

Enriching E-Learning with web Services for the Creation of Virtual Learning Platform

P.Radhika¹, Dr.P.Suresh Varma², T.L.Priyadarsini³

¹*Assistant Professor, VNR VJIET,*

²*Prinicpal, Adikavi Nannaya University,*

³*Assistant Professor, VNR VJIET.*

ABSTRACT:- The study aims at creation of virtual learning environment(VLE) using the context of web services .Now-a-days eLearning is gaining a wide spread acceptance since its inception. Much of the effort is placed on developing rich educational content & create global platform in which Information and Communication Technologies (ICTs) are used to transform education. Therefore education system need to be redesigned in a better way for which amalgamation of web services with eLearning is considered to solve the complex problems. The author tries to describe the web services architecture with the incorporation of eLearning that has defined a new way of learning. With the emergence of computer technology and urbane softwares, there is every possibility of enriching learning experience of students. Gamification, StoryBoard, Bring Your Own Device (BYOD), Localization are considered as supporting services for boosting up knowledge management process. Group Discussions, Twitter chats, Skype calls are performed in social learning. Web 2.0 services such as as blogs promote content creation, wikis make user enable of creating editable contents.

Keywords:- Virtual Learning Environment, Web 2.0, knowledge management, ICT, eLearning.

I. INTRODUCTION

A complete set of web-based tools and services, including but not limited to blogs, e-portfolios, virtual worlds, blogs, Social Networking sites,forums, Mashups, wikis, Really Simple Syndication (RSS) feeds, twitter posts, podcasting, and synchronous tools such as Skype calls ,and MOOCS, are now giving learners an opportunity to create their own learning materials that are available online, personal learning environments, and social networks[6]. E-Learning is a process of learning that involves generation of dynamic learning content targeted for learning communities to develop knowledge, a platform for sharing knowledge and delivering content online available anytime ,anywhere. E- Learning involves intensive usage of Information and Communication Technology (ICT) to serve, facilitate, and revolutionize learning process[1-3]. Learning methods include traditional learning “face—to—face”, distance learning “complete asynchronous time and place learning delivery; mainly online”, and blended learning “a unique combination of Instructor led training in the classroom and off the classroom where students learn the content on their own called as self-paced learning ”. Blended learning has the potential to increase student learning inarguably and autonomously while lowering attend rates compared to equivalent fully online courses. [4]

With the development of Internet and Web, information can be shared by web sites around the world. Knowledge can be assimilated as well as disseminated across the boundaries of learning organizations. The objective of any Internet based system is to facilitate information sharing. E-learning is a learning mode of technology enhanced learning based on Web technology.

Need for ELearning(EL) in today’s society:

- Creation of a knowledge based society
E-learning is well suited for developing the skills needed in a knowledge-based society, in particular how to find, evaluate, organize, and apply information relevant to specific work areas. Using technology for learning prepares learners for knowledge-based work.
- Suited for Life Long Learners.
E-learning is particularly suited for life-long learners, those already in the work force, who may already have at least a first degree, who have jobs and families, and/or who do not want to come on campus on a regular basis.
- Effective use of Web 2.0 tools Web 2.0 tools of themselves do not teach or result in effective or meaningful learning—there must be a particular purpose or rationale for their use, and teacher support and guidance in

most cases are still likely to be essential. However, they may be provided in different ways from conventional teaching.

- To provide content 24/7 and 365 days learning Due to the availability of contents online,EL can be made available anywhere.
- Maintain Scalability Can be scaled from 20 participants to 20000 participants with least effort and least cost.

II. ELEMENTS OF EL SOCIETY

Based on the above requirements, among the numerous architectures proposed , one famous framework divides ELearning into three eras,ELearning1.0 in which the first era makes use of direct transfer model where instructor is distributor of learning material. ELearning 2.0 is constructed by wikis, blogs, podcasts and other social web tools. ELearning3.0 is transformed with the emergence of cloud computing ,semantic web, increased data storage capacity, high screen resolutions, multi gesture devices, 3D Touch,3D Avatars ,Artificial Intelligent Systems.[5] The integration of web services with these components can lead the society for the successful implementation of virtual learning environment (VLE) where continuous flow of knowledge can improve the learning environment with the hope to create a ELearning Society.

The components are described as follows:

- Persons(students and teachers) and facilitators

This part highlights on instructors and learners since they establish physical contact. Also, Administrators and personnel with experience in the adaptation of content for EL are vital components of EL society.

