E-LEARNING: JUST A WASTE OF TIME

Mr. Miltiadis D. Lytras
Athens University of Economics and Business, Greece
mdl@aueb.gr

Dr. Athanasia Pouloudi
Brunel University, UK
Nancy.Pouloudi@brunel.ac.uk

Abstract

Many people claim that e-learning is a waste of time. High dropout rates from e-learning courses, low learner satisfaction, ambiguous performance, seem to justify their opinion. But to the other extreme knowledge is recognized as a critical resource (Nonaka and Takeuchi 1995), (Wiig 1993), (Hahn and Subramani 2000), time and place limitations are abolished through e-learning technologies. So there is a definitely need to promote a critical consideration of this new concept. Academic Institutions in Higher Education as well as Corporations face a dilemma: to follow the traditional way of delivering training and education or to establish innovative approaches. Innovation many times implies simple and clear approaches, not obscure concepts and vague terms. Our paper concentrates on clear ideas. E-learning is a waste of time only if we don't believe it as a value adding process that challenges the way of teaching.

Introduction

Many times, we wonder what e-learning is all about. Is just a simple application of information and communication technologies in education? Is something taken for granted due to technological evolution? Is the only way ahead due to the digital economy? Is just a waste of time as many people claim? Is just a case of expanding learning possibilities and a new frontier? Have we ever examined the disposition of learners to use Internet as the learning medium? At a first glance I could state that is a waste of time. E-learning Lecture based courses very often fail to promote value creating processes both for learners and teachers and their realization requires enormous efforts. The complexity of learning as a cognitive and knowledge oriented process makes the establishment of effective e-learning processes using ICT's more difficult.

More over we are disappointed when we hear people in conferences or public speeches say that e-learning implementation is as simple as publishing a presentation on-line. And many others without any scientific basis promote themselves as e-learning specialists. In our humble opinion e-learning challenges the way we teach. The highest rates of distance courses dropout are due to the insufficient efforts in realizing the value of e-learning. From this point of view we can recognize that e-learning bases its performance on integrated efforts that combine multidisciplinary contributions. The available technology expands from time to time the alternatives of implementation but the core competencies are constructed around clear ideas and underlying concepts. For example have we ever thought about what constitutes the learning product in e-learning? Is it just a knowledge component which if delivered we can achieve high performance? Or does the product of e-learning environments combine knowledge, motivation, needs fulfilment, problem solving, team synergy, packaging and other?

The vast majority of e-learning applications (Urdan and Weggen 2000) fail to establish a unique learning experience suitable for the learners' preferences. The static approach to learning content limits the willingness of many people to use ICT's in order to learn. Especially in academic environments the realization of e-learning usually is limited to the deployment of a well known e-learning platform such as WebCT, BlackBoard, Learning Space etc, and the adaptation of learning content to the specific supported format for learning objects (Rowley 2000). The utilization of such systems many times reveal the inflexible knowledge management processes of academics since e-learning is about management of knowledge. In other words e-learning requires much more effort for equivalent or improved learning outcomes in comparison to traditional learning. But unfortunately technology is only a driver not a catalyst. The e-learning value proposition and consequently the e-learning loyalty and hence the higher acceptance of e-learning depends on joint efforts that combine teachers, students, technology, learning processes, dynamic futures and so on.

The analysis of the e-learning market in Europe as well as in USA is not only difficult but has to be based on issues closer to effectiveness than to population increase. In most cases of virtual universities, the e-learning systems base their functionality on a simple browsing mechanism accompanied by a section of web links and a few on-line quizzes. Which is the value of such a system when in most cases the employment of the ICT's is limited to the print button of browsers? We could state that these systems secure the growth of the so-called distance-learning marketplace in Europe and USA even though the learner satisfaction from such a system is very limited. A critical question is whether we can enhance the learner satisfaction from an e-learning ?

The majority of integrated e-learning platforms seems to be unable to support different degrees of value delivery. They seem to base their capabilities on common characteristics that in general simulate the traditional way of teaching. So a number of critical questions emerge:

1. How does e-learning differ from traditional learning?
2. Can we define concrete ways of content enrichment in virtual environments, which add value in traditional learning content and support dynamic learning settings?
3. Can we justify theoretical foundations that prove the different value layers of learning efforts?
4. Can we test the ability of learning environments to support different educational goals through the employment of different learning processes?
5. Can we develop learning environments capable of supporting the intellectual capital exploitation both in academic and business environment?
6. Last but not least, can we formulate a framework that will support Enterprise Application Integration in a manner that will take into account the learning needs of business units? In other words can we define an application layer within business intranets that will establish knowledge management architecture? The same question stands for academic networks as well.

