

## Data Mining in the Context of E-Learning and ICT

Mrs. Jyoti Upadhyay<sup>1</sup>, Dr. Pratima Gautam<sup>2</sup>  
Research Scholar (Ph.D.)<sup>1</sup>, Dean of IT<sup>2</sup>  
AISECT UNIVERSITY, Bhopal(M.P.)  
Email: upadhyaya.jyoti@gmail.com<sup>1</sup>

**Abstract-** Relationship between ICT and e-learning shows big benefits for education, especially in higher education. We cannot ignore technology and technical skills in higher education field, even when we are overtaken technical education. Now a days we can take great advantages of Information and communication Technology (ICT) in every sector of education like Teaching and learning process, curriculum development, student progress etc. Using Data mining we can identify problem in growth of e-learning in India. Using this paper we are trying to highlight problems in e-learning to grow in some areas and how it can be solve using ICT.

**Keywords:** e-learning, ICT, Data mining.

### 1. INTRODUCTION

Whenever we use electronic media in information and communication technology it becomes E-learning. E-learning has lots of synonyms with internet based training (IBT), Web based training(WBT),Technology enhanced training (TEL),Online education, Virtual education etc. Internet plays a meaningful Role in e-learning. It provide many learning content, training program, research activities. Through e-learning in higher education an educated organization may implement interesting opportunities.ICT and e-learning policies are largely a reaction to the change that technology has already had an economics and society. One expectation is that ICT will have similar effect on education and training.

Since 2003 a new wave of web based application which now go under the name of web2.0,have been launched with very little investment. These application rely on the concept of the user as a producer of content (blog,wiki,flicker), of taste/emotion(last fm, de.li.cious), of contacts (my space) ,and of reputation/feedback (e Bay Tripadvisor). Overall .web 2.0 is already used in many areas of government activity ,often without the authorization or even the knowledge of governmental institution [1].These application makes ICT more powerful in term of e-learning because disseminating educational tender for purpose of learning was achieve prior to web 2.0. However it is only subsequent to web 2.0,the online learning space become perceptive and interactive.[9].Through this paper we are trying to search out role played by data mining in e-learning with ICT. ICT and e-learning is more beneficial with ICT skills.

### 2. WHAT IS EXACTLY E-LEARNING?

Laurillard (2006) has been defined e-learning as the use of the new technologies or application in the services of learning or learner support and it has been considered as operational definition of e-learning. Clark and Mayer in[3] define e-learning as training delivered on a digital device such as a smart phone or a laptop that is designed to support individual learning or achieve organizational goals. We can define electronic learning in many different ways. Some definitions are very limited like limiting e-learning to content delivery via the Internet (Jones,2003). When we say education or learning through ICT then definition of e-learning become "The use of Internet , Intranet/extranet, audio and video tape ,satellite, broadcast, interactive T.V., projector, DLP, not only for content delivery but also interaction among participants . Four phases are conducted to implement ICTs or E-learning content in the class room which are 1) ICTs literacy; 2) Effective and efficient use of ICTs hardware and Software for teaching learning activities 3)Pedagogy based ICTs use (Integration of ICTs in subject content ,teaching ,online support, networking and management),and 4)Adapt best innovative practices in the use of ICTs(Singh and Dhaiya,2007).

### 3. KNOWLEDGE DISCOVERY IN E-LEARNING THROUGH DATA MINING (EDM)

E-learning has many multi disciplinary aspects. Figure 1 shows how many fields of education can be interact with e-learning.

Our focus will be on knowledge management. Generic and specific tools of e-learning infrastructure record all the user and system activity in the form of logs. Using these logs, the tools and software provide detailed inputs with respect to the user. Whereas web based educational system collect large amount of data,

illustrate the various associated field in the EDM.

