

Integrating Cloud Technology in Education System

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Abstract- This paper discusses the need to infuse the Information and Communication technological innovation in the present education system of rural schools Of India. While deploying such approaches , it must be take into consideration that how such innovation will be used to meet the basic requirement of learning, teaching etc. One of the innovations in ICT is Cloud Technology which is the joint effort of Google and IBM in 2007. Here this paper presents the limitation of the efforts made by government projects and adopting cloud technology because of the promises it holds

Keywords- ICT, Cloud Technology, Education System

1. Introduction

Indian government and society has started pressuring school boards and administrators to move education into technology world. The government even mandated some new programs of studies designed to encourage and promote technology integration into curriculum as tool of learning. All these changes are required keeping in mind the importance of integrating ICT (Information and Communication Technology) with the traditional method of teaching. There is a need of developing constructive technology oriented tool which can be used as a “tool of learning”. India is ready to produce technology lead teachers.

Kozma(1991,1994) was one of the first researchers to suggest that technology research should look at technology in the context of “learner actively collaborating with the medium to construct knowledge rather than a way to deliver information. Roblyer, Edwards and Havriluk (1997) identify four elements that can serve as a rationale for using computer in education. The first is motivation. Technology helps to gain the learners attention, engage the learner through production work and increase the student’s perception of control. The second is unique instructional capabilities. The use of technology links learners to information sources, helps learners visualize problems and solutions, tracks learner progress and links learner to learner tools. The third is support for new instructional approaches such as cooperative learning, shared intelligence and problem solving and higher level skill. The fourth is increased teacher productivity. The technology feeds time to work with students by helping with production and record keeping tasks, provides more accurate information more quickly and allows teachers to produce better looking more student friendly materials more quickly. [1]

2. ICT Technology And Current Level Of Ict Access

The history of ICT across all sectors is best summed up as “opportunities multiply as they are sized”. In education it relates specifically to Internet based flexible delivery of content and programs that focus on “Educational Reform”. As ICT can virtually eliminate distance and time as factors in the exchange of information and communication they have been heralded as holding great potential for rural and remote communities, where access to social services like education and employment opportunities are often limited.

The ICT can be defined as sophisticated communication system involving networks of networks. The development of digitization has made it possible to connect all communication system into a single network



allowing for the transmission of voice, data, graphics and video over the same system. As the capacity of network increases with the continuing development of broadband more and more information can be transmitted faster and with increasing reliability. ICT is composed of hierarchy of networks that are connected using either land lines or wireless technology. LAN are the lowest common denominator of this hierarchy. The WAN connects the region's LAN and links the to the network backbone. While the backbone is a robust pipeline constructed mainly of fiber optic cable and capable of transmitting data at gigabit speeds.[2]

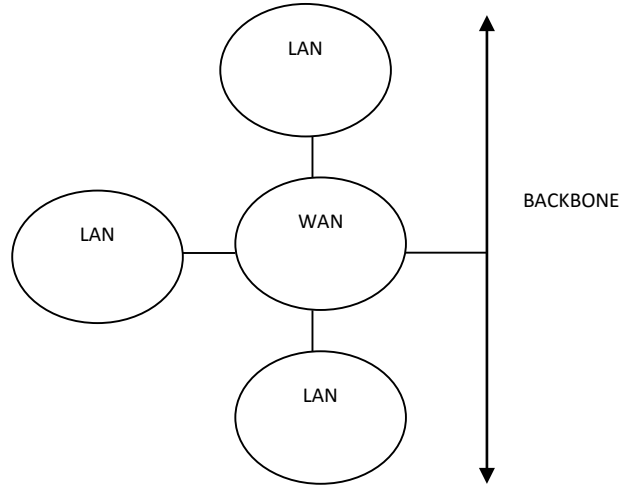


Figure: 1(Example of Wireless LAN configuration)

A. The various projects and initiatives taken by the government across the country using ICT in various sectors are as summarized below:[3]

