E-Learning Paradigm (ELP): Intellectual Framework for Computer Mediated Universities

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ABSTRACT

Scholars, who were once skeptical of the Internet’s impact on educational systems, now recognize that our paradigms are, in fact, shifting from the traditional “brick and mortar” schooling process to a contemporary virtual environment (e-universities). A paradigm represents a way of looking at the world, a shared set of assumptions that enable us to understand or predict activities and behavior. Firstly, the study establishes innovative concepts, strategies and practices that existing literatures seem to have overlooked. Secondly, the authors propose an intellectual framework that highlights issues surrounding e-learning methodologies and technologies. The methodological (e.g. delivery process or content quality) aspect has become a hot topic among governments and universities as well as academics today. This needs critical attention. The technological aspect (i.e. Internet-based instruction (IBI)) has taken many forms, from reading on-line syllabus to a “full-fledged” delivery of course material. This raises design tools and usage issues. A survey instrument was used to validate the study. The findings indicate that more functional, user-friendly tools are needed to support online learning. Moreover, integrated wireless application protocol (WAP) conferencing, integrated spellcheckers, real-time group discussion, and analytical tools must be considered. In conclusion, we recommend the use of the authors designed strategies (Diversified, Determined, Bold and Balanced) and the proposed intellectual framework to resolve these contemporary concerns.

INTRODUCTION

During the early 1990s, many of those interested in the impact of information technology liked to talk about “paradigm shifts.” Despite its attainment of cliché status, the concept of e-learning paradigm is a powerful one (Tapscott, 2001). This study presents innovative strategies and an intellectual framework to e-universities and conventional ones. These innovative strategies are very different and their application can successfully position conventional universities in the e-business field to ensure growth and competitiveness (Berryman, Harrington, Layton-Rodin and Rerolle, 1998).

Based on innovative concepts and strategies, this study identifies four e-business practices (diversified, determined, bold and balanced (DDBB)) that are significant to universities that are “contemplating” using an online system. Diversified practices seek to use e-business as a means of increasing their strategic scope in terms of creativity, territory and client base. Determined practices seek to lead their market by imposing an indispensable technological standard. Bold practices rely on innovation and their technical expertise to develop new ways of doing business on the Internet. Finally, balanced practices essentially use e-business to consolidate their core competencies. These types of practices, if implemented, would be pragmatic for universities to achieve outstanding success (Hamel, 2000).

A well designed and adequately deployed e-business paradigm can include a prosperous strategy (e.g. DDBB practice) that could be extremely interesting in terms of creating value for both existing Universities and its new entrants. Not only does a university have to select the target and services sold on the Web, it also has to (A) determine the nature of the Internet-based relations it has with its customers, (B) determine a level of e-business integration for its operations, (C) identify technological solutions, and (D) select the deployment strategy that is best suited, while attracting the right students and ensuring the viability of its e-business scheme (Dutta and Segev, 1999).

DEFINITION, TERMINOLOGY AND CLASSIFICATION

The authors define e-learning paradigm (ELP) as Web-type technological solutions implemented in support of a University’s e-business strategy and education-to-students (E2S) learning. Also, ELP could be described as Electronic Information and Feedback Exchange (EIFE) among students and Universities. E-learning encompasses the delivery of course content via all electronic media, the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD/DVD (King and Ellzy, 2004). The term e-learning also covers a wide set of applications and processes, including computer based learning, Web-based learning, virtual classrooms, and digital collaboration.

E-learning represents the entire category of technology-based learning, while online learning is only associated with Internet-based learning. Online learning constitutes just one part of technology-based learning and describes learning via Internet, intranet, and extranet. Terms like e-learning, technology-based learning and Web-based learning are defined and used differently by different organizations and user groups. Moreover, use of these terms are constantly changing, as the world of e-learning evolves. In this paper, online learning is considered a subset of e-learning as indicated in Figure 1.

