Emerging Learning System

R. Amudhevalli[1], Dr. T.V.U. KiranKumar[2], Ms. P. Thamarai[3]

[1]R. Amudhevalli, Department of Electronics and Communication Engineering, Bharath University, Selaiyur, Chennai - 600 073, Tamilnadu, India.

[2]Dr. T.V.U. Kiran Kumar, Professor, & HOD, Department of Electronics and Communication Engineering, Bharath University, Selaiyur, Chennai - 600 073, Tamilnadu, India.

[3]Ms. P. Thamarai, Asst. Prof. , Department of Electronics and Communication Engineering, Bharath University, Selaiyur, Chennai - 600 073, Tamilnadu, India.

Corresponding author: R. Amudhevalli, Department of Electronics and Communication Engineering, Bharath University, Selaiyur, Chennai - 600 073, Tamilnadu, India. Email: amuthavallirajan@gmail.com.

Abstract

In today's rapidly changing e-Learning environment, we do not have time to endure months of implementation to complete our mission-critical training initiatives. The application of information and communications technology to education and training, both in the corporate and public sectors is now big business on a global scale. It is however, an industry which is young and relatively immature. The rapid emergence of new technologies outpaces the ability of learning communities to apply the technological infrastructure in any systemic or sustainable fashion. E-learning communities are still grappling with significant pedagogical, cultural and business issues which are often under-estimated by the technologists. M-learning has now emerged as a new wave of development, based on the use of mobile devices combined with wireless infrastructure, and much of the current literature on m-learning reveals all the strengths and weaknesses associated with the more mature e-learning communities. There are, of course, close links between e-learning and m-learning and it can be argued that they represent a continuum based on the deployment of ever-more sophisticated technologies. For innovation to have an effect, however, there must be distribution channels that provide access to end-users. This is where connectivity comes in and why the Internet is different. In other media, such as print, radio, cinema, music and television, the companies who own the distribution channels (publishers, radio and television networks, film studios, and the recording industry) control the content.

1. Introduction.

For the couple of years, there has been widespread recognition of the need to place E-learning in the much broader context of the emerging knowledge economy. In particular, the development of infrastructure embracing both e-learning and information environments is now regarded as a key issue. In both higher education and corporate training sectors, the digital revolution and the blossoming of the Web have spawned a wide diversity of isolated databases and computer applications used to manage and support learning. More recently, a vision has emerged of integrated e learning systems with learning objects dynamically assembled to meet specific learning needs. There is a flurry of international activities developing a variety of specifications and standards to ensure system interoperability, and the technology needed to develop robust integrated solutions is at hand.

2. Nebo with Kyso technology

The new e-Learning software, Nebo provides complete freedom to build any e-Learning solution that works perfectly without boundaries or restrictions. Nebo's KYSO Technology is a revolutionary patent-pending technology that makes new clarity and freedom in e-Learning possible. Nebo is the first e-Learning platform built on a completely open, component-based architecture. With Nebo, readers can take any content in any format, plug it into the Nebo system, and present it as part of a single, integrated e-Learning solution.

With the Nebo/KYSO combination anyone can pick and choose the very best content or application from any source quickly and easily and that content can be integrated into one complete, centrally managed e-Learning solution. With Nebo we can add the best new content, existing or emerging technology without disrupting the current system that have already made. Nebo's architecture is unique because of an aspect of KYSO Technology called inter-component messaging which allows each Nebo module to be independent of the other modules. And if any module is added or swapped it doesn't affect the other components in the system. Nebo's KYSO Technology also gives the freedom to add new capabilities or expand existing ones quickly and painlessly. It's the only e-learning solution that gives you complete freedom. It's the only universal platform for e-Learning and beyond.