In this paper we analyze the potential usefulness of common e-learning platforms such as Blackboard and WebCT, and we propose an evaluation framework for e-learning employment focusing on the demanding issue of dynamic learning environments. Our conclusions are intended to reveal the underlying issues in the development of effective learning solutions that in many cases demand the multidisciplinary contribution of multiple methodologies.

Case studies.

Our research unit (eLTRUN, www.heltrun.aueb.gr) has participated in the past three years in the design and development of e-learning systems both in European and International level. Furthermore the willingness of the European Commission to support the expansion of e-learning through specific programs like IST, Leonardo Da Vinchi, Socrates, EUMEDIS, Go digital, eEurope, etc, encourage research focus on the parameters that secure or promote the effectiveness of e-learning implementations.

At the same time the realization of the need to utilize e-learning solutions gaining experiences from knowledge management theory formulate a specific approach: The analysis of e-learning from a knowledge management perspective.

Previous work related to our research has to do with various e-learning projects implementation. In the following section we provide a synopsis of the projects as well as the major conclusion from their implementation and pilot run.

The Teletraining Center of Athens University of Economics and Business (**www.teleduc.aueb.gr)** was implemented in order to provide a pilot e-learning system capable to support the delivery of four seminars all over Greece, covering topics such as electronic commerce, statistics and marketing. The technological infrastructure includes servers, digital cameras and three of the most popular e-learning platforms such as WebCT, Lotus Learning Space and Blackboard. At the pilot run of e-learning system a number of students enrolled at the section of the e-commerce seminar hosted on the WebCT server.

The first analysis of a survey conducted having as a sample the students of the e-commerce seminar provides useful recommendations: First of all the need to enhance the functionalities of the system with dynamic ways for the construction of learning content was evident. The limitation of the e-learning platform to support students in different modes than sequential browsing of learning modules was a major disadvantage. More over the inability to provide mechanisms that would facilitate the exploration of knowledge according to specific learning needs was pointed out as a learning obstacle.

From teacher's perspective there was a major difficulty at the reconstruction of learning material since there is a limitation in html pages linking. Additionally the content management constraints the creativity and doesn't support flexible learning scenarios. Finally the absence of learning templates or content templates proves a lack of learning orientation for the whole platform of WebCT.

The GEM consortium (Global Master in Electronic Commerce- http://www.heltrun.aueb.gr/gem) is an international network of business schools sharing a common curriculum in e-commerce at the master's degree level. The global character of the program is ensured through the official cooperation of the best business schools and universities in Europe and USA, all experienced in research and education in e-commerce. The program has received the endorsement of the European Commission and G7's Information Technology group.

The founding members of the GEM consortium include:

- Athens University of Technology and Business, Greece
- Copenhagen Business School, Copenhagen, Denmark
- Erasmus University, Rotterdam School of Management / Faculty of Business, The Netherlands
- Georgia State University, Atlanta, Georgia, United States of America
- Norwegian School of Economics and Business Administration, Bergen, Norway
- University of Cologne, Cologne, Germany

The development of an e-learning facility was considered from the members of the consortium as a vital process of the whole master program. For this reason there was an extensive research on the capabilities of the integrated platforms to support the whole approach. Finally the consortium decided to use the Blackboard as the technological infrastructure for the development of distance courses. The Athens University of Economics and Business undertook to develop the e-technology course for e-commerce master program (www.eltrun.aueb.gr/gem/new).

The first semester that the course was delivered, provided a number of very useful comments from trainers and professors of the course. The major difficulty of the learners was the inability to find the appropriate learning content according to their previous experiences on the field. The inability of the system to diagnose the learners' needs and to deliver the learning content that would cover their needs was pointed out. The sequential linkage of the learning modules also limited the flexibility of the system. The separate learning modules were provided to the executives (learners) through the classical session's method. This approach seemed to be of low value for the learners. More over the inability of the systems to support knowledge management mechanisms such as web semantics proved a critical barrier for the achievement of performance. Another project closely related to executives training is the IST project called MODEL.

