Benefits of Using Cloud Computing in Education Field

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Abstract

In the last twenty years, Information Technology has become a part of everyday life. Things like paying bills, booking tickets, chatting, video conferencing and many more works have became easy due to advancement of Information Technology. Many innovations made an impact on our life. Internet is one thing that has changed our life entirely. It has spread so rapidly in each sector that it is impossible to imagine a sector without Information Technology. Best examples will be Banking and State or Central Government.

With the new development in technology, education in particular has seen a transformation from classroom to virtual classroom. Thanks to Cloud computing, it became an asset in teaching learning process.

This paper is about cloud computing and benefits of cloud computing in the education field.

Keywords: Education, Cloud Computing, Technology, IaSS, PaSS, SaSS, FaSS

Introduction

In recent years IT field has kept evolving, many technologies and innovations were born and phased out over a period of time. Cloud computing is one of the new trends in computing, which became popular. Reason behind its popularity was its flexibility of accessing storage data over Internet from any geographical location. In twenty-first century education is heavily dependent on technology. Gone are the days when students had to attend classes with textbooks and notebooks. Things changed to introduction of Internet and e-learning. This technology has enabled students to do various activates like accessing syllabus, take admission, enroll to a certain course, access e-books, submit assignments and many more things became easy. To access any information students only need a basic computer literacy.

Due to high pace in technology, all computing devices are getting faster, smarter, smaller and powerful in computing power. This can be blessing to individual but could be financial burden to educational institutions. As every few years there is continuous up gradation of hardware and software which is costly matter, even maintenance is also carries sensible cost. To overcome this, cloud computing is a better alternative. Many universities and schools are shifting to cloud computing. Cloud helps user to access cloud platform and applications off campus or in campus depending upon institutional approach. One of the reasons it became so popular, is due to reasonable pricing. Cloud computing is helping to reduce infrastructure cost; it is helping to create online educational courses at affordable pricing. Thus, this affordable online education is helping economically divided community get education, thus helping to build educated community and nation.

Dispersion of higher education in all areasin increasing all over the world at a very fast step. With increase in number of institutions offering higher education, challenged by growing needs, universities are facing problems in providing necessary information technology (IT) support for educational, research and development activities. The step in which education sector is moving ahead

there is a need of cloud computing. Some of the organizations of higher education, such as universities and colleges, are the fundamental of innovation over their advanced research and development. (Tilak, 2020)

What is Cloud Computing?

Cloud computing can be simply defined as a way of storing and accessing data and programs over the Internet instead of on your computer's hard drive.

Amazon defines "Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing. Instead of buying, owning, and maintaining physical data centres and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider."

Microsoft defines" Simply put, cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet ("the cloud") to offer faster innovation, flexible resources, and economies of scale. You typically pay only for cloud services you use, helping lower your operating costs, run your infrastructure more efficiently and scale as your business needs change"

The cloud is basically a server that has database and software running on it. They are located at data centers all over the world. By using cloud computing, business or individuals don't have to manage physical servers, run software on their machine.

This cloud helps user to access files, applications from device, such as ~~Example~~ Google Drive, Dropbox. While we can share photos, videos and important documents.

For business to switch to cloud computing gives tremendous advantage, where they can save money on IT infrastructure. In simple term they don't have to worry about software updates and hardware up gradation.

The key element of cloud computing is virtualization, where buyer can create a virtual machine, which will act as a physical computer with your demanded configuration. Virtual machines do not interact with each other, so files and application running on one virtual machine are off the limit from other virtual machine, even though both are present on the same physical machine.

Cloud servers are always online and available 24×7. As vendors backup their services on multiple machines across multiple regions of the world (NR2)

Types of Models in Cloud computing Cloud flare

1. Software-as-a-Service (SaaS): In this model software (applications) are hosted on cloud servers. Thus eliminating the need to host software on local servers. This way SaaS reduces maintenance and service cost. Google Document is one example of this type

2. Infrastructure-as-a-Service (IaaS): This model helps move the organizations data centre to cloud. This service provider maintains all storage servers and networking hardware. Examples of IaaS are Digital Ocean, Google Compute Engine, and OpenStack.

3. Platform-as-a-Service (PaaS): This model is used by developer, where he rents things to built application. This model provides development tools, infrastructure, and operating systems. It helps to simplify web development application. PaaS examples include Heroku and Microsoft Azure.

4. Function-as-a-Service (FaaS): This model is also known as server less computing. As cloud applications are broken down in smaller components that only run when they are needed. It is called "server less" because it doesn't run on dedicated servers. But FaaS still runs on Cloud. Examples are Amazon Lambada, Microsoft Azure Function.

Benefits of Technology in education

Education sector is benefited by technology. Cloud has helped access to educational resources at lowest cost. Especially internet and digital media have transformed educational sector.

