E-learning: Tools and Technology

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Abstract

"Someday, in the distant future, our grandchildren's grandchildren will develop a new equivalent of our classrooms. They will spend many hours in front of boxes with fires glowing within. May they have the wisdom to know the difference between light and knowledge."

- Plato

E-learning is no more a technie word understandable only by a few. Today it is a part of everybody’s life. Whether a student or a house-wife, all tend to use e-learning for their day-to-day bits of information. Library and Information Centres of an organization are hubs for information dissemination, so nothing can be better than libraries coming out with their own e-learning solutions. In this article are listed few easy ways and tools to develop our own e-learning modules, and we look for a better understanding of e-learning at semantic level.
1. Day-to-day e-learning

E-learning is essentially education via electronic network in which content is transferred via the Internet, intranet, extranet, audio/video tapes, satellite television and CD-ROMs (1). E-Learning facilitates web-based transfer of knowledge and skills, virtual classroom and virtual clubs of similar discourse. E-learning shares the concept of distance learning with speed of Internet.

In corporate world, where decentralization is the buzz-word, companies depend largely on e-learning capabilities for coordination of their various activities, for example, mutual working on a physically dispersed project. Their dependence is also in terms of employees training and orientation. Today every big or small organization wants to incorporate e-learning in their network. This has resulted in a wide range of tools in the market for e-learning modules and every customized help is readily available in this regard.

Almost all software giants in India and overseas take-up e-learning projects as their major challenges. Even many multimedia companies provide e-learning solutions.

Different kinds of e-learning areas, for which software are being developed are:

- Consulting and Workshops
- Recruitment Training
- Assessments
- Simulations
- Leadership and Business skills training
- Simple Learning Management Systems, and
- E-Learning as a marketing tool - Training kits for customers to educate them about a product.

M-learning

Another facet of E-learning, that is picking up fast is M-learning. It stands for mobile learning. M-learning enables organizations to leverage the
'anytime, anywhere' access provided by mobile devices to address the typical training challenges of e-learning (2). This way e-learning is accessible through PDA devices, smart phones and digital cell phones also.

2. Steps to e-learning

As given on the eLearning Advisors Network of University of Bristol (7), they have described 5 steps that lead to e-learning:

2.1 Need

First step is to identify the need for e-learning and then working out a strategic plan for the software development and e-learning implementation. Things that needs to be answered are:

- Who will be the prospective users of e-learning?
- What are their knowledge needs?
- What is their IT understanding level for the technology that we may use in our e-learning modules? For example, technology understanding of a school kid differs from that of a science scholar.

2.2 Pedagogy

This is the time to reflect upon the pedagogy involved, and to re-evaluate and identify the specific learning objectives of the users' learning. Pedagogy is the art or science of teaching. Pedagogy is also sometimes referred to as the correct use of teaching strategies.

2.3 Resources

Identify the resources required, both hardware and software. Review the tools available. Calculate the budget for the overall project and the initial capital outlay.
2.4 **Creation**

This is the main stage of the whole project which involves designing and development. Obtain training and support. Acquire resources to support eLearning (digital images, video, sound files etc). And finally, effective users induction/training in how to access and use the eLearning.

2.5 **Evaluate**

Evaluate the efficacy of the e-learning by staff and users’ feedback and, if possible, evaluation by a external examiner.

3. **E-learning: tools and technology**

Most developers still use HTML, Javascript, Flash and other such standard tools for e-learning softwares. But all e-learning developers don’t have access to programming support, or they don’t want to be restricted to simple HTML. This need has given rise to a varied number of commercial as well as open-source software products that could be used as specialist e-learning authoring tools (3). Literally speaking, these tools lead to the creation of Digital Learning Environment.

3.1 **Blogging Tools**

Blogging tools let you create and write to a web-log (4).

