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A study of cloud computing in selected schools

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Abstract: This paper focuses on challenging problems in school education by considering cloud computing. Nature of computer network in school education is changing rapidly at every moment. Computers used to be the exception in schools just over a decade ago. Now, they are widespread, a regular feature in school and at home. Wireless Sensor Networks (WSNs) provide a low cost option for monitoring different environments such as schools, farms, forests and water and electricity networks.

In school education, computer equipments are generally situated in laboratory style accommodation. Its use is often priorities to certificated courses in schools followed by a general awareness short course structure for all other students in the school. In some cases the computer provision extends beyond the control of a computing specialist, and small numbers of machines are made available in the Design, English, Social Science etc. areas

However, students exposed to a networked environment in school will be better prepared for future jobs in industry. Networks can help teachers to complete better online lesson plans, they can complete the syllabus in time from a variety of locations like multiple classrooms, staff lounges, and their homes. In short, the promise of school networks seems almost unlimited benefits of Computer Network :1)Improved communication and collaboration 2)Save time, 3)More convenient access to software tools 4)Less expensive5)More benefited to student and teacher 5)Faster access to more information.

This paper also focused on existing position of computer network in different schools in ruler area. There are so many advantages of computer network facility but it seems less use of one using computer network facility. Researchers are taken schools in rural area of Karad Taluka, Dist-Satara for research work.

Keywords: Computer network, Cloud computing, School education, Wireless Sensor Network (WSN).

I.INTRODUCTION

Definition

Computer network means two or more computers are connected to each other through an intermediate path.

Cloud computing is one of the most talked about solutions on the education scene. School IT managers and educators know firsthand that technology changes and the potential they create for young learners

The National Institute of Standards and Technology (NIST) define a cloud computing as follows:

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Basic Network Technology

Ultimately students and teachers are interested in working with network software applications like Web browsers and email clients. To support these applications, several other technologies must first be put in place. Collectively these components are sometimes called the "architecture," "framework," or "infrastructure" necessary to support end-user networking:

- Computer hardware
- Network operating systems
- Network hardware

Computer Hardware

Several different types of hardware could conceivably be used in a school network. *Desktop computers* generally provide the most networking flexibility and computing power, but if mobility is more important, *notebook computers* also may make sense.

Handheld devices offer a lower-cost alternative to notebooks for teachers wanting basic mobile data entry capability. Teachers can use the handheld system to "take notes" during class, for example, and later upload or "synchronize" their data with a desktop computer.

So-called *wearable devices* extend the "small and portable" concept of handhelds one step further. Among their various uses, wearables can free a person's hands or augment the learning experience. Generally speaking, though, wearable applications remain outside the mainstream of network computing.

II. NETWORK OPERATING SYSTEMS

An operating system is the main software component controlling the interaction between people and their computer hardware. Today's handhelds and wearable typically come bundled with their own custom operating systems. With desktop and notebook computers, however, the opposite is often true. These computers can sometimes be purchased with no operating system installed or (more typically) the operating system that comes pre-installed can be replaced with a different one.

Network Hardware

Handhelds and wearable usually also include built-in hardware for networking functions. For desktop and laptop computers, however, network adapters must often be chosen and purchased separately. Additional, dedicated

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hardware devices such as routers and hubs are also needed for more advanced and integrated networking capabilities.

Applications and Benefits of computer Network:
Many primary and secondary schools have Internet and email access. Other popular applications in schools include word processing and spreadsheet programs, Web page development tools, and programming environments like Microsoft Visual Basic.

Advantages of Computer Network
Advantages of computer network in school education are given below:
1. Provides a flexible, scalable, cost effective model that does not tie schools to out-of-date infrastructure or application investments
2. Offers the flexibility to meet rapidly changing software requirements for todays and tomorrow's teachers and students
3. Allows software standardization, a shared pool of applications for use school- or district-wide, and easier maintenance through centralized licensing and updates
4. Enables rapid development and deployment of complex solutions without the need for in-house expertise
5. Can eliminate the upfront financial burden of deploying new technologies through a pay-as-you-go model
6. Supports multiple client platforms both inside and outside the school infrastructure

Objectives
Following are the objectives of the researcher work:
1) To study the present status of computer network in selected schools.
2) To study students activities and their performance.
3) To suggest the measures for improvement of system.
4)

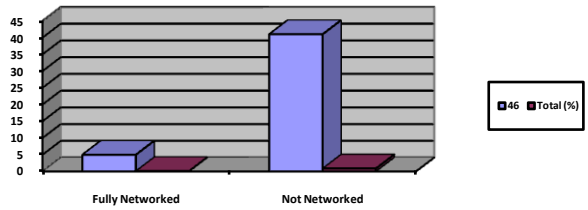
Research Design
This research work is empirical type of research. Researchers are selected schools in Karad Taluka, Dist-Satara as a research work area. There are totally 309 schools in Karad Taluka. Researchers have selected 15% sample, i.e 46 schools for research work using stratified random sampling.

III.DATA ANALYSIS AND INTERPRETATION

Researchers have collected the data from the teacher and headmasters of selected schools from rural area of Karad Taluka, Dist-Satara.. After collection of data researchers have analyzed and interpreted it. Data analyzed and interpreted is shown below:

Table No: 1 Status of Computer Network

Sr. No	Taluka	No. of Schools as on July 2013	Fully Networked	Not Networked	Total
1.	Karad	46	05	41	46
Total (%)			**11%**	**89%**	**100%**



Source: The above data received from Educational Department of Z.P.Satara.
Fig1: Status of Computer Network

Table No1 shows the information about the status of computer network used in selected schools for teaching learning process.

