



Use of Cloud Computing for E-Learning Initiative

NIYATI B. SHAH

Research Scholar,

Department of Library and Information Science,
Hemchandracharya North Gujarat University, Patan
(M) 9909913285

DR. VAIDEHI C. PANDYA

Research Guide & Visiting Lecturer

Department of Library and Information Science,
Hemchandracharya North Gujarat University, Patan

Abstract:

The recent development in the ICT has influenced in the field of education is recognized as e-learning. E-Learning provides anytime, anywhere and any device learning. The rapid popularity of E-learning is gradually increasing due to latest development in Cloud computing based E-learning system. Cloud computing is becoming an adoptable technology with its dynamic scalability and usage of virtualized resources as a service through the Internet. E-Learning system requires software and huge hardware resources that are not affordable to many organizations. Cloud Computing is the best solution for such situation. In this paper the author has discuss that how the cloud computing is useful in E-Learning.

Keywords: *E-Learning, Cloud Computing, Virtual Classroom etc.*

1. Introduction

E-learning is can be defined as Internet based learning in general. Modern technological advancement and Innovation has led to the development of E-learning. E-learning is a recent development and is a wonderful gift to the mankind. Information technology acted as a blessing in giving a new shape to the modern learning process. E-learning incorporates all educational activities that are carried out by individuals or groups working either online or offline, synchronously or asynchronously via Networked or standalone computers and other electronic devices. Many universities and institutes worldwide are using e-learning methodologies; one of the most popular examples is MIT.

The innovation and advancement in education is mandatory, leading to the development of the e-learning. As the need for modern education is increasing constantly, so, the e-learning systems need to keep pace with the latest technology.

There is no doubt that the future belongs to the web 3.0 (also called the intelligent web).The advancement in technology supports the creation of modern applications that can run on a wide range of hardware devices, like mobiles or PDAS, While storing their data inside the clouds.

2. Cloud computing

Cloud Computing, commonly referred as “the cloud” is the delivery of on demand computing resources—everything from applications to data centers—over the Internet on a pay-for-use basis. Cloud computing allows users to use applications without installation and access their personal files at any computer with

internet access. This technology allows for much more efficient computing by centralizing data storage, processing and bandwidth. The NIST (National Institute of Standards and Technology) definition lists five essential characteristics of cloud computing: on-demand self-service, broad network access, resource pooling, rapid elasticity or expansion, and measured service. It also lists three "service models" (software, platform and infrastructure), and four "deployment models" (private, community, public and hybrid) that together categorize ways to deliver cloud services.

3. E-Learning

E-learning system grows at an exponential rate with the huge growth of number of students, educational contents, services offered and resources made available. E-learning faces the challenges of meeting storage and communication requirements, maximizing resource computation dealing with the necessity of the use of a platform that meets scalable demands and cost control. This environment is called cloud computing-learning is the combination of online learning with fact to instruction net work learning. (Web-based resources) Applications of Cloud Computing in E-learning

4. Virtual Classroom

A virtual classroom is an online classroom that provides facility for student to communicate with each another, view presentations or videos, interact with other participants and engage with resources in work groups. The Faculty can deliver interactive Lecture. Students can participate live during the course of the session from a remote site.

5. Mobile based learning

The easy affordability and availability of mobile has created space for mobile based learning. Mobile learning is efficient for students. With increasing transportation time between their home and college, students can take advantage of the time they have to wait at bus or railway station, it provides ubiquitous learning.

E-learning with Mobile technology has given some more ways to increase the quality of teaching and learning at all levels. It covers up tablets, mobile phones and smart phones which support easy and fast communication between students and teachers for interactive learning. iPads is also a very important organizational tools cum storage tools for reading lecturer notes, materials and emails which can be access ubiquitously.

Recently a study conducted for students in Kentucky and Tennessee in the United States to examine pre-service teachers' acceptance of M-learning by O'Bannon and Thomas (2015), in that study half of student support use of mobile for educational instructional purpose. However laptop is more powerful tools that support learning is examine by Sad & Goktas-2014.