Project	Partners	Objectives
School Television in India	Central Institute of Educational Technology & 6 state Institutes of Educational Technology	Programmes produced and telecast on National Television from 1984 to date
Gyan Darshan	Ministry of Human Resource Development, Information & Broadcasting, the Prasar Bharti and Indira Gandhi National Open University (IGNOU)	Also broadcasts the programmes of National Open School and Central Institute for Education Technology, National Council for Educational Research and Training
Gyan Vani		Reaching the backward rural communities by radio
TARAHaat		Literacy through ICTs; quality education at affordable prices right at the learner's doorstep; TARAHaat earners range from 8-35 years of age, school and college students, unemployed youth, professionals, women

Gyandoot Project	National Informatics Center, Ministry of Communications and Information Technology and state government of Madhya Pradesh: http://gyandoot.nic.in ; gyandoot@rediffmail.com	Providing access to information such as land records, registration, mandi prices
Leveraging ICT through Market Centre for tribal communities	Pan Asia Networking ICT R&D Grants Program-4D initiatives: www.panasia.org.sg/grants/awards/0201a5.htm	Access to medical, education agri-forest produce markets
Karnataka CLC in Schools Initiative	Azim Premji Foundation, Government of Karnataka : www.azimpremjifoundation.org/index.htm	To demonstrate that technology initiatives, such as the use of software to reinforce certain aspects of mathematics, geography, environmental sciences and Kannada, have a positive impact on the interest levels of children and increase their learning achievement levels

Table: 1

3. Cloud Technology And Implementation Of Cloud Technology In Education System

In implementing these projects one of the biggest challenges that government faced in providing technology infused education was the lack of infrastructure and the maintenance of the available infrastructure. Also making available wide range of hardware and software was very difficult to manage. There are students and computers available in rural schools, but again there is lack of trained teachers in ICT. In this research work an attempt is made to present an idea of a model which is teacher centric and developed with the help of cloud computing. Cloud computing is an unstructured term which takes on different meanings depending upon its context of use. As technical term in computer science it is used to denote on demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or services provider interaction.

In common idiom and as employed in business context it refers more broadly to the remote provisioning of computer services. It provides IT services that are used to answer the necessities of the user in a flexible and adaptive way. Here cloud computing is discussed as a paradigm in which resources of an IT system are offers as services (which can be hardware, software, storage resources etc.) to the users (which are teachers, school administration, students etc in this paper) through net connection with the aim of providing high performance computing. [4]

A. Factors forcing to infuse cloud computing in education:

1. Cloud computing can be encapsulated with the traditional method of teaching in the cost effective manner, as it is pay by subscription based on usage.
2. It will definitely enhance teaching and assessment strategies of teachers thus giving rise to technology lead teachers.
3. It will increase student's engagement levels and in turn will impact 21st century skill development.

Students can use cloud based apps for creating and uploading text documents, presentations and other study material.

4. It has the capability to support student research, document storage, work collaboration as its major strength.

1. It will help in increasing 21st century Cognitive and Meta cognitive skills.
2. Cloud related professional learning will support the utilization of best teaching practices when teaching with cloud.
3. It will allow students to work from multiple locations and can access data through various devices like mobile, laptop etc.
4. Cloud computing allow user to dynamically scale as demands fluctuate.
5. Children will board on intellectual adventures by engaging and connecting with information thus creating a Self Organized Learning Environments (SOLEs) which will stimulate curiosity and inspire learning through self-instruction and peer-shared knowledge.

