

Use of Cloud Computing In Education Sector

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ARTICLE DETAILS

Article History

Published Online: 10 January 2019

Keywords

Cloud computing, Education

ABSTRACT

Education is fundamental to growth and development. It is highly important in today's life. It helps to motivate mind and shape it. Many Academic Institutes are exploring new technologies for effective teaching and learning Methodology. One of the emerging technologies Cloud Computing can be very useful in teaching learning process as Cloud computing provides a variety of services. This paper focuses on basic introduction of cloud Computing and how cloud computing can be introduced in the education to improve teaching and learning methodology.

1. Introduction

Cloud computing it's a type Internet based computing which provides you shared processing resources and data to systems and other devices on respective demand. A network of large computers that form the cloud handles the storage and function of a program that would otherwise create a heavy workload for a smaller computer. The goal of cloud computing is to allow users to take benefit from all of these technologies, without the need for deep knowledge about or expertise with each one of them. In the last couple of years "cloud computing" has increasingly been discussed. This is a relatively new trend of IT industry development, focused on users, and driven by the increasing use of various mobile devices such as laptops, tablet PCs and smartphones. European governments and industry plan to invest 45 billion euros in the development of cloud computing by the year 2020[1].

2. Types of cloud computing

Cloud computing is delivered through one of three basic service models with progressively increasing levels of service offered to end users. Infrastructure as a Service (IaaS) provides users with a basic computing infrastructure on which they can install operating systems, security software and applications. In effect, this cloud-based service can substitute for locally installed physical hardware such as server computers and storage drives. In Platform as a Service (PaaS) the cloud supplier provides, on top of this physical infrastructure, operating systems, programming libraries and other tools which users can employ to create or deploy their own applications. Finally Software as a Service (SaaS) provides the customer with an end user application (e.g. an email application for an organisation) as well as the underlying computing resources required to run it. It is sometimes referred to as 'software on demand'.

3. Nature and benefits of cloud computing[2]

Cloud computing boasts several attractive benefits for businesses and end users. Five of the main benefits of cloud computing are:

- **Self-service provisioning:** End users can spin up compute resources for almost any type of workload on demand. This eliminates the traditional

need for IT administrators to provision and manage compute resources.

- **Elasticity:** Companies can scale up as computing needs increase and scale down again as demands decrease. This eliminates the need for massive investments in local infrastructure, which may or may not remain active.
- **Pay per use:** Compute resources are measured at a granular level, enabling users to pay only for the resources and workloads they use.
- **Workload resilience:** Cloud service providers often implement redundant resources to ensure resilient storage and to keep users' important workloads running -- often across multiple global regions.
- **Migration flexibility:** Organizations can move certain workloads to or from the cloud -- or to different cloud platforms -- as desired or automatically for better cost savings or to use new services as they emerge.

4. Uses of cloud computing

You are probably using cloud computing right now, even if you don't realise it. If you use an online service to send email, edit documents, watch movies or TV, listen to music, play games or store pictures and other files, it is likely that cloud computing is making it all possible behind the scenes. The first cloud computing services are barely a decade old, but already a variety of organisations—from tiny startups to global corporations, government agencies to non-profits—are embracing the technology for all sorts of reasons.

Here are a few examples of what is possible today with cloud services from a cloud provider:

1) Create new apps and services

Quickly build, deploy and scale applications—web, mobile and API—on any platform. Access the resources you need to help meet performance, security and compliance requirements.

2) Test and build applications

Reduce application development cost and time by using cloud infrastructures that can easily be scaled up or down.

3) Store, back up and recover data

Protect your data more cost-efficiently—and at massive scale—by transferring your data over the Internet to an offsite cloud storage system that is accessible from any location and any device.

4) Analyse data

Unify your data across teams, divisions and locations in the cloud. Then use cloud services, such as machine learning and artificial intelligence, to uncover insights for more informed decisions.