Majority 41(89%) of the schools are not networked whereas 05(11%) schools are only networked out of 45 selected schools.

It means that there is a scope for development and utilization of computer network in selected schools in rural area.

Table No. 2 Computer Hardware in schools

Sr.No	Taluka	No. of Schools	Computer Hardware used		Total
			Advanced	old	
1.	Karad	46	02	44	**46**
Total (%)			**4**	**96**	**100**

Above table depict the information about the computer hardware used in schools for teaching learning process.
It seems that the majority (96%) of the schools are not use advanced computer hardware and only 4% schools are using advance computer network.
It means there is large scope for utilization of computer hardware so that they can able to access the data speedily and get work done in less time.

Table No. 3 Network operating system used

Sr.No	Taluka	No. of Schools	Windows/NT	Novell Netware	Total
1.	Karad	46	43	03	46
Total (%)			**93**	**07**	**100**

Table above gives the information about the network operating system used in the schools.

The survey revealed that the most popular operating system in secondary schools there was Microsoft Windows/NT (used in 93% of locations) where as only 7% Novell NetWare is used and no one use operating system such as Linux.

It is interpreted that along with windows/NT other operating systems like Novell Netware and Linux operating system can used for more security purpose.

Proposed model of ICT Implementation in school education using cloud Computing Technique

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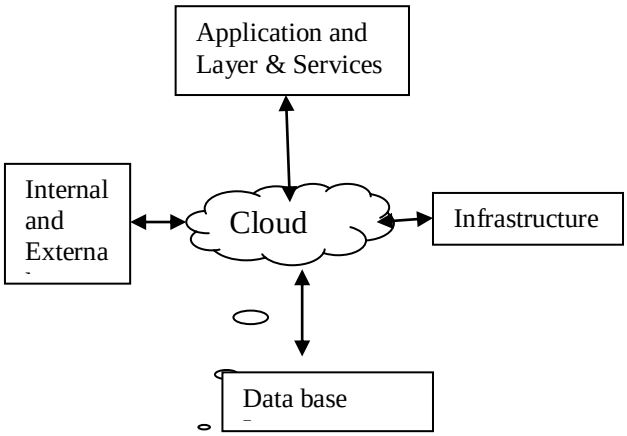

Fig2: Suggested Module using Cloud Computing

Diagram shows there are two basic types of cloud infrastructures: internal and external. In an internal cloud, servers, software resources, and IT expertise are used inside the school system to build a scalable infrastructure that meets cloud computing requirements. In an external cloud, service providers sell on-demand, shared services to a school. IT support, service s, and expertise are included in the package; the school needs to run only the provided
Internal and external services included services such as data to be inputted and outputs that are getting through this system.
Secondly database layer is related to the databases, execution run time, web servers, development tools etc. Database layer related to 1) Student Data 2) Financial Data 3) Research Data 4) Course Data 5) Donor Data 6) School Data 7) Library Data 8) Facility Data
Third is infrastructure layer it include virtual machines, servers, storage balancers, network etc.
Application and services layer include email, CRM, virtual desktop, communication, games etc
Application layer also covers following points

1. **Teaching Learning Services:** Servers can provide some or all software applications, operating systems, and Internet access, rather than having these installed and maintained on each platform separately. Servers deliver on demand, as needed by the school population, to the full spectrum of learning platforms and devices. For example, a single application might be shared by hundreds of students and teachers on notebooks, tablets, and desktops.

2. **School IT**: Cloud computing allows for cost- and energy-efficient centralization of school infrastructures. It takes advantage of server capabilities to adjust allocation based on demand—all invisible to teachers and students. Remote management and maintenance can save time and increase security. For instance, an application or operating system served by the cloud can be upgraded once at the server level, rather than on each individual platform. Platform access can be restricted or denied in the event of a loss or theft.

3. **Access:** Along with the greater control for IT comes increased flexibility for teachers. They can select from the entire pool of available applications those which best complement their curriculum and students at any given time. The wide range of
Internet-based software and tools can also be quickly and easily served by the cloud.
In application layer it also includes Research Services, Administrative Services, Communication and Collaboration services, Data Warehouse, Web portal and Mobile Services.

Various benefits of cloud computing:
Cloud computing is one of the most talked about solutions on the education scene. School IT managers and educators know firsthand that technology changes—and the potential they create for young learners

Social benefits:

- Enables greater learner autonomy
- Unlocks hidden potential for those with communication difficulties
- Enables students to demonstrate achievement in ways which might not be possible with traditional methods
- Enables tasks to be tailored to suit individual skills and abilities

Benefits for students:

- Computers can improve students' independent access to education
- Students with special educational needs are able to accomplish tasks working at their own pace
- Visually impaired students using the Internet can access information alongside their sighted peers
- Students with profound and multiple learning difficulties can communicate more easily
- Students using voice communication aids are able to gain confidence and social credibility at school and in their communities
- Increased ICT confidence amongst students motivates them to use the Internet at home for schoolwork and leisure interests.

Benefits for Teachers:

- . In different schools using cloud Technology Reduced isolation for teachers working in special educational fields, enabling them to communicate electronically with colleagues
- Support for reflection on professional practice via online communication
- Improved skills for staff and a greater understanding of access technology used by students
- Enhanced professional development and improved effectiveness in using ICTs with students, through collaboration with peers

Materials already in electronic form (for example, from the internet) are more easily adapted into accessible resources such as large print or Braille materials

IV.CONCLUSION

It is concluded that computer network and cloud computing is very essential for students as well as teachers. Efficiency and effectiveness in teaching learning process can be increased due to use of cloud computing. It is necessary to take benefit of cloud computing by the schools run in rural area of Karad Taluka to improve the standard

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