As King and Ellzy (2004) put it, e-learning universities are those that leverage various electronic technologies to create, enable, deliver, and/or facilitate lifelong learning. Components can include content delivery in multiple formats, management of the learning
David King

Figure 1
Online learning as a subset of E-Learning

E-Learning = Technology-Based Learning
Online Learning = Internet-Based Learning

experience, and a networked community of learners, content developers and experts. E-learning provides faster learning at reduced costs, increased access to learning, and clear accountability for all candidates in the learning process. In today's fast-paced educational culture, universities that implement e-learning provide their establishments with the ability to turn change into competitive advantage.

Online learning could be designed in many forms: From basic to advanced. A basic online learning program includes the text and graphics of the course, exercises, testing, and record keeping, such as test scores and bookmarks. An advanced online learning program includes animations, simulations, audio and video sequences, peer and expert discussion groups, online mentoring, links to educative materials on other universities or institutions intranet, and communications with established educational proceedings.

Over the past few years, the Internet revolution has led to the development of electronic learning (e-learning) that has been perceived either as a drastic alternative, or solution for traditional universities looking for market expansion. These universities adopt technological solutions that are innovative and create value. Their strategic intentions are to either make use of the new technological solutions, engage in aggressive growth at a higher than-average pace in the University "industry" or sector, and/or to increase the market by imposing a technological application. Figure 1 identifies seven positives of implementing e-learning.

THE "E" DETERMINISTIC AND MOTIVATIONAL DYNAMICS

The potential of technology is determined by motivational factors. The authors identified seven core factors presented in Figure 2. These factors are recognized as the motivational backbone for implementing e-learning.

THE INTELLECTUAL FRAMEWORK

Figure 3 illustrates the authors proposed framework that could be implemented or adapted by universities in their traditional business model by integrating e-business applications. The following are the core e-business applications indicated in the outer sketch of the framework.

- **Connectivity** - access to information is available on a global scale.
- **Flexibility** - learning can take place any time, any place.
- **Interactivity** - assessment of learning can be immediate and autonomous.
- **Collaboration** - use of discussion tools can support collaborative learning beyond the classroom.

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Experience

The Web offers e-learners a total learning experience, from synchronous learning to threaded discussions to self-paced study.

Engagement

The Web captivates learners by enabling creative approaches to learning that foster collaboration and a sense of community.

Ease of Use

Not only is the Web easy to use for learners who are already familiar with the navigation capabilities of the medium, but to learning providers. Also Designers can easily make content immediately available to learners across most technical platforms.

Empowerment

The Web puts learners in the driver's seat with a set of tools that enables personalization of content and allows learners to choose the way in which they best learn.

Exploration

E-learners use the Web as an exploratory tool to access a plethora of information and resources.

Enabler

Electronic learning is an enabler for self-engineered, self-motivated, self-initiated, adaptable and flexible learning.

Educator

On the internet, anyone can learn or study and find information about almost anything at anytime from anywhere.

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24
Extended Opportunities - e-content can reinforce and extend classroom-based learning.

Motivation - multimedia resources can make learning fun.

E-Learning Paradigm - Modules

The Institutional module is concerned with the entire university goals and issues. This includes the technological, managerial and pedagogical. Universities’ primary focus is on student services (e.g., pre-enrollment services, course and program information, registration and payment, etc.) that are related to e-learning.

The Pedagogical module of e-learning refers to teaching and learning. This dimension addresses issues concerning, content, design approach, organization, methods and strategies, and medium of e-learning environments. Various e-learning methods and strategies include presentation, demonstration, practice, tutorials, simulations, discussion, collaboration, etc.). In this module, the academic affairs (e.g., faculty and staff support, instructional affairs, workload, class size, etc.) are largely considered.

The Management module of e-learning refers to the maintenance of the learning environment and distribution of information. This includes administrative affairs (e.g., ethics, organization and change, instructional development and media services, etc.).
Balanced Practices
Balanced practices are applied by traditional universities whose conversion to e-business is carried out cautiously. The universities in this group—feature business models which rely on a specialization or a limited diversification by capitalizing on the company’s skills and core business (entrepreneurial niche or productive function in its sector) that also deal with e-business competition. In this practice e-business implementation does not conflict with the traditional business model as long as a university’s core business remains the same (Mahadevan, 2000).

