

Distributed Learning Sequences for the Future Generation

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Abstract

Proficient utilization of network resources in disseminating knowledge based information in on-line and off-line environment formulates a concrete platform of collaborative learning sequences.

Standardizing course curricula by panel of experts and implementing the learning techniques in distributed networking aspects optimizes the resource management.

This form of virtual learning systems has already been adopted in several countries through distributed information architecture and decentralized administrative structure. Utilizing low cost methodologies and adaptive technologies, off-line web based simulations and interactive multimedia techniques are providing enhanced performance indicators in terms of learning outcome.

Increased networking among distance education institutes, establishing interactive discussion forums among distance educators, sharing knowledge and experience in formulating effective course curriculum, sharing case studies and success stories within the communities in producing capacity course materials, and archiving contents in distributed resources would enhance the learning processes in this system of learning.

Extending this platform in other regions, by breaking geographical boundaries can set up an ideal learning vehicle for the new generation of learners.

Keywords: distributed learning, collaborative learning, virtual learning.

Distributed Learning Platform

Distributed learning can be conceptualized as to provide learning opportunities beyond the boundaries of the traditional education system, through utilization of available range of information technologies. Distributed learning sequences are comprised of email, Internet, www, video conferencing (virtual conferencing), groupware, newsgroups, simulations, egroups, chatrooms, interactive and instructional software utilities.

A distributed learning platform facilitates learner-centered educational paradigm, rather than tutor-centered system, and promotes interactive learning, where the learner can initiate the learning processes.

According to Jack Wilson (1994), four factors should come into play in developing a more efficient and effective learning environment: cognition, collaboration, communication and computing. In this system the learning environment exists among a dispersed student population structured according to learner needs by integrating transformation in traditional institutional functions. Learners and educators can enter into the learning platform irrespective of time and location.

Three important parameters, mainly, has gone through rapid transformation in distance education system. These are, teacher (termed as educator), class room (independent of place and boundary), and duration of a class period (elongated as per the need).

Educator- The educator acts as the designer of the learning platform, from where contents can be accessed in a diversified manner as per need of the learners.

Place- Not an important element in this learning system. Even tutorials can be replaced by virtual classrooms and a class is made up of a virtual community of learners.

Time- The most variable parameter in this respect, where the class time is not restricted to a specific duration of period. Flexibility of length of the learning sequences has made this process more popular to the learner, where they can expand or contract their schedules to fit into their learning schedules and learning goals.

In the traditional approach students are staying at the outskirts of the teaching system and most of the time communication is unidirectional (Figure-1). But, in open learning system learners are located at the centre of the system and most

of the communications are bi-directional and interactive (Figure-2).

Existing Distributed Learning Providers

Computer mediated communications make the teaching and learning process independent of time and space. The commonly used distance education tools are: printed materials, electronics materials, teleconference, videoconferencing, radio, television, facsimiles, e-mail, newsgroups, the Internet, on-line chats, specialized software, etc. (Murshed, M.M., et. al. 2000).

There are a few distance educators, who can be designated as the leaders, in providing distance education for many years. Open University of United Kingdom, Open University of Hong Kong, Indira Gnanhi National Open University of India, Sukuthai Thamathirat Open University of Thailand, Bangladesh Open University of Bangladesh, Allama Iqbal Open University of Pakistan, Open University of Sri Lanka, are a few to name as initiators in establishing distance education platform for open learning system.

Many highly reputed international universities like, Adelaide University, Athabasca University, Carnegie Mellon University, Deakin University, Keio University, Harvard University, McGill University, University of Wisconsin, etc. are a few names in traditional education system, who have adopted learning processes in open and distant mode.

Through organizational approach, the Commonwealth of Learning (CoL), International Centre for Distance Learning (iCDL), and International Council for Open and Distance Education (ICDE) are serving purposes of furnishing a common platform of meeting specific needs for open learning community. However, a repository of contents, specially, in regional form is non-existent.