- Big Blog Tool - [http://www.bigblogtool.com/](http://www.bigblogtool.com/)
- Blogger - [http://www.blogger.com/start](http://www.blogger.com/start)

3.2 **Collaboration Tools**

Collaboration tools can be categorised to following types (4):

1. Application sharing – Let the presenter share the programs, windows, or the entire screen with participants.
   - Exchange Conferencing Server - [www.microsoft.com/exchange](http://www.microsoft.com/exchange)
2 Audio Conferencing – Let the participants talk with each other.
   • Exchange Conferencing Server - www.microsoft.com/exchange
   • Robust Audio Tool – www.mice.cs.ucl.ac.uk/multimedia/software/rat/

3 Chat, Instant Messaging and E-mail – Enable text-based conversation in real time and exchange of messages with other e-mail clients using Internet.
   • Exchange Conferencing Server - www.microsoft.com/exchange
   • SquirrelMail - www.squirrelmail.org
   • ChatSpace Community Server - www.akiva.com

4 Online discussion, Video Conferencing – Online discussion allow users to post messages to a known location where other participants can read and respond to them, while video conferencing tools let the users see and hear one another. Examples:
   • DiscussionApp – www.server.com
   • List Manager – www.lyris.com
   • VIC (Video Conferencing tool)- www-nrg.ee.lbl.gov/vic/

5 Web Touring tool – Allow participants in a collaborative activity to browse web pages together.
   • Multicity Valur Package – www.multicity.com

6 Whiteboard – A whiteboard simulates the communication that occurs when the instructor draws on a wall-mounted whiteboard and then invites a student to contribute to the drawing.
   • Groupboard – www.groupboard.com

3.3 Content Converters

File format converters can convert multiple files from one file format to another (4).
   • Batch Converter - www.sonicfoundry.com
   • Quick Time Player Pro – www.apple.com/quicktime/
3.4 Content Management Systems

These tools do the task of managing and reusing all types of informational content.

- AuthorIT – www.authorIT.com
- Userland Frontier – http://frontier.userland.com/

3.5 Course Authoring Tools

Special purpose tools for creating e-learning courses.

- Authorware - www.macromedia.com
- Trainersoft - www.outstart.com
- Web Course Builder – www.readygo.com
- Toolbook Assistant - www.click2learn.com
- Quest - www.allencomm.com
- DazzlerMax - www.maxit.com

3.6 Help Authoring Tools

Special purpose tools for creating online help files.

AuthorIT – www.authorIT.com
Robohelp – www.ehelp.com

3.7 Learning Management Systems

Simplify the process of administering education and training. Their primary function is to offer a collection of courses and track what courses learners have taken.

- Digital Think Learning Management - www.digitalthink.com
- Active Learner - www.resourcedev.com
- ViewCentral:eLearning - www.viewcentral.com
- Virtual Training Assistant - www.risc-inc.com
- Oracle iLearning - www.oracle.com/ilearning
- KnowledgeHub - www.elementk.com
3.8 Website Authoring Tools

To build and link individual web pages to create an interactive website.

- Amaya - www.w3c.org/amaya
- Dreamweaver - www.macromedia.com/dreamweaver
- GoLive - www.adobe.com/golive
- Netscape Composer - www.netscape.com

4. e-learning: opportunities ahead

4.1 Business opportunities

LMS Portal
http://www.lms-portal.com/

LMS Portal, an e-learning platform, is a tool that has the power of Communication, Organization, Management and Training. Learning Management System (LMS) is a technology driven platform that enables educational institutions and business organizations to move teaching, training and learning initiatives and programs on the Internet for E-learning to take place. It provides Internet/intranet based infrastructure for teachers, instructors, trainers and program directors to manage and track a student, employee, trainee's participation and performance in E-learning.

IndiaWebDevelopers: E-learning Solutions
http://www.indiawebdevelopers.com/services/ElearningSolutions.asp

They develop productive e-learning solutions. India Web Developers design and deploy robust e-learning solutions ranging from content customization and e-learning strategies to integrating e-learning into a framework. At IndiaWebDevelopers, e-learning solutions include e-learning development, interactive learning, online learning, instructional design, learning management systems, online test development, custom content
development, online conferencing, e-learning software and e-learning strategy consulting.

_Sterco Digitex_
http://www.stercodigitex.com/sitemap.html

They prepare courseware that enhances the effectiveness of a course and truly results in e-learning that is interactive and hands-on, giving the user an impressive learning experience.
Its features include state-of-the-art student tracking and administrative reporting, an interface design that mixes with the content in hand, interactive multimedia that includes animation with the best audio and video effects, and others.