Effective e-Learning does not rely on content alone. We also need a very long list of tools to integrate the content and existing e-Learning solutions to work as part of a cohesive solution – for example, centralized administration, skills management, assessment, progress tracking, authentication, collaboration, reporting, and so on. Nebo comes complete with a long list of built-in core capabilities that meet the mainstream needs of any e-Learning solution–centralized administration, basic authentication,

licensing, reporting tools, and search tools. Nebo's component architecture also gives you the freedom to add new capabilities – or expand existing ones – quickly and painlessly (Fig. 1, 2).
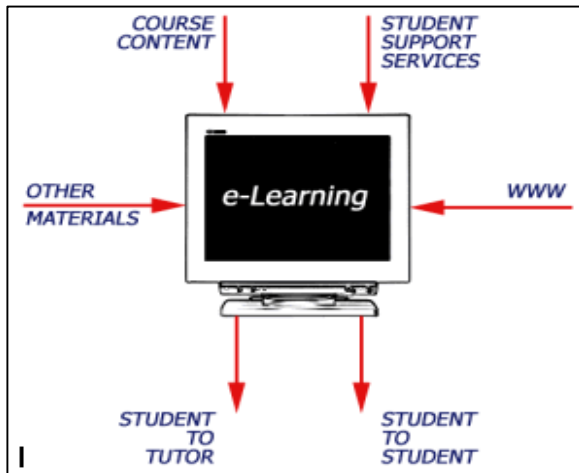

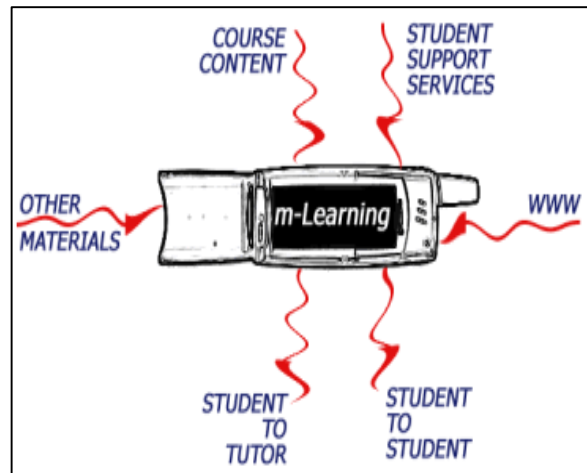Fig.1: E-Learning and M-Learning, the differences. wired virtual learning environment of today

Fig.2: Wireless virtual learning environment of tomorrow

3. Integrated Learning Systems

In both higher education and corporate training sectors, the digital revolution and the blossoming of the Web have spawned a wide diversity of isolated databases and computer applications used to manage and support learning. More recently, a vision has emerged of integrated e-learning systems with learning objects dynamically assembled to meet specific learning needs. There is a flurry of international activities developing a variety of specifications and standards to ensure system interoperability, and the technology needed to develop robust integrated solutions is at hand. Yet many organizations are challenged with implementation, as the technical details appear piecemeal and don't seem to address real underlying organizational and learning concerns.

4. Fragmented Organizational Systems

There are a multitude of isolated and technologically distinct databases containing a wealth of useful information. Learner/Student Information Systems (SIS) are used for admitting learners into programs, course registration, and other administrative functions (maintaining contact information, course grades and program progress, administering transcripts, etc.). Various test-banking systems have been installed, as well as systems to support advising and curriculum planning, and library or learning resource management. More recently, organizations involved in e-learning have invested in Learning

Management Systems (MS) can deliver content in Web-based learning environments that may include a variety of synchronous and asynchronous communication channels (e-mail, chat, discussion boards, whiteboards, group-surfing, Voice-Over-IP, etc.) and instructional support tools (grade books, student tracking, etc.). Often these applications require more than a minimum of Help Desk support and ancillary systems. Still more recently e-learning content is being developed in Learning Content Management Systems (LCMS) or in Learning Object Repositories (LORs). And now portals are being utilized to present more unified and personalized experiences. Such learning system components are increasingly being required to interoperate to gain organizational efficiencies by "single-sourcing" data. In the hodgepodge of existing systems, the same data is often required in many places, yet there are no clearly established methods for interoperability and data exchange between components. No existing learning system integrates the functionality of an LCMS, an LMS, and a SIS, let alone test banking, system monitoring, curriculum planning, and learner profiling or portal functionalities.