In traditional education system, Asian Institute of Technology, or Asian Institute of Management are excellent contributions from the society. But, similar approaches are missing for an open learning system. A regional institute can be provided logical supports to be transformed into a regional open learning repository.

Technologies in distributed learning process

Easy accessibility of Internet has allowed educators and learners to explore it as a platform of DL and a vehicle of electronic communication with enormous resources. The Internet can be viewed as an elaborated model for distributed learning environment concept.

The TCP/IP communication standard has generated a highly functional workplace for cross-platform software utilities. Moreover, most of the utilities are of open source platform and run on fairly low-tech machines. This has expanded the open learning population by providing better access at lower cost. Also, Internet tools, like, file transfer protocol (FTP) is being used to transport learning modules across geographically distributed servers at minimum bandwidth provision and technical effort.

Using appropriate technology web based multimedia technology would be cheaper and more interactive at the front end accumulating all acquired expenses (Rahman, M.H., et. al. 2000).

Four technical parameters are of prime concern in distributed learning platform, namely, Network Infrastructure, File Server, Support Servers (email, egroups, newsgroups, chat), and Web Server.

In distributed learning every learner must have easy access to network infrastructure and Internet. To support it, the network should be robust at high traffic and diversified data flow. Interactive multimedia based courseware sometime demand extended bandwidth, which is often difficult to satisfy in developing country's context, where high speed data is still not available to most of the consumers. To suffice this problem, off-line interactive multimedia CDs are becoming popular.

File servers act as repositories of learning contents and resources. They must be reliable and secure, in addition to the requirement of gigabytes of cheaper storage facility. By the blessing of technology up-gradation, this essence of file server is not a problem any more, except logging of immense number of simultaneous users may create problem. Many open source software are now available to take care of streaming audio or video with high graphics contents and also provide solution for multiple logins.

Proxy servers are increasingly becoming robust enough to act as the mail server and other support servers without additional firmware and complications. Many user friendly utility software are available for setting up egroups, newsgroups, chat rooms, or even internationally reputed mailers like, yahoo, msn, excite, are providing similar services at free of cost.

Space for webservers can be extremely expensive, or affordably cheaper, depending on their locations, support parameters and simultaneous login facilities. Compromising with a few of elite characteristics, web servers can be kept in regional locations at very much cheaper cost and not much sacrificing the login satisfaction.

Objectives and Methodologies

In interactive learning, higher education courses used frequent revision of content, in comparison to traditional courses, to be responsive to the end users, like, professional learners. Moreover, emphasis should be given to collaborative learning processes, by actively sharing information, ideas and problem solving methods among a team of learners, and jointly assessing the outcomes.

Initiating and sustaining an institution-wide redesign of education will require strong executive leadership and a viable process model, because it entails fundamental rethinking of instructional strategies (Diana, G.O. & Mark, K.M., 1996). Designing a revitalized learning experience needs hard thinking, understanding of core values of thoughts, and effective changes in long-established instructional patterns.

A distributed learning sequence should target its stakeholders with the following objectives:

- Provide quality education and training opportunities regardless of geographic location;
- Enhance professional capacity throughout the spectrum of services;
- Establish distributed learning platforms in diversified sequences;
- Develop niche driven products and services for local, regional and global end users;
- Build collaborations among enterprises engaged in this sector;

- Attain leadership in providing professional development in online learning for the instructors;
- Provide access to accredited quality learning opportunities; and
- Adopt and effectively use the instructional technologies.

The process of creating, analyzing, and evaluating (higher-level thinking skills in Bloom's taxonomy) in collaboration with others strengthens socialization skills; increases cross-cultural awareness and appreciation; increases general interest, focus, and synthesis efforts (Jill, H.E., 1994).

Quality and Accountability

A regional access centre should have twenty four hour access with necessary networked resources; customized user friendly utilities; readily upgradable; and robust service facility.