The MODEL (Multimedia for Open and Dynamic Executives Learning) project that is funded by European Commission's IST Program, is an innovative approach pursuing the development of a dynamic learning environment capable of managing effectively the knowledge in business units and academics environments (Civi 2000). The MODEL approach is trying to define a new market of knowledge management solutions and tools. We could describe it as a niche market that facilitates the development of competencies and the exploitation of the human capital through a combination of e-learning and knowledge management characteristics.

The core competencies in the modern organizations are constructed through vital business processes that in general provide a web of interconnections among people, knowledge resources, customers, tasks and evaluation standards. The major problem observed in the current situation is the absence of knowledge management systems that increase the re-usability of knowledge for training purposes. Executive training is mainly accomplished using executive seminars and various workshops with reliance on not clearly defined quality standards. Moreover most of business units suffer from their inability to support new hired employees according to the specific characteristic of core business processes and business environment in general. The cost for training a new employee is great and increases if we take into account knowledge oriented rather than routine business processes. In other words we have an exponential increase of the cost of training or learning when the subject of the training is more value creating. The development of a tool that would be able to manage effectively the required knowledge for the comprehension of knowledge processes is the objective of our research effort. The major research questions include:

- Is the knowledge delivered on executive training programs solid or does it incorporates a synthesis of well-defined value components?
- Is there a simple learning scenario that best fits to business process training?
- Can we distinguish learning processes that enhance and facilitate the knowledge delivery on an advanced system for executives training?
- Can we categorize these learning processes on a hierarchical way using a value metric? For example, can we distinguish learning processes on a value delivery basis allowing building learning scenarios of different difficulty and value?
- Can we analyze the logic of such a system and distinguish technological components? And is there any direct relation between the implementation of each component to the learning process that supports?
- Can we embed dynamic characteristics to the whole system based on the nature of the knowledge components and the diversity of learning processes?
- On a more abstract way can we create theoretical concepts e.g. conceptual maps or grids that could directly link business processes types with learning scenarios?

The MODEL tool-set systematically pursues to answer the above questions. The overall objective is to justify the necessary components of a KM system that will be able to support the development of executives in business environments and beyond (John Garrick 2000). Such a tool will be able to support Training Departments of Organizations, Corporate Universities, Distance Learning Programs, Universities, Learning portals etc. The scope of such a system is the capacity to create customized learning spaces according to specific dynamic characteristics of knowledge.

The underlying idea of the development effort is to create flexible, customized and powerful learning settings for executives (Nissen, Kamel et al. 2000). The embedding of dynamic features in technological learning environments has to be justified from a value adding perspective. In other words we have to understand that the technological infrastructure for the delivery of learning content is not oriented exclusively to the sequential reference of learning modules usually in html format or PowerPoint slides. It has to be clear that the information highways of distance learning have to deliver more in terms of content and functionalities.

To sum up in the MODEL project the aim is to create a knowledge management mechanism for the enhancement of organizational learning in modern organizations (Pemberton and Stonehouse 2000), (Jackson and O'Dell 1998) and academic institutions. Issues like case studies development, templates, and problem solving capabilities as well as technological considerations will be addressed. The Model Tool-Set focuses on the hidden value of learning processes that support executives in their personal and team development. This issue is very different from the traditional case-study method approach: It tries after an analytical consideration of learning issues to set an integrated environment that can be customized on the basis of selection learning processes from a pool. In other words the MODEL Case Studies Creation Process has to follow a concrete definition of learning processes appropriate for specific knowledge intensive tasks. The combination of these processes formulates the MODEL customized environment that best supports the case study content delivery.

Each combination sets a different template of learning scenarios that incorporates potential capacity for skills development. From the user perspective the MODEL tool-set can provide a number of customisation approaches. Other projects and extensive research have reinforced our approach for e-learning. For example in e-LEARN, a Leonardo Da Vinci project investigated the capability of WebCT to support English language courses for public sectors corporations. Also, the project ESWL (Educational space without limits) set a postgraduate master course available to the students of three master programs in Greek Universities with the use

of WebCT. The major components of our approach for e-learning effectiveness and evaluation are presented in the following section.