5. Functional components of a complete E-Learning System

The problem of integrating such diverse system components appears to be an enormous task, particularly when seen from an individual organization's point-of-view as requiring unique solutions for each integration link. Large organizations may be able to purchase custom solutions, but such proprietary integration systems are complex and expensive, and beyond the reach of most small and medium-sized enterprises, many institutions of higher learning, and most organizations in the developing world.

6. Web Services Solutions

Web Services is an emerging technical platform designed specifically to solve such integration problems. Web Services is a "metaprotocol" used to define other protocols, that is, it is a language used to specify the protocols or messaging required between system components to integrate them into a unified system. Web Services technology has several unique features and distinct advantages. It takes a layered approach to integration, separating the requisite messaging from the way the message is transported and from how it is described and made available to other applications. This makes Web Services technology-independent. Web

Services can be implemented in an entirely modular manner. This means it can be used to design a complete learning system where, for example, not only can one LMS be "plugged out" and another "plugged in" seamlessly, but even subcomponents may be interchanged as required — so it also becomes possible to replace just that white boarding tool. But probably the most significant feature of Web Services architectures is that they may be distributed, that is, they can be used to integrate applications

Fig. 3: The COMPAQ IPAQ PDA   Fig. 4: The Wireless Palmtop R 250   Fig. 5: The WAP Telephone R 380

or functional services located anywhere on the Internet. In particular, Web Services technology has the potential to spawn a new

economy of independent learning appliances to be plugged in or out of a learning system as required. Web Services can provide the technology for developing integrated learning systems. But still there remain some institutional obstacles to overcome before such technical solutions can be applied globally (Fig. 3, 4, 5).

7. Learner-Centered Systems

As the practice of instruction shifts increasingly away from classroom-based models, institutions of higher education are grappling with some fundamental changes required by e-learning environments and the expansion of competitive markets ushered in by the Web. Many institutions are caught in a confusing no-man's-land between the established "sage on the stage" model of education and the need for effectively supporting learners in the user-driven medium that is the Web. There is a recognized need for a "learner-centered" approach, and some discussion of its characteristics, but it remains unclear to those immersed in the instructor-led paradigm how exactly to bring this about. Effective online instruction requires institutional commitment and a team-based approach to instruction. The online learning experience deserves careful planning, and support materials must be designed, developed, and maintained. This is best accomplished employing a range of expertise (content authoring, instructional design, editing, media specialists, etc.) and a systematic approach to learning design. The

Fig.6: Functional components of complete E-learning system

online instructor takes on the role of facilitator, guide, and coach, and does not necessarily have the expertise to develop the learning materials. These may touch sensitive issues at the heart of an institution's organizational and educational models (Fig. 6).
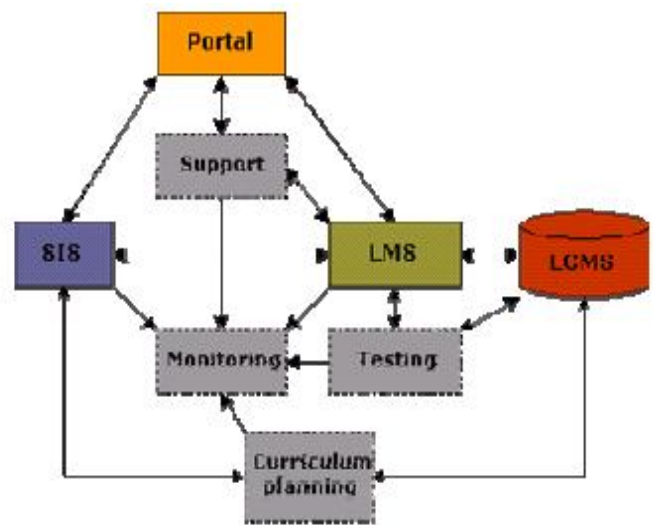
In nonacademic environments systematic team-based instructional design methodologies have already proven their effectiveness in developing Web-based learning. Learning organizations are now seeking to extend these methods by offering education or training aligned with organizational goals and knowledge management systems, and optimized for individual learners. Learning designers need access to tools and systems incorporating their methodologies and integrated with organizational design, development, and delivery components. Learning design certainly has the flexibility to provide for the evolving learning needs of the coming decades. What is needed is to incorporate its methods and tools directly into the foundations of the next generation of e-learning systems.