- Technical infrastructure and suitable environment

Technical facilities include hardware and software Different interfaces for users (instructors and learners) as major components of EL society. Proper technological infrastructures as well as a good learning environment for learning and teaching are major components of an EL society.

- Media

Technically ELearning course consists of media elements such as audio, video, graphics , animations.

audio—used to deliver the primary content, as with a narrator, or can be used in specific situations, such as an introduction from the president of a company or characters in a scenario.

video—can be used as the primary method of content delivery or to provide additional information for specific teaching points

graphics—include still photography(stock photography or custom), clip-art pictures, illustrations, graphs, or diagrams

animations—include moving graphics; for example, for a course about a manufacturing process, a moving graphic could simulate the flow through the different production departments.

- Collaboration

Collaboration is the activity of learners working together to reach a learning goal. In the classroom, collaboration occurs anytime one learner turns to another and makes a comment, asks a question, or works with someone on a project. In e-learning this might occur in discussion forums or social media sites.

- Feedback or evaluation

An evaluation and/or monitoring system is one of the important components of an EL system to ensure that the system is effective. Progress tracking, including assessment and feedback, etc. are significant components of an EL society.

III. ENRICHING ELEARNING WITH WEB SERVICES

3.1 Technology Trends for Web 3.0

Based upon the above definitions, it is likely that the new generation of web applications will have some specific core technologies to support them. The learning in Web 2.0 highlights the active participation of internet users and interaction among social communities, through *social network tools* or *social software* such with Blog, wiki, social book marking and social networking. The tools & services of Web 3.0 technologies would foster a more open approach to learning. Web 3.0 has been revolutionized with the

integration of advanced graphics (*Scalable Vector Graphics or SVG*) and semantic data. 3-D social networking systems and immersive 3-D internet environments has been given another focus that will take the best of virtual worlds (*such as Second Life*) and gaming environments and merge them with the Web. In the last few years, acquisition of knowledge through learning is benefited from the technological evolution of the web. The explosion of the web has permitted the introduction of new educational processes, which are more flexible for accessing the resources for learning. Now a days Internet is a power house of information and a very good source of knowledge. Advanced search engines or the semantic web has come into picture in order to effectively deal with the huge amount of information on the web. This has given a very good opportunity to retrieve useful and relevant information in audio, video forms for its users [7]. A traditional web engine is not empowered to really understand what the search id and how efficiently it should be done. It simply looks for Web pages that contain the keywords found in your search terms. Search engine does not effectively retrieve the content that is being searched for.

It can only tell that the keyword appears on the Web page. A Web 3.0 Agents based-search engine is created in such a way that it not only understands the keywords in your search, but also interpret the perspective of user request. It would return relevant results and suggest other content related to your search terms. Experts trust that Web 3.0 will provide users with rich user experiences. Experts also believe that with Web 3.0, every user will have a unique internet profile based on that user's browsing history. Web 3.0 will use this outline to adapt itself for the browsing experience and deliver the same to each individual. That means that if two different learners, each performed an internet search with the same keywords using the same service, they would receive different results determined by their individual profiles [8]. Students will also benefit from knowledge construction empowered by the Semantic Web. A Semantic Web Agent based search engine is expected to return a multimedia report in the form of both audio and video content rather than just a list of hits.



Fig.1: Web 3.0 Tools and Services

3.2 Learning with 3D

3D learning is an exciting, developing area of the eLearning Community. With the technology reaching maturity, it's easy to see that it won't be long before 3D learning approaches, including augmented reality, earn a place in the standard suite of online training products. One of the key benefits of 3D learning is the ability to simulate the real practice environment and situation. Training can be replicated using 3D modeling, giving learners the real-deal experience without the repercussions of mistakes. 3D learning allows training content to be blended with a real-world practice environment. Learners could be presented with equipment parts to assemble, learning about each as they virtually touch them, or navigate through an exploded virtual document or process to learn the steps and links. 3D learning allows students to visualize equipment, procedures, and tasks in a unique, practical way.

New gaming trends are leading to innovation developments in collaborative gaming experiences. We are beginning to see the merging of gamification with real social opportunities in an educational context. Gamification is going to be a new era in eLearning which is going to make 3D learning more fun. Because 3D learning is closely related to gaming, it is easy to integrate the mechanics of gamification into the solution so learning can be facilitated in a competitive virtual environment or driven by achievement through reward

earning. Gamification strategies can significantly increase learner engagement and motivation and help future-proof training to increase the return on investment.