5) Stream audio and video

Connect with your audience anywhere, anytime, on any device with high-definition video and audio with global distribution.

6) Embed intelligence

Use intelligent models to help engage customers and provide valuable insights from the data captured.

7) Deliver software on demand

Also known as software as a service (SaaS), on-demand software lets you offer the latest software versions and updates around to customers—anytime they need, anywhere they are.

5. Present education system

Most of the private educational institutions have become highly dependent on information technology to service their requirements. These services are increasingly provided using Internet technologies to faculty and students and accessed from web browsers. The services are offered cheaply or freely to education, often with much higher availability than can be provided by the educational institution. But cloud computing is having other effects as well, which have the potential to greatly change how education works, both in online courses and in traditional classrooms.

6. Benefits of Cloud Computing in Education System[3]

1. **No more expensive textbooks.** It's no secret that university-level textbooks are expensive. The cost of textbooks has outpaced the cost of virtually everything else in education, including tuition. As a result, many students are simply refusing to buy them. Cloud-based textbooks can solve this problem as digital content is significantly less expensive than printed content. This levels the playing field so that lower-income students can have the same access to quality learning materials as their higher-income counterparts. Currently, higher education institutions across the United States are piloting an e-textbook program involving 50 publishers and close to 30,000 textbooks.
2. **No more outdated learning materials.** In the K-12 arena, the problem of expensive textbooks means that many of the materials students are using are outdated. The average social studies book in elementary and junior high schools is seven to eleven years old, which means that the world maps in these books are no longer correct. With cutbacks in school budgets, many districts, especially in less affluent areas, simply can't afford to replace these outdated resources. Cloud-based materials are easy to update in real time so that students always have access to the most current learning resources.

3. **No expensive hardware required.** Cloud-based applications can be run on Internet browsers, but most are compatible with mobile devices as well. This means that schools and students do not necessarily need to own expensive computers—a \$50 smartphone can access these applications just as well as a \$500 laptop. Students also don't need to purchase external storage devices as there are plenty of companies, like Google, that offer free cloud-based storage.
4. **No expensive software required.** One of the biggest advantages of cloud-based computing is the software-as-a-service (SaaS) model. Many software programs are now available either free or on a low-cost subscription basis, which substantially lowers the cost of essential applications for students. For example, instead of purchasing a single Microsoft Office student license for \$140, students and their families can purchase a cloud-based subscription for five computers and five mobile devices for only \$10 per month. Even better, they can use Google Docs for free. Institutions can also save big by using SaaS applications—traditional learning management systems can cost upwards of \$50,000 or more, but cloud-based learning management systems like ProProfs' Training Maker are available starting at \$60 a month with no per-user fee.
5. **Reaching more, and more diverse, students.** Cloud computing opens up a world of new possibilities for students, especially those who are not served well by traditional education systems. For example, until education moved online, the options for adult students who didn't finish high school were very limited—now these students can earn their diploma or GED online. There are many other types of students for whom a traditional school environment simply doesn't work, and these students now have many options for pursuing alternative forms of education.

7. Why store in the cloud[4]?

- 76% of the institutes have reduced the cost of the applications by moving to the cloud.
- 35% of the institutes have uploaded at least 1Tb of data to the cloud.
- If stats are to be believed 43% of the higher education institutes have opted for cloud or planning for cloud computing solutions.

8. Conclusion

Although still quite a vague term for some, cloud computing is definitely one of the major innovations that entered worldwide classrooms in recent years. With the ability to cut IT costs and at the same time create a modern collaborative environment, educational institutions can see some important benefits from moving to the cloud. Modernizing learning processes and introducing the latest technologies in classrooms encourage students to develop skills and knowledge necessary for achieving their academic and professional goals. From this perspective, it is obvious how valuable a resource the cloud is in the education sector. Together with other forms of technology implementation, the cloud can substantially increase learning opportunities for students all over the world, and eventually contribute to equipping future generations with skills and competences necessary for international career advancements.

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