8. Extensible Learning Systems

Organizations large and small, public and private, in industrialized countries and in the developing world, require architecture for e-learning systems that:

❖ Integrates all functional components needed to support learning

- ❖ Modular, with replaceable components that may be swapped in or out
- ❖ Allows components to be included independent of the technology used to develop them, and
- ❖ Allows for the inclusion of legacy systems
- ❖ Allows for distributed applications or services — learning appliances
- ❖ Expand ably allows additional components and future functionality
- ❖ Transparently incorporates trial-and error learning design methodologies
- ❖ Dynamically match learning objects to multiple learner profiles and specific learning needs
- ❖ Supports personalized learning (to more effectively meet learner needs) and customizable
- ❖ Opens standard and specification.

9. M-Learning

M-learning is a term coined to cover a complex array of possibilities opened up by the convergence of new mobile technologies, wireless infrastructure and e-learning developments. As with any emerging paradigm, there are many attempts to define its essence. It is worth quoting some of these definitions in order to capture the common threads inherent in the term m-learning. Consider the following,

1. "M-Learning is the intersection of mobile computing and e-learning: accessible resources wherever you are, strong search Capabilities, rich interaction, powerful support for effective learning, and performance-based assessment. E-Learning independent of location, time or space".

2. "A new m-learning architecture will support creation, brokerage, delivery and tracking of learning and information contents, using ambient intelligence.

3. Three ways learning can be considered as mobile "learning" .It is mobile in different areas of life, it is mobile with respect of time which has relatively common agreement with multi-purpose hand-held devices such as personal digital assistants (PDA's) and cell phones will outsell PC's and laptops in the very near future within the global community. Tablet PCs are becoming fully powered personal computers with strong potential for m-learning and there is now a lot of speculation on the development and potential application of wearable devices. There is a general consensus amongst the consultant community, however, that many obstacles exist in terms of implementing any significant m-learning applications, based on current mobile technology capacity. These obstacles can be summarized in the following form,

- ❖ Limited memory and storage are major inhibitors.
- ❖ Screens are generally too small for the use of any sophisticated applications.
- ❖ Transmitting across different browsers and platforms is almost impossible.
- ❖ Existing applications are not easily integrated to the mobile technology environment.
- ❖ Start-up costs are invariably high.
- ❖ Tracking outcomes is difficult.
- ❖ Security is a major issue.
- ❖ Cost of accessing major third-party networks is punitive.
- ❖ Multiple permissions are necessary in terms of negotiated access.
- ❖ Continuous technology development militates against stability and sustainability in terms of mounting viable m-learning applications.

Many of these issues also exist in the e-learning industry but they are exacerbated in the e-learning space because of the current limited technological capacity.

10. Conclusion

Individual empowerment, combined with effective leadership and support, will enable the educational institution/University to offer a quality and competitive education in the 21st century. With the computer technology that   exists today there are many opportunities to enhance education. Multimedia presentations offer a multitude of teaching facilities; the internet has destroyed the time constraints associated with inconvenient university courses; e-mail offers a direct link between students, instructors, and industry representatives. Used together, these utilities can have a tremendous impact on the quality of education a student receives.

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