#### 4. E-LEARNING IN INDIA

Educational Data mining has emerged as an independent research area from 2008. Method used in

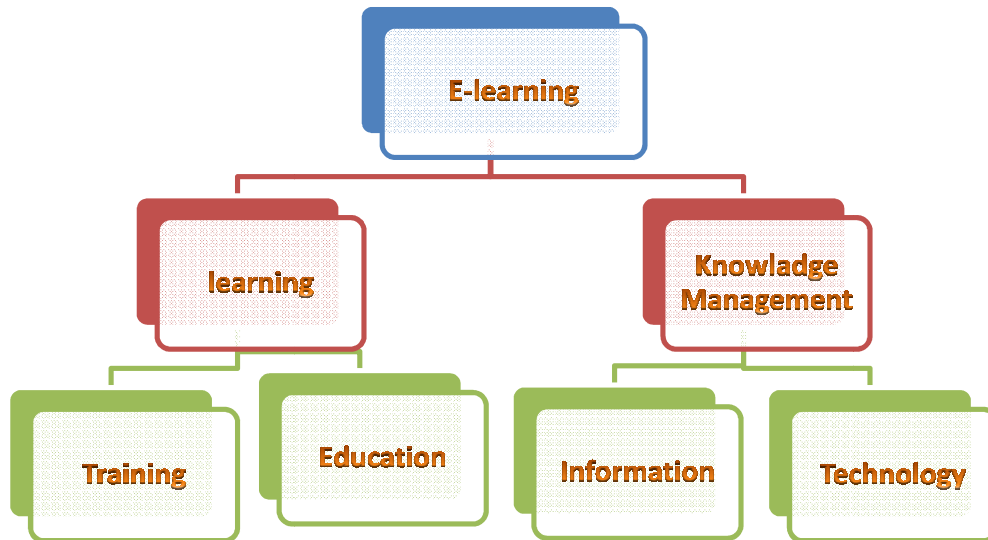


Figure 1 Various Fields in e-learning

from web log. These data can be mine in more collective way just as a instructor can also learn more about learning and improve practice by studying a group of students.

Data Mining also called knowledge discovery in Database (KDD). Mined knowledge from educational field is referred as Educational Data Mining (EDM). The mined knowledge can give a better insight, facilitate and enhance the educational process and the learning a whole [10]. Figure 2

EDM often differ from methods from the broader data mining literature. Method from psychology metrics literature is often integrated with methods from the machine learning and data mining literature to achieve this goal. For Example in mining data about how students choose to use educational software it may be worthwhile to simultaneously consider data at the keystroke level, classroom level, and school level [Rayan Baker,2007]. It can be said that e-learning enable us to achieve the objective and to bring about the all around development.

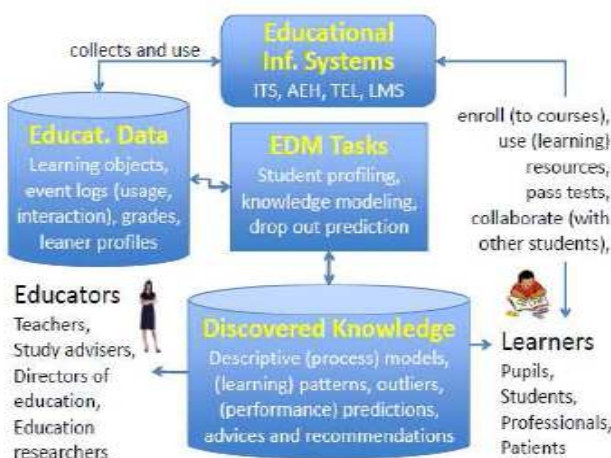


Figure 2 various associated field in the EDM

According to latest report of MHRD in India there are 642 universities, 34908, colleges and 11356 stand alone institutions. There are 83 technical, 33 agriculture, 27 Medical, 17 law and 10 veterinary university.

Indian Education system is basically composed of university and colleges. As of now the Teaching Learning process in India class room model oriented. All these may be replaced with audio-video aid. Maximum candidates and teacher find it less comfortable with ICT resources because of their perception of atmosphere and the unsatisfied learning experience, although it is not true in all circumstances. Many organizations like ICAI, ICST, ICWAI, ICFAI and others have developed the successful distance learning courses and modules.

