (DES) with key distribution centers (KDC) with enough key size, larger than 64 bit.

For security of the data outside the machine ports, to avoid unauthorized access through wireless media (i.e. WI-FI) software like Kerberos, Blow fish can be deployed.

To make the intranet secure (between modem and switch) which will open to the Internet, can be provided using IPSEC, with the help of its unique feature of providing authentication headers.

Last, but not the least, VPN tunneling method can be used for further tightening security over Internet. Enforcing Digital certificate standards can be used for securing any financial transaction that may come under the system.

Considerations for designing web-based Courses

Since web-based learning depends on learner's initiative, providing content in an appropriate form must be the highest priority. For web-based courses following basic design criteria should be taken into consideration (i) Accessibility – contents must be information rich without overstretching bandwidth. (ii) Clarity – Clarity of language, information structure and visual representations are most important. (iii) Efficiency – presentation of the content must be precise and to the point. (iv) Focus – the aim should be to achieve depth of information without distracting the learner's focus or attention. (v) Consistency – Consistent interface design creates a sense of familiarity and comfort for the user. (vi) Flexibility – The structure of the presentation must be flexible enough and adoptable to changes.

Conclusion: The web-based courses must consider various theoretical models and integrate them in a manner to achieve the target of effective and interactive learning in a virtual classroom environment. Besides learning objectives, the institutions must address to the issues of interactivity and cost effectiveness. Though there is a tremendous scope for the web-based courses in future its success in our country will depend on the issues like designing and implementation strategy of the institutions offering such courses. Appropriate model which addresses to pedagogical issues and integrate various objectives can go a long way in popularizing web-based education and training in our country.

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