_4.2 Open Source Software Initiatives_

_Claronine_
http://www.claroline.net/

Claronine is a free application based on PHP /MySQL allowing teachers or education organizations to create and administrate courses through the web. The software was initially started by the University of Louvain (Belgium) and released under Open Source licence (GPL). A community of developers around the world have since contributed to its development.
Claronine allows a variety of pedagogical setup including widening of traditional classroom and online collaborative learning. It allows teachers (professors, lecturers...) to create and administer course websites through a browser (Internet Explorer, Netscape, FireFox, Mozilla ...). With this one can publish documents in any format (PDF, HTML, Office, Video...), run discussion forums, create student groups, compose exercises, have students submit papers, etc.
Adept
http://sourceforge.net/projects/adept

Adept is a free multilanguage e-learning system. Users can choose, navigate, read courses on screen, do exercises and download related material. Authors can create courses online or import them from word processor files. It also act as quiz generation software.

Segue CMS
http://sourceforge.net/projects/segue

Segue is an open source collaborative content management system designed for e-learning that combines the ease of use of course management systems with the flexibility of weblogs for creating various types of sites including course, news, and journal.

Basic E-Learning Tool Set (BELTS)
http://sourceforge.net/projects/belts

The Basic E-Learning Tool Set provides a basic set of tools for using and managing learning objects. Users can search and discover content, and set up classes (groups of users) and lessons (sequences of learning objects) for others to interact with.

5. E-learning projects in action

5.1 SAP Education : E-Learning
http://www.sap.com/

In the IT solutions world, there is hardly anyone who doesn’t know about SAP. SAP is a German based company which is world’s largest inter-enterprise software company and third largest independent software provider. SAP Education offers a growing catalog of e-learning offerings -- highly interactive, Web-based courses that enable one to deliver the timely, focused training mapping with organization demands.
SAP Education's e-learning courses complement the tried-and-tested classroom-based training, allowing users to improve or maintain their skills by building online learning into their schedules. This way learners have the flexibility to determine what, where, and when to learn. They can repeat learning units as often as required and control the duration of learning sessions.

5.2 Tata Interactive Systems (TIS)
http://www.tatainteractive.com/

TIS develops some of the best e-learning solutions in the world, with its presence scanning across the US, Europe, Australia, Japan, the Middle East and India. TIS is the only e-learning organisation in the world whose processes have been assessed at SEI-CMM Level 5 (Carnegie Mellon Software Engineering Institute - Capability Maturity Model) and SEI P-CMM Level 5. CMM is a framework that describes the key elements of an effective software process. It describes an evolutionary improvement path from an ad hoc, immature process to a mature, disciplined process (5). TIS has also earned the ISO 9001 and TickIT certifications.

Tata Interactive Systems develops custom e-learning programs for a diverse set of organisations including corporates, educational publishers, virtual schools, online universities, and government and defence institutions.

Awards

The following are some of the awards won by Tata Interactive Systems’ e-learning products in the global arena (6):

- APEX 2005 Award of Excellence
- Media & Methods Magazine Award 2005
- Brandon Hall Excellence in Learning Award 2005 and 2004
- APEX 2004 Award of Excellence
- APEX Award 2003 for Excellence in Courseware Design
“Let me lay my cards on the table face up. I am the author of several online learning tools.”

- Peter Drucker when asked if e-learning is changing the training profession.

6. References

(1) E-learning definition.  

(2) M-learning.  
http://www.tatainteractive.com/newtis/service/mlearning.jsp  
(browsed on 28th Nov. 2005)

(3) Content Builders – Tools for E-learning authors -  
http://www.fasttrak-consulting.co.uk/tactix/Features/content.htm  
(browsed on 30th Nov. 2005)

(4) E-learning tools.  

(5) Capability Maturity Model for Software.  

(6) Tata Interactive Systems.  

(7) 5 Steps to e-learning.  
http://www.bristol.ac.uk/elan/5steps/5steps.htm