Some Universities like IGNOU,SMU, PTU, Annamali directorate of distance education in e-learning mode. In well facilitate learning environment through technology students become excited about what they are learning aware that they are member of a global community (Berge, 1991).

## 5. CONCLUSION:

India facing a lot challenges in higher education. E-learning may become answer of all those challenges. In e-learning there are many open research challenges that exist in this domain. Using ICT specialist, educationists and learner's joint ventures Data mining techniques can deploy in e-learning system. E-Learning and various ICT tools have the real potential to transform teaching and learning that threatens the existing ways of teaching and learning and the ways higher education institutions are organized and managed. Transformation of teaching and learning through the use of ICT has to be done through many resources: the government, academic organization, each institution, each department, each faculty member, and each student. India has been good at improving qualities of products and services. Now is the time to realize disruptive technologies of teaching and learning and make efforts to transform it to adapt to them. Otherwise, it is difficult to provide quality education for the future.

## REFERENCES

- [1] Osimo, D., (2008). Web 2.0 in Government: Why and How? *JRC Scientific and Technical Reports*, EUR 23358 EN
- [2] Arruabarrena, R., Perez, T.A.,Lopez-Cuadrado, J., and Vadillo, J.G.J.(2002). On evaluating adaptive systems for education. *Adaptive Hypermedia*(pp. 363-367).
- [3] Clark, R. C. & Mayer, R. E., (2011). e-learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning, 3rd ed. Pfeiffer, San Francisco
- [4] Baker. R. J. D. F., & Yacef. K.,(2009). *The state of educational data mining in 2009: A review and future visions*, J. Educational Data Mining, vol. 1, no. 1, pp. 3–17.
- [5] Baker,R.J.D.F.,( 2010). *Data Mining*, In: Editors-in-Chief: Penelope Peterson, Eva Baker and Barry McGaw, Editor(s)-in-Chief, International Encyclopaedia of Education, 3rd ed, Elsevier, Oxford, pp 112-118.
- [6] Barahate. S. R., (2012). Article: Educational Data Mining as a Trend of Data Mining in Educational System. *IJCA Proceedings on International Conference and workshop on Emerging Trends in Technology (ICWET 2012)* icwet(9):11-16, March 2012.
- [7] Bedi, K., Milic, M., Stedul, I.,(2012). *Information society and e-learning*. MIPRO, 2012 Proceedings of the 35th International Convention , pp.1249-1253, 21-25 May 2012
- [8] Bienkowski, M.,Feng, M.,Means, B.,(2012), Enhancing Teaching and Learning Through Educational Data Mining and Learning Analytics: An Issue Brief, *Office of Educational Technology, US Department of Education*.
- [9] Greenhow, C., Robelia, B., & Hughes, J. (2009). Learning, teaching, and scholarship in a digital age: Web2.0 and classroom research: What path should we take now? *Educational Researcher*, 38, 246–259.
- [10] Calders,T., Pechenizkiy,M.,(2012). Introduction to The Special Section on Educational Data Mining, *ACM SIGKDD Explorations Newsletter*.
- [11] Castro, F., Vellido, A., Nebot, A. Mugica,
- [12] Ennew, C.T., Young, A.F. (2006), “Weapons of mass instruction? The rhetoric and reality of online learning.”, *Marketing Intelligence and Planning*,Emerald Group Publishing Ltd. , Vol. 24, No. 2,pp 148-157.
- [13] Falowo, R.O. (2007), “Factors Impeding Implementation of Web-Based Distance Learning” *AACE Journal*, 15(3), pp 315-338.
- [14] Galusha, J.M. (1997, December). Barriers to learning in distance education. *Interpersonal Computing and Technology: An Electronic Journal for the 21st Century*, 5(3-4), 6-14.Retrieved November 25, 2007,
- [15] Greenberg, G. (1998, Winter). Distance education technologies: Best practices for K-12 settings.