The instruction design function should be able to produce standard quality in developing new courses as well as ongoing and modification of existing courses. Necessary mechanism need to be developed to receive feedback and advice to improve the learning techniques (learning and teaching) in on-line (including off-line and distributed) environment.

Future Research Provisions

Broadband has emerged as the third wave of technology offering high bandwidth connectivity across wide area networks, opening enormous opportunities for information retrieval and open learning systems.

Widespread adoption of distributed learning model not only depends sociological changes and institutional transformation, but also, on the outgrowth of information technologies. Development of new technologies will be driven by rapidly evolving requirements for future distributed learning functionality, migrating towards a digitally dependent platform.

Advantages

Delivery of education through a collaborative, computer-mediated environment alters the relationships between the instructor, the students, and the course content. The many-to-many, asynchronous nature of the media democratizes

access and encourages student input (Linda, H., 1991).

Distributed Learning sequence can be accessed from multiple points, learning opportunities can be segregated at mutual interest, and easily adopted to a common technological infrastructure supporting wider content distribution and collaborative computing.

Disadvantages

Incorporation of technology has mixed reactions in distributed learning processes. This approach changes habits of educators and learners, by implicating changes in preparation of a class, duration of a class period, or duration of a degree earning period. Educators, more or less, tends to become experts in instructional design, application design, and technical implementation. This needs an overall monitoring and evaluating tool for justification at the end to assess the ultimate outcome and achievements.

Conclusions

The emergence of enormous discrete repositories of educational materials will necessitate new capabilities for storing, caching, searching, filtering, retrieving, and managing digital information among geographically distributed servers. The system should be able to expertly cope on creation of content, storage and management, search, query and filtering techniques, wide distribution and easy access, and management of content right.

The unique power of networked communication will catalyze the transformation of higher education into a new model for the 21st century (Jack Wilson, 1994).

Model of a distributed learning platform should be able to adopt a medium of communication with workability at low bandwidth, with

minimum interactivity, at low access cost, with limited utilities, and provide maximum data security.

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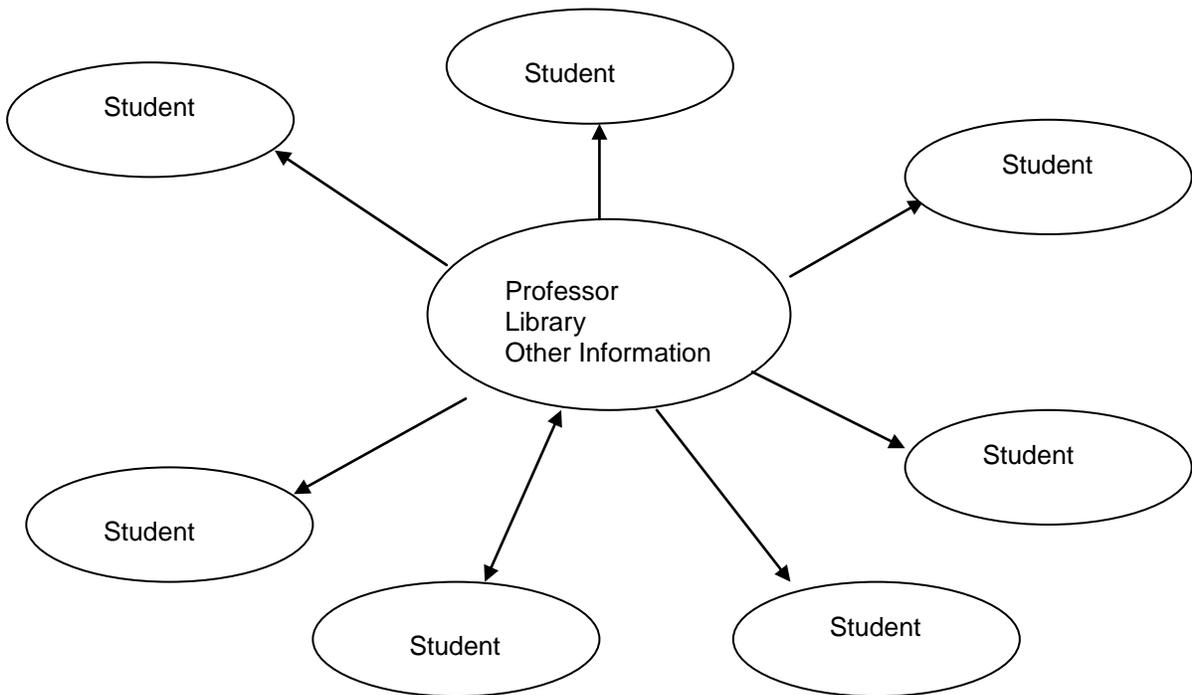


