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Challenges in Designing a Future for Distributed Education

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Abstract

Distance education (DE) and learning is expanding in use from educational institution applications to a broader spectrum of business applications. As these uses grow it is important to recognize the driving forces and future challenges. To date the driving forces can be identified as enhanced educational opportunities, and the development of new delivery technologies involving audio, video, and data transmissions. Many-increased distance learning (DL) applications are the result of changing strategic plans of many higher education institutions to increase their student base. Understanding the current and future challenges concerning DL will result in the proper strategic planning for the development of new infrastructures as well as the design, implementation, and delivery of new course materials and approaches.

Introduction

It is not uncommon in this half of the century for technology to lead transformation of business processes, service delivery, and even organizational or industry structure. For instance, EDI can be credited with the implementation and proliferation of Just-in-Time inventory management and the accompanying transformations of retail sales industries. Likewise, the internet in general, and the World Wide Web in specific is currently revolutionizing the way product information is delivered in a rapidly growing variety and number of industries. This new technology has created new opportunities for delivering as well as marketing educational products.

While information technology may create new opportunities for new products, services, marketing techniques, and strategic efforts, at some point the users must take stock of the resources, the characteristics of change, the objectives of the business and the needs of the market. While the attributes of these new technology may initially impact the design of the new processes or strategies, a strategy will evolve in order to design deliberately the processes which should be implemented in order to best meet the identified needs and objectives.

These new services and new forms of education delivery are in various stages of design, experimentation, and implementation. As opportunities for new kinds of educational delivery are developed, it is extremely important that we exercise caution and careful analysis of delivery methods, their merits, and their limitations in education. Ives and Jarvenpaa [1996] assert that the private sector will eclipse the public sector as the predominant educational institution. Do educators and businesses use new technology because it is the latest and fastest available, or is there planning behind its implementation in academic settings?

It is the purpose of this paper to raise the following issues: 1) briefly explore the tandem evolutions of DL technologies and services; 2) discuss emerging opportunities for education delivery in both businesses an academic environment; 3) identify the variables in an emerging view of distributed education that will require careful analysis in order for distributed technologies to become true asset to education.

Changing Distance Learning Technologies

A widely used definition is that distance learning or distributed education uses information technology to deliver educational or learning processes to remote locations. This transfer of information or course content is used in many different ways and may involve any of a great variety of communication technologies and delivery alternatives. DE is also used to describe conditions for 'learning on demand', where participants may engage in learning at a different time than the original presentation [Burgess, 1994].

The advent of cable television brought the Mind Extension University (MEU) and Jones Intercable Services which both offer courses for college credit from various institutions across the United States. However they required only very passive participation from the student. This was very similar to the previous course offerings on the Public Broadcasting System (PBS).

Today, with increases in data transmission speeds between locations, and the general lowering of communication costs per bit transmitted, two-way audio and video has become increasing accessible. The student has gone from a passive learner to an active participant in the process. An example of this change and using new delivery technology is in North Carolina. As a result of a state mandate in the mid to late 1980's to provide all students in North Carolina with the same learning opportunities, the state of North Carolina became a pioneer leader in providing distance learning opportunities to its schools. The government and higher education institutions lead the drive to get the three major phone carriers in the state to agree on a standard protocol for the transmission and delivery of the distance learning video, audio and data needs [Patterson and Smith, 1994].

Other states have followed North Carolina's model, with a significant number of states in the 'farm' belt first adopting the model. This is driven by the need to provide improved educational opportunities to the rural high schools. Iowa currently has 126 schools and colleges on line. [Boulton, 1995].

Students in the future will be able to take classes from their dorm rooms, homes or workplaces. As more ISDN (Integrated Services Digital Network) lines are installed, expanded internet services become available from cable operators, and fiber optic lines are installed, the speed problems inherit in the transmission of video will be decrease. It is envisioned that many of the 'Executive MBA' programs will be offered directly to corporate worksites or to the individual's home, without the need for costly trips to the campus. Some pioneering efforts are already underway in the executive MBA program area [Byrne, 1995].

Distance Learning Opportunities

DL applications are already affecting traditional education organizations at every academic level. Most notably, they appear to be creating new markets and the opportunity to expand curricula to meet more specialized needs. Universities are rapidly identifying ways both to expand curricula and to reach new, geographically dispersed and non-traditional markets. At many schools distance education helps deliver upper level college courses to branch campuses where enrollment would not justify a course offering. Combining classes across campuses offers the additional benefit of standardizing quality of the course throughout the university system. The new markets include non-traditional students who may not be able to leave their homes or who are dispersed across the country or even around the world.

