

West Bengal & Education Systems: The Need and Initiatives of Cloud Based Education Systems

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Abstract: If the history of development of Indian education structure is studied minutely then it is found that education in West Bengal has played a vital role there. Educational environment of West Bengal was very rich from past days. Ram Mohan Roy, David Hare, Ishwar Chandra Vidyasagar, Shashi Bhushan Chatterjee, William Carey and many others educationist and social reformers the pillars of bring new age of revolution called renaissance in the Indian History. According to current census report West Bengal has got a literacy rate of 77.9%. Now-a-days technology plays a pivotal role in education system. Through different learning management system student gets immense opportunities to access vast field of resources of their need. In the field of education, cloud computing has its use in the field of education for a number of reasons. This computing technology will enable a numerous educational institution to use of the global internet resources for data management issues like data analysis and data storage. Through this paper the need for cloud computing in the field of education in West Bengal perspective has been pointed out in a very simple way.

Keywords: West Bengal, Higher Education, Cloud Computing, Virtualization.

1. INTRODUCTION

In Modern days the development of the society mainly depends upon the Higher education. In the transformation of society and the entire world economy, the partnerships between universities, government and industry, researchers and students have their significant contribution. Lack of resources like small classrooms, staffing cuts, shortage of qualified teachers are the main constrains for our entire educational system. It has been suffering from these problems continuously. The Cloud technology can be treated as the solution to this problem because it is a valuable tool that can be used to improve accessibility to quality education and to boost achievement. Most significant benefits of cloud computing is the cost saving scenario which is root cause behind all challenges faced during implementation of new technology in any system [1], [2], [7]. These by implementing the virtual classroom environment the problem of outdated, too-small, overcrowded classrooms can be solved. Students can attend classes outside of the classroom environment by actually log onto a space online. Cloud environment provide an effective tool to the students to share their ideas and help educational institution to drastically reduce the overhead expenditures on quality learning materials like books and software. Cloud based education system help to give equal access to those scarce resources which helps the students to improve their academic performance. The goal of Cloud based education system is to provide best quality of education with minimum resource utilization.

2. OBJECTIVE

Though this paper the prospective of cloud computation initiatives in the field of education in West Bengal has been highlighted. It mainly focuses on the area like the current scenario of higher education in West Bengal and its future enhancements. The aim of this paper is include to learn about the implementation of virtual e-learning system

in the field of Higher Education. Its benefits alone with the risk analysis while implementing. The infrastructural constrains also be mentioned in this paper.

3. HIGHER EDUCATION

West Bengal is an Indian State located in Eastern Part. Kolkata is the Capital of West Bengal. There are two types of sectors such as public and private control the entire education system in west Bengal. Funding coming from three levels: central, state, and local. Compulsory Child education is fundamental policy of West Bengal education System. Modern Education System development in West Bengal are first initiated by British missionaries and the Indian social reformists. West Bengal has many new and old universities such as University of Engineering & Management, Amity University, The University of Calcutta, The University of Burdwan, Vidyasagar University, The West Bengal State University, Indian Institute of Management Calcutta (the first IIM), Indian Institute of Technology Kharagpur (the first IIT), IIST Shibpur (2nd oldest engineering institution in India), Jadavpur University, Presidency University, Indian Institute of Science Education and Research, Kolkata, National Institute of Technology, Durgapur, Indian Statistical Institute and Visva-Bharati University. However West Bengal has received many new universities such as Raiganj University, Kazi Nazrul University, DHWU, PBCU-Coochbehar, Bankura University [3], [8], [13], [15].

Two categories of schools are mainly found in West Bengal run by either State government or private organizations and major medium of instruction is either English or Bengali in addition to this several regional language like Urdu, Hindi, Nepali Medium schools are also available in the state. As far affiliation body is concerned the Council for the Indian School Certificate Examinations (CISCE) controlled by CNI, the Central Board for Secondary Education

(CBSE) controlled by Central Government, the National Institute of Open School (NIOS) or the West Bengal Board of Secondary Education are major key players. Several streams are available like liberal arts, commerce or science in pre-university standard. After completion students are entitled for degree programs.

West Bengal is the intellectual state and produces several scientist, social scientist and distinguished professionals. Among the distinguished professionals named physicists Satyendra Nath Bose, Meghnad Saha, and Jagadish Chandra Bose; chemist Prafulla Chandra Roy; statisticians Prasanta Chandra Mahalanobis and Anil Kumar Gain; physician Upendranath Brahmachari; educator like Ashutosh Mukherjee, including few Nobel laureates Rabindranath Tagore, C. V. Raman, and Amartya Sen were born, worked or studied in the in this West Bengal [13], [15].

In the state the number of universities is 30+ where as affiliated colleges are about 700. The Secondary school is about 6000 where as primary school is about 50000. Hence Lakh of students at presents studying in several capacities.

To see the benefits of E-Learning and Education Technology, Government of West Bengal has proposed cloud based “Virtual classrooms” system through which student and a teacher from anywhere in the world can have access to the any type of study materials through online video conferencing and in very near future this become reality in West Bengal soon. As per the source Rs. 100 crore for the purpose is presented in the budget and was already presented in the assembly.