B. Various services that cloud can serve to the educational system in school are as shown below:[5]

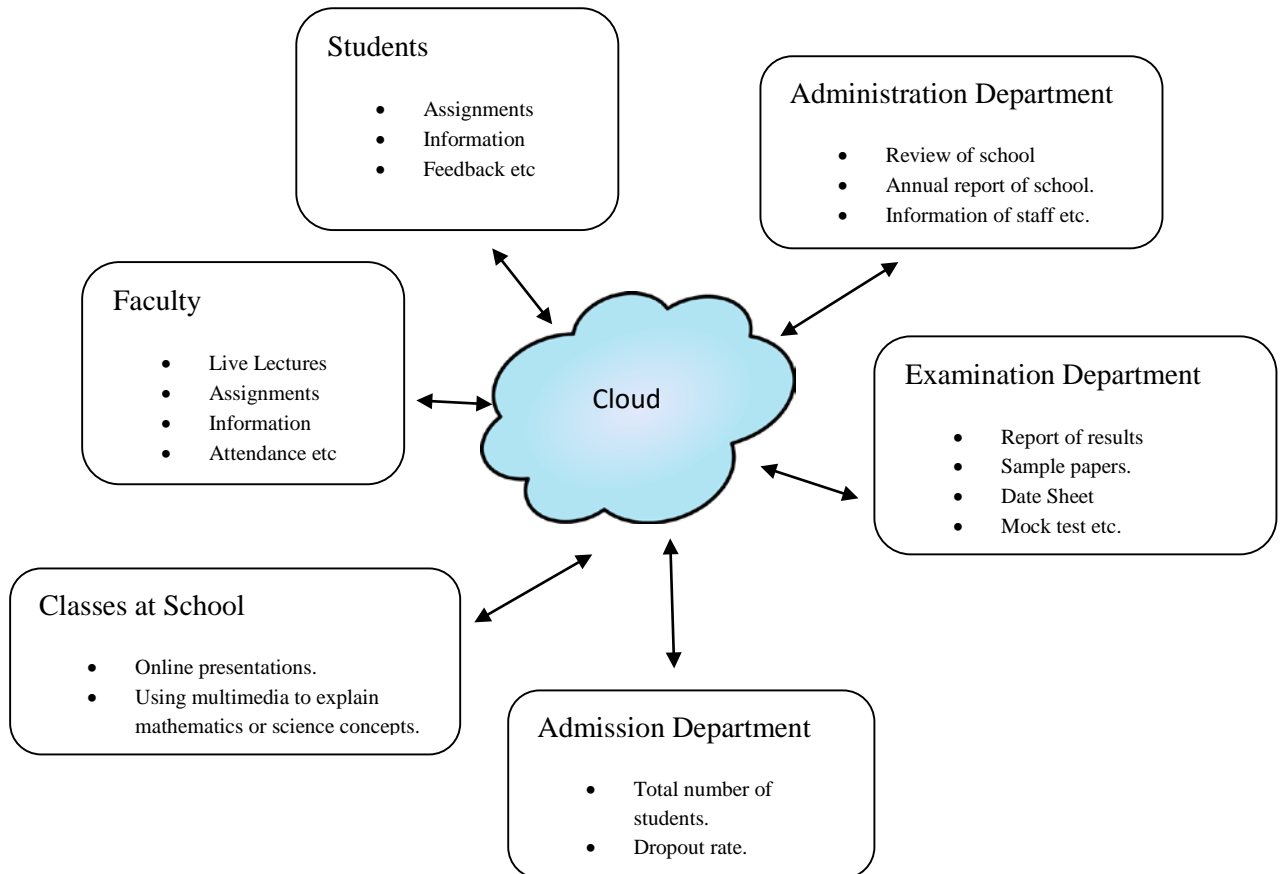


Figure: 2 (Application of Cloud in educational sector)

4. Organization of Cloud Computing Environment

The cloud environment is designed to cope with the three key concerns: improving classroom access to the cloud to ensure its optimal use and effectiveness; enhancing the quality and range of teacher's cloud-related professional teaching practices and the implementation of the cloud within rural schools. To integrate cloud with traditional wired LAN a portal is used. The portal logic is implemented in a device such as bridge or router (in the diagram router is showed), that is part of the wired LAN and is attached to the cloud. Access points (AP) are provided that acts as bridge and relay points for the wireless or mobile devices like tablets, mobile phones , palmtops etc. Access points includes some sort of access control logic such as a polling or token-passing scheme. Each access point supports a number of wireless end systems within its transmission range.