Businesses and education institutions have several complementary goals for developing and maintaining a quality workforce. Ives and Jarvenpaa [1996] suggest that a goal of universities should be to work with industry to enhance their learning capabilities as a result of CBT and DL technologies. Distance education can assist in achieving these mutual goals. Businesses need a qualified employee pool as well as continual upgrading of their current pool.

Universities have a need to provide high caliber individuals for this pool, and business can provide assistance to develop the talents of enrolled students. Electronically, business can provide experts from the field to provide real-life scenarios for the classroom environment. Likewise, businesses can use the resources of universities and other outside experts to bring 'guest speakers' via telecommunications technology directly into their conference rooms..

DL technology clearly impacts education's physical environment. It may also affect the options and opportunities for the student in such a way that he may selectively consume education. And finally, it appears that it may radically alter the options and capabilities of the professional educator. A number of issues in each of these areas are emerging through the experimental use of DL technology and should be actively explored as we redefine our concept of the education process.

1. **Changing historical educational paradigms.**

    Consequently we must begin to consider whether universities deliver unique value to students by offering the same basic Common Body of Knowledge (CBK) courses that are available in every other university in the country? Could standard undergraduate general requirements be pre-recorded and stored? Could these standard requirements be delivered universally by the best lecturers in the country? [Gell and Cochrane, 1994].

    Next we may ask What about the environment? Are classrooms necessary? And can standard courses be delivered 'on demand' by the student? Should students be constrained to take courses only in one country? Again, technology tells us we can move out of the classrooms. Might we lose value in some of our classes if we do that? Which ones? How can we use the technology to enhance education while protecting current value?

2. **Role of Student**

    These questions lead us to consider a new view of the student as a consumer of education services, rather than as an apprentice or acolyte. Distributable computer instruction materials support independent learning Cognitive tools permit students to explore the content of what they are learning more independently. [Jonassen et. al., 1995].

    Access to and control over more powerful learning tools, and a menu of education services from which he may select the components of education he prefers would empower the student to manage his own education to a new degree. Students will arguably become more responsible for 'self paced' learning. Can students design virtual courses? [Gell and Cochrane, 1994]. Are students adequately prepared to design their own education?

3. **Role of educator**

    If students assume the role of selective consumers in control of their own education, the role of educator will necessarily change, too. Cast [1996] argues that distributed education implementation will require a shift from 'teacher-centered' to 'learner-centered' approaches. Instructors are no longer the expert and the only distributor of knowledge. Students are no longer passive recipients of information. Knowledge will consist of sharing understandings and intellectual breakthroughs between instructor and student.

    Jonassen et al., [1995] report that whereas up to 80% of the verbal exchange in traditional classrooms is provided by the teacher, it can drop to 10 - 15% in computer conferencing situations. "Mediated instruction moves the teacher from the podium

to sideline, from leader to coach, from purveyor of knowledge to facilitator of personal meaning making." In this view, faculty will become 'managers of the education environment,' as opposed to the personal provider of critical information.

Such change is paradigmatic , as we reinvent the educator role from that of the traditional lecturer, in the same physical space and time as their students, to that of a manager of a very rich (and expanding) set of educational resources and as facilitator of the learning process. Again, the technology to enable such a vision exists. We must now question whether the vision is optimal for learning.

A limitation to widespread adoption of distance education has nothing to do with technology. Rather it is the perception among faculty that the team approach to designing distance instruction may undermine the faculty member's autonomy [Olcott and Wright, 1995].

Summary

Increased educational demands by institutions and business will force additional changes in distance education. Colleges might truly become virtual worlds, as students will engage in classes from their homes, and visit the campus only once or twice a semester. The location, number, and source of educators in the process may change, too. Businesses may adopt DL resources to provide consistent quality training to all locations. They may also elect to bring into their conference rooms outside experts from the field or from educational institutions.

Finally, a paradigm shift in the thinking of the faculty and deliverers of the information must occur. We suggest that the emerging role of instructor in a distance education environment will become a coordination of diverse and dispersed resources rather than the recitation of information. How we make that shift to ensure the improvement of education will require vigorous discussion and research.

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