Furthermore, balanced universities view e-business as an economic lever enabling them to strengthen their strategic position. These universities focus on control, integration and visibility. In terms of performance, they seek to maintain or increase profit margins as well as maintain or increase the perceived value of education while improving efficiency and effectiveness of the target processes. In this type of practice, universities tend to favor the following technological solutions: management information systems, promotional or transactional Web sites, and navigation tools for ease of course searches.

Diversified Practices
This group features universities for which e-business conversion focuses on external positioning as measured by operational diversification and growth. We view the ELPs of such universities as being especially useful in sectors where traditional learning is already structured. Indeed, the developed paradigms take into account existing rules of competition and growth potential, thus promoting diversification of the universities’ operations (Venkatraman and Henderson, 1998). Moreover, similar rules of competition, applying to both e-learning and traditional studies (face-to-face), facilitate the management of diversified practices.

Some universities in this e-era are not as well prepared to function in emerging markets where the criticisms in e-learning are becoming a concern. Such is the case for numerous emerging e-learning education sectors whose prototypes are still in the thinking process. Furthermore, e-learning diversification can cause these universities to suffer significant conflicts in terms of quality, system availability and procurement which are requiring management skills. Successful diversified businesses however are able to seize opportunities for growth and diversification.

Determined Practices
The strategic aim for this group of universities is to acquire maximum students in the market, or a segment thereof, by imposing a technological standard or by systematically utilizing an electronic channel. For Universities whose strategy is based on these e-learning paradigms targeting the market with additional overhead (e.g., the setting up of technological standards: design, development, implementation and online maintenance) is a fundamental methodology (Evans and Wurster, 2000). To achieve this, determined practices attempt to structure the market using portals (e-marketplaces). New entrants create independent, neutral portals while the already well established e-universities share marketplaces, often by teaming up with their competitors. At any rate, determined practices generally invest more in their technological infrastructures (e.g. IT/IS skilled labor). In fact, the implementation of such e-learning paradigms calls for the establishment of technological standards that require major investments, whose payback periods are often longer than expected and whose operating costs are substantial (Mahadevan, 2000).

Bold Practices
Universities regarded as bold adopt an ELP that is innovative but always focused on their basic strategic skills. Although they tend to pursue aggressive growth that is greater than the market’s, their strategic scope is reduced. Bold practices opt for experimental and
A total of 50 survey responses were received. 44% were female while 46% were male. The following is an overview of the gender and age intervals:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age Interval</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>31-40</td>
<td>34%</td>
</tr>
<tr>
<td>Female</td>
<td>21-30</td>
<td>25%</td>
</tr>
<tr>
<td>Male</td>
<td>15-20</td>
<td>12%</td>
</tr>
<tr>
<td>Male</td>
<td>31-40</td>
<td>4%</td>
</tr>
</tbody>
</table>

This question provided an overview of respondents who viewed e-learning opportunities from different perspectives. On average a higher number of respondents agreed on the following described perspectives: Intellectual Challenge, Diversity of Experience, Research, Flexibility, Career Development, and Time Saving.

In this graph, it was obvious that respondents maintained some consistency in regards to the "neutral" perceptions which were based on the two core factors (self motivation and face-to-face). This is evident from graph C. However a summation of "strongly agree" and "agree" opens up for a debate as explained in graph E.

Based on the two significant variables (e-learning opportunities and limitations –C & D), it can be argued that a discrepancy was found in responses provided by the survey participants. Although 54% were consistent in indicating that e-learning provided magnificent opportunities, self-motivation was an issue that accounted 28% and lack of face-to-face contact was also favored by 18%.

A ranking of e-tools importance and use were depicted as above. e-mail (56%) was the most significant and preferred use, and unexpectedly EMS was the least favored with only 4%.