3.3 Online 3 -D Labs bringing Virtual Reality / Informative labs / Simulations or 3D Web:

Powerful 3D labs can bring simulations so that students could feel the internal anatomy in an exciting way. Network applets are experimental devices that can be carried here and there particularly in science experiments. Virtual labs simulate the operating system, computer screen that promotes technical interaction and direct manipulation of objects. Virtual Reality labs are still more interactive and users become the participants in a virtually real world in an artificial 3dimensional environment. 3D rich Graphical User Interfaces (GUIs) act as a powerful platform for the users to participate. Learners can perform collaborative activities, sharing results and exchanging media information among participants in a more natural way [12]. Virtual Labs/Educational labs/Simulations or 3D Web based applications that will shape future education:

- To see the internal anatomy which is not possible in real world sometimes.
- To promote student teamwork and make them participate in collaborative activities.
- To promote assessment through Project Based Learning
- To develop scenarios and simulations for the real world.

Wiki is a collaborative tool that allows many people to create and edit online documents without programming knowledge. Many different formats of wiki can be entrenched into wiki such as text, images, audio, RSS feeds. The person creating a wiki can even set a password for restricting the content that can be posted on the wiki. As wikis help in collaboration they can be integrated in workgroup, branch, division or organization to safeguard knowledge contents/ digital resources in case of human capital flight. and its usage is also seen in the development of content. Forums allow for asynchronous communication between number of users. Because of this asynchronous nature of all knowledge being stored at one place, this can be used by the users at any point of time and at anywhere. (Abel et al., 2010) [9]. Integration of forum into EL system can help in knowledge sharing, Q&A sessions, Information sharing and to collect feedback and accordingly evaluation can be done. Individuals can stay connected with each other through online communities like social networking sites and they can share their personal views, hobbies, etc. Social networking is an online platform and can be defined as a social utility that connects people with each other who work, study, and live around them (Lee, 2011) [10]. Professional social networking community can help the learners to enhance knowledge and clarify doubts by identifying experts outside their community. Also the content developers and instructors can collaborate with subject matter experts to improve the quality of teaching content development respectively.

Web 3.0 is regarded as the intelligent web which gives a sea change in education by using smart interfaces. It uses all the technologies of web 2.0 along with its additional services. The web 2.0 technologies are capable of generating large amount of data, but they are all not utilized properly. AI techniques can be used to extract the patterns in the large amount of data and its use. To retrieve course content and knowledge/digital content can big data technique can be used. The data generated by web2.0 is in free-form with different forms. Thus, they cannot be linked, processed and utilized. Berners-Lee developed linked data for publishing content and connecting datasets on web.

Thus, linked data can also help in knowledge sharing. Huge infrastructure is very much essential to process and analyse large set of data produced by web. Cloud computing services can be in technological infrastructure without purchasing the software/hardware by reducing financial burden. Cloud Computing offer a powerful solution in term of infrastructure, software and platform by offering services at a cheaper cost. It is another solution that is offered to eLearning The EL system can be adaptable one with the successful incorporation of web services that can be accessed anywhere. The proposed EL system is supposed to create more interactive Virtual Learning Environment with this integration. The EL framework integrated with web services is given in figure 2.