6. Blogs

A blog created for educational purpose is called an edublog. Edublogs support student and teacher learning by facilitating reflection, questioning by self and others, collaboration. Now days the use of blogs has become popular in education institutions including colleges as well as schools also. It can be useful tools for sharing information and tips for students and keeping in contact with parents.

7. Facebook

Facebook is also an ideal media to share education videos to collaborate student. However educator and researcher are in two minds whether social media like Face book has little educational value and does not

serve any academic purpose. In the worst-case scenario, Face book could even impact negatively on individual performance.

8. Whats App

Now a day's Whats App is most using service in social media. It is a my favorite way of communication between students and all other. In our college we create a group of each class and communicate with them and share meaning full information. More than 1.5 billion people in over 180 countries use Whats App to stay in touch with friends and family, anytime and anywhere (www.whatsapp.com).Whats App enable student a facility to exchange messages, images, audio or video [7].

9. V R based learning

Education and technology are interconnected. Today's more and more students want in a part-time or distance education to continue their education, VR has attracted considerable attention in learning, training and traditional education. VR based learning provide operators to bring together all disciplinary resources in a common playground. The VR base multimedia platform has productively demonstrated great potential of education and training.

10. Simulation

Simulation is a method for practice and learning that can be applied to many different disciplines and trainees. This method is highly interactive and relies upon audio, video, graphics. There are such custom simulations games or video which could very good include 3D components.

11. Advantages of E-learning

Flexible: E-learning is flexible in terms of time, location and can be completed at a pace of the learner. Also, learner can choose his choice of learning materials using his mobile. This is known as M learning.

Time and money saver: E-learning saves the time of the learner as it eliminates the need to travel and also the need for classroom-based learning is not required.

Instant feedback: E-learning provides instant feedback to your answers/solution.

Improved computer skills: E-learning benefits the learner by enhancing the learner's computer skills, especially for those learners who are not accustomed to use it regularly.

Scalable learning: E-learning is nimble as it is able to quickly create and communicate new policies, innovations, ideas, concepts and training, whether it's for entertainment, or formal education.

Easy for learners: These are no age-based restrictions as learner can work at their own place and learn it.

Effective communication: E-learning advantage is that expert knowledge is not only communicated but also captured.

12. Challenges in cloud based e-learning

Security and privacy: Security and privacy is the major challenge of cloud computing system. The security is threatened even if one site is attacked. This threat can be diminished by using encrypted file systems, security application and security hardware to track unusual attack across the servers worldwide.

-Location data of Enterprises are unaware of whereabouts of the location of cloud servers, from technical point of view; location of data has become a critical issue for data governance requirements.

Expensive to use: Cloud- based data are very expensive to maintain as clients need to spend more for the land width in order to deliver intensive and complex data over the network, though they can save money on hardware.

No guarantee: Business/enterprises are reluctant to suite over cloud without firm guarantees of quality. The service level agreements of the cloud service president are inadequate to guarantee the availability and scalability of it.

13. Cloud computing for e-learning

Cloud computing is very important for e-learning as there are many benefits of it such as

- There is no need to keep a back up of everything on a thumb drive and transferring it from one device to another.
- As long as students want to keep information with them, repository of information can be created.
- It gives students freedom of place which means a student can work from multiple places (like home, work, library.etc)
- Students can also find their files and edit them through the cloud.
- Cloud computing makes browser –based applications easily accessible through various devices (mobiles, laptop and desktop computer) if internet connection is available.
- Cloud computing allows users to dynamically scale as demands fluctuate. Scale infrastructure to maximize investments.
- With cloud computing, data is always safe. It is almost impossible for any person to find the machines location which stores wanted data (eg; tests, exam question, and results.etc) or to find out the physical device which he needs to steal in order to get a digital asset.
- Virtualization: Makes possible the rapid replacement of a compromised cloud located server without major costs or damages. It is very easy to create a clone of a virtual machine so the cloud downtime is expected to be reduced substantially.
- Centralized data storage: Cloud computing gives the security of data, application stored in it. There is no loss of data into the cloud so a new client is connected very fast. It makes the client safe and secure of his data and application not to be stolen.
- Effective Monitoring of data: Monitoring of data becomes easier as only one place need to be monitored instead of thousands of computers spread over a large area.