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**Table 1**

Interpretation of Data Collection

<table>
<thead>
<tr>
<th>GRAPH #</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A total of 50 survey responses were received. 44% were female while 46% were male. The following is an overview of the gender and age intervals: Female = 2% (ages 31-40); 34% (ages 21-30); 8% (ages 15-20); Male = 4% (ages 31-40); 48% (ages 21-30); 4% ages 15-20.</td>
</tr>
<tr>
<td>B</td>
<td>This graph illustrates two categories of e-learning experience. Mixed mode and Online dependent. In the mixed mode completed were 30% and greenhorn were 16% that added up to 46%; whilst in the online, completed were 32% and greenhorn were 22% which added up to 54%.</td>
</tr>
<tr>
<td>C</td>
<td>This question provided an overview of respondents who viewed e-learning opportunities from different perspectives. On average a higher number of respondents agreed on the following described perspectives: Intellectual Challenge, Diversity of Experience, Research, Flexibility, Career Development, and Time Saving.</td>
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<td>D</td>
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<tr>
<td>F</td>
<td>A ranking of e-tools importance and use were depicted as above. e-mail (56%) was the most significant and preferred use, and unexpectedly EMS was the least favored with only 4%.</td>
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</table>
innovative e-learning paradigms whose sustainability has not yet been proven. The 'mortality' rate of dot-com companies is proof of this. Such emerging bold practices are often "start-ups" that have come to symbolize the "New Electronic Dot-Edu" System. By their very nature, the ELPs of these universities are innovative. They do not depend on widespread education practices, as would traditional universities operating in a stable education environment. The technological solutions of such universities count heavily on the Web and rely relatively little on the university's traditional activities (if any). These universities generally deploy complex technological solutions like collaborative portals, simulations, sophisticated search engines and Internet browsers.

DESCRIPTIVE DATA ANALYSIS & RESULTS

The objective of the survey was to determine the strength of students' perceptions through a 'questionnaire'. The survey was an inexpensive, quick, efficient and accurate way of seeking perspectives as far as this study was concerned (Galliers, 1992).

The survey results are presented in a descriptive data analysis format, i.e. a percentage distribution summary of responses. Descriptive data analysis is suitable for a structured questionnaire survey (Galliers and Land, 1987). In a descriptive data analysis, no other statistical method was necessary since it was believed that a percentage summary of data responses would be adequate as this research was not based on the cause and effect (scientific) approach.

Findings from the following survey questions achieved a significant result in regards to e-learning opportunities. The following graphs provide a synopsis of percentage (statistical) analysis on participants' background and 4 core areas in the study. The graphs are the result of 50 survey responses. Table 1 describes
and provides interpretation of the graphs. Participants for the survey were asked to indicate their gender, age and experience in e-learning. They were all upper level undergraduates and were seeking various degree programs.

The following graphs depict the detailed survey responses collated in graph C above. (Explanation of these Graphs will be provided upon request).

CONTRIBUTION, CONCLUSION AND RECOMMENDATION

The intellectual contributions of this study come from both the theory and findings of the survey as described throughout the paper. Well designed e-learning tools could provide opportunities for learners as well as assist in applying appropriate strategies by e-universities (Porter, 2001). Analyses of most responses from the survey indicated that the framework (Figure 3) could be ideal for e-learning. This research will be ideal for conventional universities, e-universities, governments and academics who wish to understand the issues associated with the quality and delivery of e-learning.

Also, this paper has argued that e-learning can be achieved by exploring the proposed paradigm (Figure 3). Numerous literatures have supported this argument, particularly DeMoor (1999), Hirschheim and Klein (1992), Hirschheim, Klein and Lyytinen (1995), Jones (1998) and Lucas (2002), who recognize the reliability and effectiveness of e-learning systems. However, there are important factors that need to be considered when designing a system, like training, skills and computer administration.

From an e-learning perspective, there are several illustrated figures and tables (Figures 1, 2, 3 & 4; and Table 1) that lead to the understanding of this framework if implemented. E-universities and designers of e-learning systems need to take into account the necessary functions that may be required. For example, in the process of online communication messages, it is important for the system designers to ensure that communications are not intercepted, so that confidentiality and reliability of information are established.

This will increase the number of students who wish to utilize the opportunities of e-learning systems.

REFERENCES