Dynamic e-learning concepts

The common practice is to buy an e-learning platform, to adopt content or to buy content and to deliver on 24-hour basis the learning material to various learners has a justification: It provides an easy way to claim presence on e-learning, regardless of the absence of mechanisms that exploit the value diffusion for the learners and the trainers. Our approach is setting or is currently researching the ability of a three-dimensional model to expand the traditional considerations for e-learning importance. The **Multidimensional Dynamic e-Learning (MDL) Model** is based on three complementary dimensions:

- The Knowledge Management dimension
- The e-Learning dimension
- The application integration dimension

Each of these describe in synopsis detailed considerations that confront the e-learning platforms such as knowledge management systems with embedded e-learning pedagogy and capacity of dynamic integration with other crucial business applications. The following paragraphs provide explanations for the three dimensions of the MDL model.

The **Knowledge Management Sophistication** summarizes the ability of the e-learning platform to manage learning content in various formats, to re-use learning modules and to support knowledge management processes (Liebowitz 1999), (Choo 1996) such as knowledge creation, knowledge codification, knowledge transformation and knowledge diffusion (Tiwana 1999). The enrichment of content through a sophisticated model of metadata and semantics or annotations is of critical importance for the enhancement of dynamic learning (Gooijer 2000). XML language is the last frontier, which speeds up the realization of the Knowledge management dimension. Think about how much effort is required for the embedment of dynamic features through XML in traditional learning environments (Williams 1999), (Staab, Jürgen et al. 2000), (Brasethvik 1998). The new generation of e-learning systems would be very different. This evolutionary shift can be compared to e-commerce generations. The static approaches and the publishing concentrations have given their places to dynamic full customisation systems with advanced profiling mechanisms (Süß 2000). The Learning Services Portals have to be based on integration of multiple technological components and extensive pedagogical considerations that justify the value proposition.

The **E–Learning Dimension** stands for the ability of an e-learning system to construct effective learning mechanisms and learning processes that support the achievement of different educational goals (Bloom and Krathwohl 1984). This dimension incorporates issues like learning styles, learning needs, learning templates as well as learning specification settings.

The **Application Integration Dimension** summarizes for the e-learning platforms the capacity to collaborate with other business applications (or academic information systems) in order to obtain learning content from real business operations. This dimension seems to be the least obvious in common e-learning platforms and this causes a number of gaps for the effective implementation of e-learning systems. The critical issue of insufficient content in many situations is due to the inability of the organizations to establish a knowledge generation mechanism through the operation of information systems that support the most important business processes.

With the use of the MDL model every e-learning platform can be positioned somewhere on the MDL cube. More over this analysis with the three coordinates can be analysed further. First of all by defining the scales for every dimension implying specific value metrics or different modes. This work is really very challenging and the experiences gained from the implementation of the projects can contribute important guidelines. The generic dimensions of the MDL model incorporate various issues that need explanation.

For example the e-learning dimension and the emergence of high and low value learning processes demand a well-justified way of differentiation. Our research work in this field relates with the distinction of various learning processes that suppose to be different in terms of delivered value to the learners. Each learning process has its own learning cycle, a continuum of learning tasks that reveal and exploit the learning content. Currently we have define ten different learning processes that have a different value in terms of learners satisfaction and

learning content exploitation: Analysis, Synthesis, Reasoning, Explanation, Problem solving, Collaboration, Case Writing, Evaluation, Presentation and Relation.

These ten learning processes define a pool of learning processes capable of supporting different learning modes. Accordingly to our research work an e-learning platform must support such a pool in order to provide dynamic ways of constructing the learning scene for every learner. The availability of these learning processes in the majority of the currently dominated e-learning platforms seems to be inadequate. In most of the cases this learning dimension is misunderstood or missing. The critical question is whether can we gain effectiveness from an e-learning system if the employed technologies does not support sophisticated learning goal hierarchies.

The Knowledge Management Sophistication Dimension of the MDL model is also critical. The majority of e-learning platforms do not support mechanisms that would enhance the re-usability of learning content. The enormous efforts that have to be paid in order to redesign learning content or to adopt traditional content for e-learning purposes burdens the effectiveness of these tools.