Figure-1: Communication links of a conventional education system

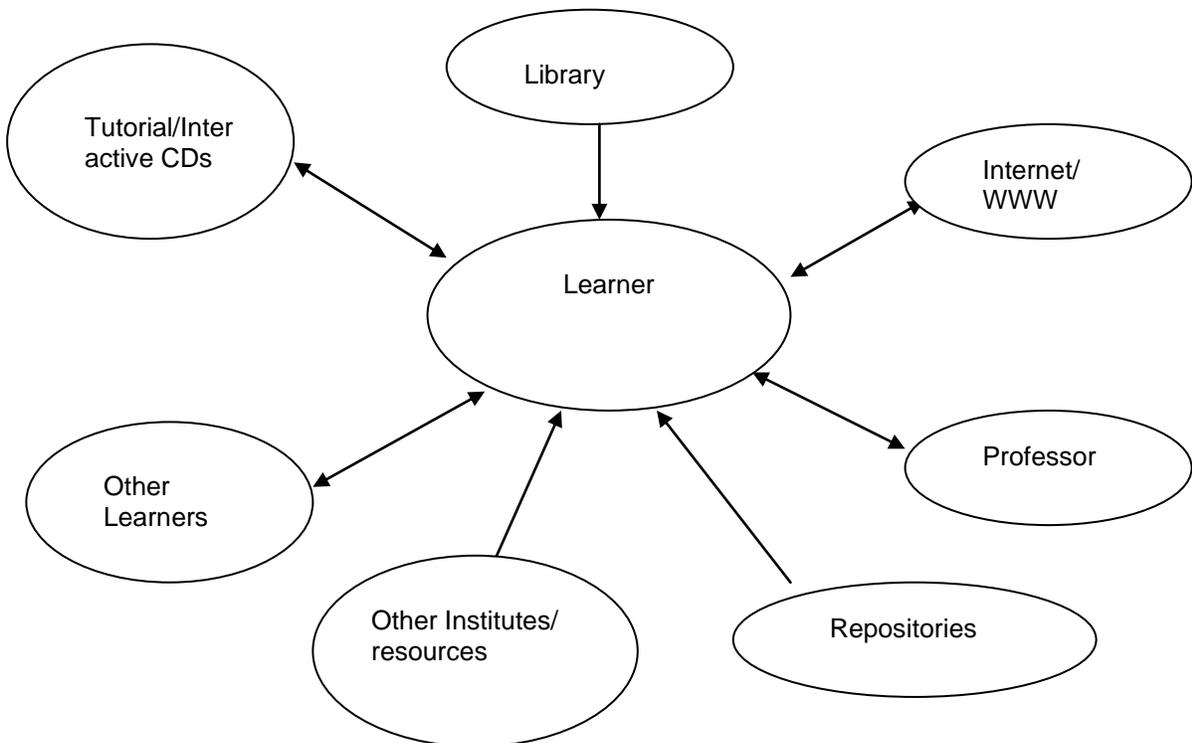


Figure-2: Communication links of a Virtual Learning System