New Technology has many advantages. Technology makes learning process interesting to students. There is a huge potential to start online educational courses. Currently, government of India in investing Rs.one lakh crore in initiative called as RISE (Revitalizing Infrastructure and Systems in Education) which has a precise focus on Artificial Intelligence (AI), Virtual Reality (VR) and Cloud Computing use in Education Sector.

Cloud Computing along with other technologies can help bridge the gap of issues that are been faced by education sector.

Following some issues face by the educational sector

a. Quality: Major issue with our educational system is it lacks in quality of education, Syllabus and education courses are not updated as per global demand. NASSCOM estimate that by 2022 9% of Indian workforce will be engaged in jobs that don't exist today.

Hence, cloud computing can be used to create and deliver a stereotype courses from one place to multiple classroom. Cloud infrastructure will handle large data, analysis of this data will be part of teacher that will help in quality improvement.

b. Reach: In many countries which are economically backward, education is like day dreaming, due to lack of educational institution, infrastructure and higher fees. Cloud can help deal both issues. Remote classrooms can help running multiple classrooms with minimum teachers. Cloud can also help establish connection between teachers and students. This way with the help of cloud, educational institutes will reach thousands of students across the country.

c. Channelize Administration Work: Teachers, Faculties across the world has various administrative works besides teaching. Cloud can help flatten administrative duties. Having a CRM system on cloud can help handle students details, grades, and academic performance. It will help faculties and teachers greatly and, they can focus on main activity of teaching. Using Business Intelligence class analysis and student evaluation will be easy.

Benefits of Cloud Computing

1. Virtual Class Room: Universities or educational institutes are able to create virtual classroom with the help of cloud based software. This reduces the infrastructure coast, faculties can create online courses. This can be access by students from any place. It can also be used as to give a virtual exam by the students. This is definitely a time and cost saver solution for students.

2. Ease of Accessibility: One Major advantage of using cloud computing is course content, data, files, applications etc. can easily be accessed anytime anywhere. There is no time and distance barrier while accessing the course content. Content being available on cloud, one has the freedom to view the content using mobile device. This becomes a major help to students who can view it while commuting.

3. Cost-Saver: Educational institutions and students both can be benefited due to cloud service providers low pricing. Students can save money by using learning resources online, while educational organizations will be happy as Infrastructure-as-a-Service (IaaS) model is helping them to reduce financial burden by reducing IT Infrastructure building cost.

4. Secure Data Storage: Cloud computing provides secure data storage. Data encryption method is used while there is exchange or transfer taking place. Thus, all the educational contents remains integrated without getting compromised.

5. Scalability: It is one of the key features of cloud computing. It helps to create flexible infrastructure, customizable to organizational requirement. A scalable system is able to scale up and scale down its resources, functionality, and performance according to user's need. Thus, it can help universities when there is a usage peak like by scaling up requirement at the time of admission, and assignment submission. This way there will be check on wastage of resources.

6. Greater Extent: Cloud computing has provided students with new way of online education. This opens a whole new world to students. This gives students opportunity to learn course online, particularly the courses that are not available at their location. In this way students can have entire freedom to gain knowledge without crossing the border. Virtual class rooms are also helping many professionals who are not able to upgrade knowledge by attending conventional class room program.

It also gives educational institution golden opportunity to expand horizon by creating online courses and material and put it on a cloud. This act will help many knowledge seekers.
University becomes a beneficiary of Cloud computing.
There are two types of universities physical and online. For example, California Virtual University (online), and any state university (physical).

Reasons for universities to adopt cloud technology are as follows:

a. Virtual Class rooms: Help faculties to take face to face lectures of distant students.

b. Textbooks: University can provide e-books. This has many advantages. First, this helps university

get rid of printed books, saving printing cost. Any changes in subject syllabus are made easy to modify and upload in short time.

c. Cloud Storage and Application: Students are encouraged using Google Drive or drop box to store their personal files, thus freeing local machine of massive data storage. Use of cloud applications like word processor, and spreadsheet helps university in having essential soft wares on local machine.

d. Virtual Labs: This provides interactive instructor driven session in online labs. These sessions can be accessed anytime, anywhere by anyone.

Conclusions

Cloud computing is a blessing in the twenty-first century. It will keep evolving, new model will get evolved. New technologies will be formed on similar line. In the near future all the applications and functionalities will be web based. Artificial Intelligence, Virtual Reality, and Cloud Computing are creating a road map of coming years. Educational institutes should take maximum benefit of this technology. In the current situation it is essential that university should provide alternative solution for students. In case of any calamities, when there is a lockdown, cloud computing will be the last hope that will keep things moving and bridge the gap between information or knowledge and knowledge seeker.

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