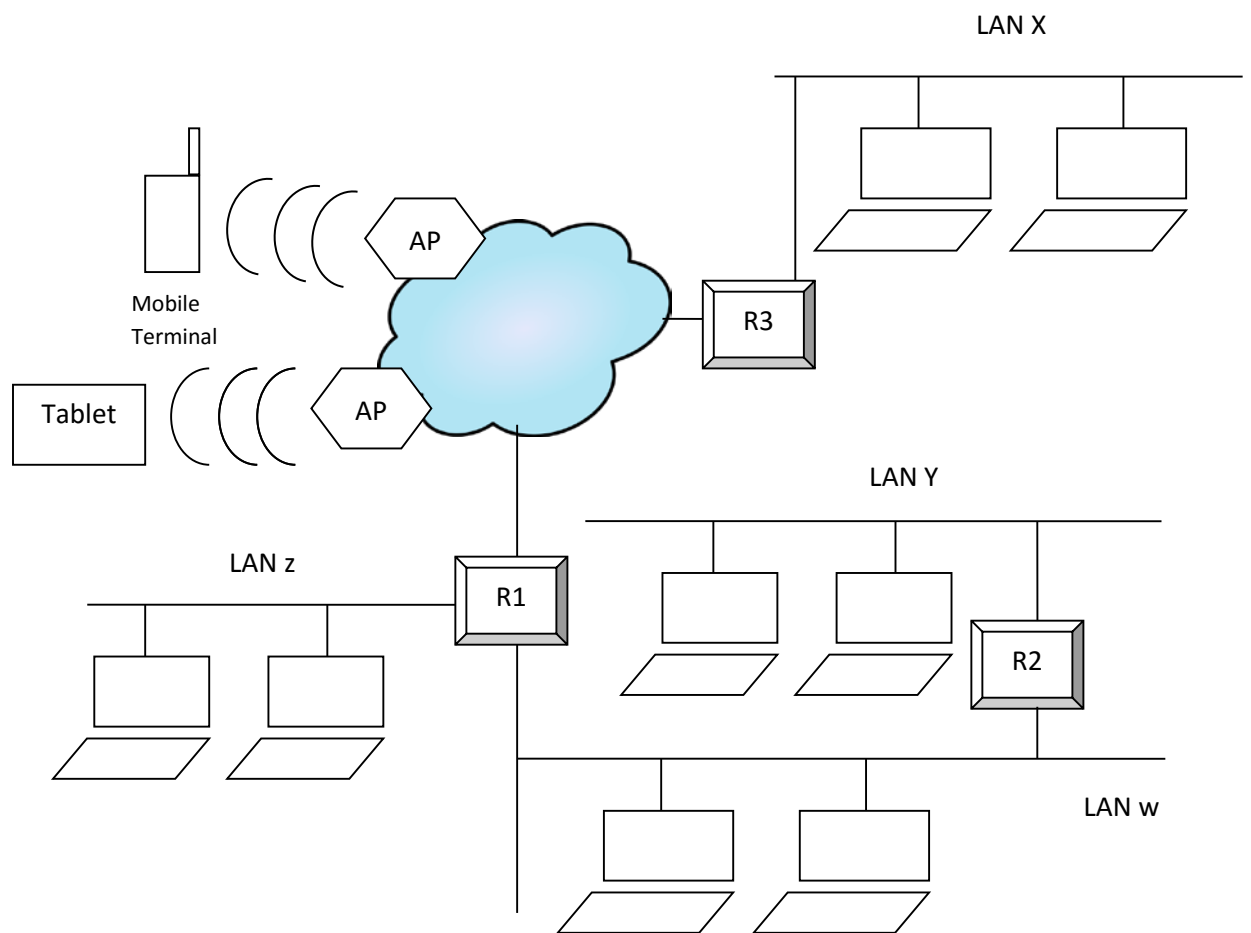


Figure: 3(Example of Cloud configuration)

5. Conclusion

The cloud implementation will surely bring an optimistic change in the world of digital learning. With the help of cloud technology collaborative, student-directed and inquiry-driven teaching strategies can be brought into the classroom. The features of cloud technology are best suited to drift the education system in India where various government projects are facing the problem of uneven distribution of educational resources. Cloud Computing is a rapidly accelerating revolution within IT and will become the default method of IT delivery moving into the future.

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