Our model, claims that the KM sophistication dimension is exploited enough when there are established knowledge processes that manipulate dynamic content. The re-usability of content and the support of high value learning processes presuppose the presence of an advanced KM subsystem capable to categorize, to enrich and to integrate various learning objects. Consequently the enrichment of learning content with various metadata is necessary for the application of dynamic learning. Very few learning platforms can nowadays provide metadata to the learning content and when this is applicable there is no a mechanism that allows the data mining of relevant learning objects from the learning warehouse system that manages the learning content.

Finally the Application Integration Dimension is also critical. The micro cell of any e-learning system has to be enriched very frequently with new learning content. In a business environment this requirement is forced from the demanding business need for immediate and valid knowledge utilization. The current situation is very disappointing concerning the realization of the integration between e-learning systems and vital business applications. The development of learning content for business specific processes demands a whole development cycle with unclear quality standards. Many e-learning experts provide their expertise in order to develop the required learning material. But lets think about a module on an e-learning system that would be able to run in parallel at the background of business applications and to capture critical events from learning perspective. For example a screen-shoot, an important report, a table, and other business specific elements with more or less value for the achievement of the various business processes. The next section provides an overview of the MDL model.

MDL cube presentation

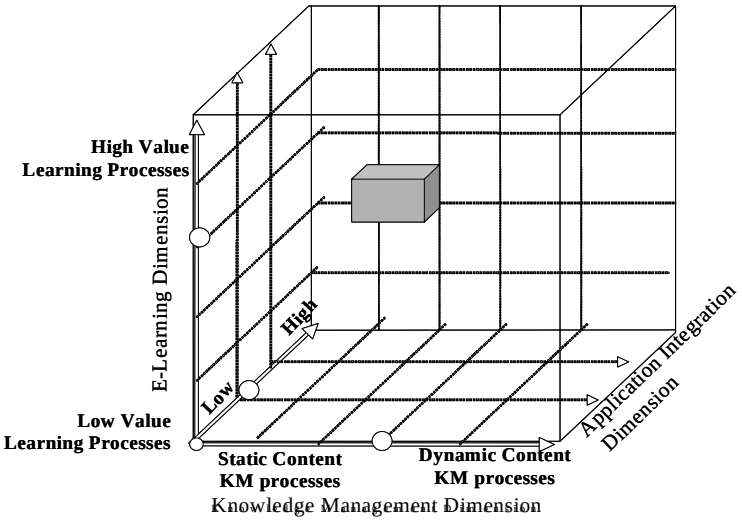

Figure 1: The MDL cube

The Multidimensional Dynamic e-Learning Model provides an analytical tool that can be used in order to position every e-learning system. The three dimensions of the model imply different degrees of delivered value. So from this point of view the MDL cube represent the whole e-learning utilization value. Potentially our exemplar for e-learning in business or academic environment delivers the maximum value when all the dimensions are satisfied to the maximum allowed scale.

The specific position for every e-learning platform has to be justified very clearly. Our research effort at this stage concentrates on the limitation and the specification of the scale on every dimension. The establishment of such a system will allow the specification of e-learning modes. For example the three coordinates for every valid position on this cube will imply specific technological capabilities as well as learning scenarios. The selection of each mode and its implementation will of course require different levels of budget and effort. The most advanced e-learning systems positioned on the upper right corner of the cube will realize full e-learning solutions in terms of integration, knowledge management capabilities and effective learning. Certainly the most advanced e-learning cubes need advanced capabilities of information processing.

Conclusion

The MDL model approach sets a method for the evaluation of any e-learning platform. Of course the presentation of the method on this paper was limited due to the length limitation. The whole approach of MDL cube MODEL is supported by a number of accompanying frameworks and theoretical concepts, which in collaboration enhance its scientific justification.

The development of a system that will realize the upper right layers of the cube is currently our research priority. Of course the required modules need extensive justification and creative work. We believe that in one's year time we will be able to launch an integrated e-learning knowledge management system with the characteristics that we mentioned on this paper. The refinement of our approach is a continuing process and will be supported by a number of new projects that we are going to propose in Greek and European Commission programs. We look forward to collaboration with other parties across different countries and disciplines, as we understand that this ambitious e-learning system has to be based on teamwork covering a wide range of multidisciplinary contributions.

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