The cloud provides a unique entry point for all the clients, so the security changes can be easily tested and implemented.

- It is easy to access through web and can be operated from anywhere.
- Hence there is no need for clients' side software.
- Easy on pocket, cost effective, user can pay by subscription based on his usage.
- Many educational institutions, offices can be supported and all subscriber data is held by 'saas' server.
- Cloud computing frees the client from the stress of backing up data or from crash recovery of data.

14. Benefits of cloud computing in E-learning system

- Virtualization: It is the most important feature of cloud computing. It makes possible the rapid replacement of a cloud located server without causing any major damage of costs. Application deployment, environment and physical platform are all expensed, managed, migrated and backup through virtualization.
- Convenient and continuous availability: Cloud computing benefits the users to continuously access the information from anywhere irrespective of the time zone, it gives the freedom of work, place and time.
- Cost effective: It is the most important benefit of cloud computing. As it eliminates the uses to invest in stand-alone software and servers, which make it cost effective. It is available at cheaper rates than stand alone software.
- There is no limit to its storage capacity as it can store ample of data.
- It provides resiliency and redundancy to its users.
- There is no burden on the customer for update of software .As It is taken care by the cloud provider with no extra cost to the user.

- Cloud providers are more concern about the safety and security of users data and are always discovering new solutions day by day
- Environment Friendly: Cloud infrastructure provides two important aspects to create the computing in a greener approach. They are resource and energy efficient.
- It helps to create a balance in nature by reducing carbon emissions and energy consumption.
- The main agenda of cloud infrastructure is to make computing greener irrespective of public, private or service cloud.
- Benefits to students: With clouds computing, students or users are mostly benefited as everything became online .Now, students are able to take online courses, online exams, submission of assignments and also projects online. It enables the students to acquire the needed information about the different courses from the teachers via online.
- Benefits to teachers/Instructors: Not only students are benefitted by cloud computing but also it is advantageous for teachers/instructors. Teachers can work online and prepare course contents, resources through content management systems.
- Teachers can also prepare online tests, access the submitted projects or assignments and can communicate the results/feedback to students.

Thus, cloud computing enable the users to work free from anywhere, it is easy to access and also environment friendly with unlimited storage, cost effective in comparison to standalone software-and servers.

15. Disadvantages

Though E-learning system offers many advantages over in-person training, but it also has some limitations (Disadvantages).

- E-learning systems are weak on scalability at the infrastructure level.
- The cost and resource management prove to be expensive when receiving high workload as the system need to add and configure new resources of the same type required.

16. Conclusion

Cloud computing is an effective model from education perspective. Learners can have the opportunity to gain rapid and economical access to various applications and resources. Cloud computing reduces the organizational expenses like software license cost, hardware costs and maintenance costs. In this paper, cloud based e-learning and its advantages and disadvantages have been discussed. The e-learning system cannot completely replace instructors but it is only a usage of technology to deliver lectures, giving new contents, concepts and method for education, so that the role of instructor cannot be replaced.

References

1. Buyya, Vecchiola, Selvi, (2013). Mastering Cloud Computing, McGraw Hill Education (India) Pvt. Ltd.
2. Dong, Bo et al., (2009). "An E-learning Ecosystem Based on Cloud computing Infrastructure". Ninth IEEE International Conference on Advanced Learning Technologies.
3. Ghazal, Riahi, (2015). E-learning Systems Based on Cloud Computing: A Review, Elsevier
4. Rao, M.N. (2015). Cloud Computing, PHI Learning Pvt. Ltd.
5. Zhu, Chengyun, (2010). "Cloud Security: The security risks of Cloud computing, models and strategies", Programmer, May. pp.71-73.