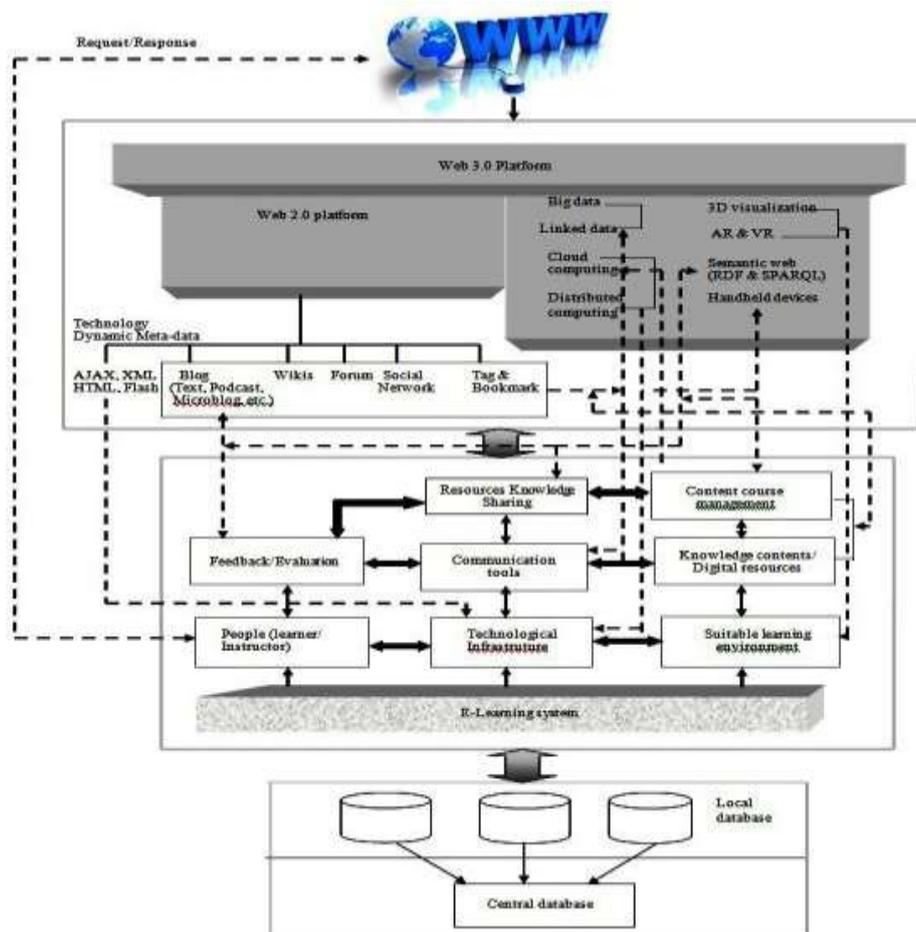


Fig. 2. Integration of web services with e-learning.

IV. CONCLUSION

The biggest educational challenge faced by educators now-a-days is not only helping the learners to gain a comprehensive understanding and acquire desired knowledge but also make the student learn how to succeed innovatively that contributes a lot to the society. Recent changes in higher education made the students to go through self- paced learning, asynchronous virtual classroom and is making educators to find the best way in integrating technology in fulfilling curriculum requirements. [11]Enriching ELearning with webservices gives a new path to EL society by making learner as potential content producer. As such this integration should synthesize new ways of sharing knowledge, transforming information and explore new ways to learn irrespective of barriers in geographic location, and form a knowledge society thus fulfilling the requirements of learner to a maximum extent.

REFERENCES

- [1]. Zongmin Ma, "Web –based Intelligent E-Learning :Technologies and Applications",Information Science Publishing,2006
- [2]. William Horton, Catherine Horton , "E-Learning Tools and Technologies", Wiley Publishing Inc., 2003.
- [3]. Michael Graham Moore , "Handbook of Distance Education ",Lawrence Erlbaum Associates , 2003.
- [4]. Charles D.Dzibuan, Joel L.Hartman, Patsy D.Moskal, "Blended Learning", Vol 2004, Issue 7, Educase Connect ,2004.

- [5]. Dr. Fehmida Hussain(2013) “E-Learning 3.0 = E-Learning 2.0 + Web 3.0?” IOSR Journal of Research & Method in Education (IOSR-JRME) e-ISSN: 2320–7388, Volume3,Issue3 PP 39-47
- [6]. Lee,M.J.W.Ms Loughlin,c(2011): “Web 2.0 –Based E-Learning “Applying Social informatics for Tertiary Teaching”, In Information Science Reference ,”<http://www.igi-global.com> ,pp21-42.
- [7]. S. A. Inamdar and G.N.Shinde “Intelligence Based Search EngineSystem for Web Mining, Reasearch, Refelctions and Innovations in Integrating ICT in Education”,2009.
- [8]. Strickland, Jonathan,”How web 3.0 will work”, <http://computer.howstuffworks.com/web-30.htm> Abel, F., Bittencourt, I.I., Costa, E., Henze, N., Krause, D., and Vassileva, J (2010): “Recommendations in Online Discussion Forums for E-Learning Systems”, IEEE Transactions ON LEARNING TECHNOLOGIES, Vol. 3, No. 2, pp 165-176.
- [9]. Kurubacak, G. (2011): “eLearning for Pluralism: The Culture of eLearning in Building a Knowledge Society”, International Jl. on E-Learning 10 (2), 145-167.
- [10]. Mark Stevens “21st-Century Learner Create! Communicate! Collaborate! <http://www.nea.org/home/>
- [11]. Oblinger, J. L. (2005). Is it age for IT: First steps Towards Understanding the Net Generation. Educating the Net Generation, 2.1- 1.5. Retrieved from <http://www.educause.edu/ir/library/pdf/pub7101b.pdf>