4. CLOUD COMPUTING AND SYSTEMS

Cloud computing (CC) is a new paradigm which means storing and accessing data and programs over the Internet by using a network of remote servers hosted on the Internet rather than a local server or a personal computer. It is just a metaphor for the Internet. Distributed networked based virtual resources are the basic platform used by all applications and services provided by Cloud Computing. They are run by common Internet protocols and networking standards. The main task of Cloud Computing is to ensure that the users can simply use the computing resources on demand and pay money according to the usage. Information technology is the exploring means used by the universities, colleges and schools for imparting the training programs. The need for the networks, servers, storage, applications and services are increases day by day. Infrastructure, platform and software are main thrust area for investment by Educational Institutions. Demand for the computing needs in the case of Educational Institutions keep on changing from time to time. The students are expectations to have access and view the information in his PDA, Tablets and Mobile Phones. Cloud Computing fulfill this needs for the educational institution with its resource sharing and virtualization technologies. The Characteristics of Cloud Computing is on-demand Self-Service, Broad Network Access, Resource Pooling, Rapid Elasticity and Measured Service [4], [9], [12]

5. CLOUD BASED EDUCATION IN WEST BENGAL: EXITING SCENARIO AND FUTURE INITIATIVES

It is the agenda of West Bengal Government that at least two virtual classrooms equipped with high-speed internet and video facilities will be for 2,000 schools and about 732 colleges each. Students from distant village can have accessed to the whole world with one button

on. The core aim of this movement is to remove disparities based on geographical location [17]. They follow the education system of various renowned educational institutions of the world such as Harvard in the US, the London School of Economics and from the Ecoles of France so that government can readily implement the system. Virtual classrooms provide an environment through which the gap in the quality of education between main university campuses and their affiliated colleges can be abolished. It is a convenient technology by which the working class and housewives can go on with their further education. The classrooms will have state-of-the-art features, like interactive white board, a digital podium, Internet-enabled touch screen Android TV, document cameras to project live experiments and 3D diagrams (A Basic Figure on Cloud into Education depicted in Fig: 1). The main vision of the Virtual Classroom project is

- It improves the lesson planning and in-class teaching experiences of teachers.
- It provides the environment where student can learn with fun.
- It provides the students’ classroom experiences by diversifying learning activities.
- To gives an improve environment where student can have learning outcomes in all aspects including subject-specific and in a broader context.
- Providing technology with curriculum-aligned learning content.
- It help to Conduct holistic trainings which make teachers to familiar with the technology into their classrooms.
- It provide ongoing technical and lesson planning support to teachers.

All the teachers in-charge (TI) are asked to submit the report of the infrastructure in schools where virtual classrooms program are going to be implemented by the West Bengal Government.

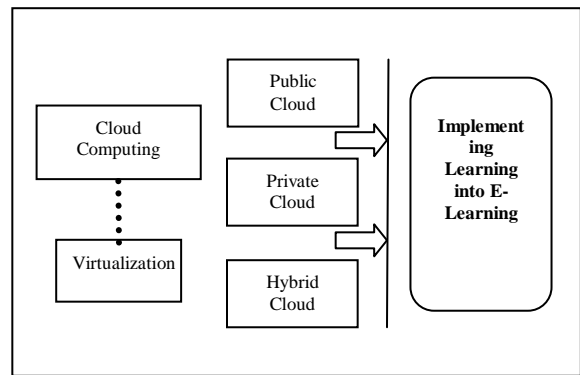


Fig:1 Cloud and its Ultimate result in Education Systems

Senior officials of the of the West Bengal Government also confirm the order given to the school authority where virtual classroom are going to be set up. In this virtual classroom implementation program, Government primarily chosen the most backward three districts situated at Jagalmahal area and remotes villages located in Terai and Dooars region, North Bengal. District primary councils are also asked to submit the same report on the infrastructure details by the Senior officials of the state government. Main constrains about setting up

virtual classroom program in schools of West Bengal is the low speed internet facilities and in addition to that inadequate infrastructure and lack of proper trained professionals. So setting up adequate infrastructure in schools with proper arrangements is an important issue here. High speed internet facilities should be provided in the classrooms. It has been found from the study that the classrooms having capacity to accommodate at most 100 students are the best suited for conducting a virtual classroom and so efforts will be made to set up the virtual classrooms in those rooms with comparatively high seating capacity [5], [6], [10].

6. FUTURE POSSIBILITIES

Cloud Computing has reduced responsibility of the maintenance burden of the education system. Cloud provides instant global platforms, to implement high speed capacities and it also reduced cost and easily take care of the, scalability issues. [14], [15]. There will be an online survey to collect the required data for the implementation of cloud based education system in the universities and other governmental or private institutions in the region

The main strengths of the future possibilities of implementation of V-learning services using cloud computing are:

- English speaking, highly qualified and techno savvy manpower.
- Safe Electronic Environment – Official recognition for Digital Signatures and E-transactions.
- Human resource cost is minimized here in compared with developed country.
- It will provide a Strong domestic education industry which up-gradation of skills of the students as all as teaching faculties with the help of High speed internet facility.
- Growing services of software technologies.

7. CONCLUSION

With cloud computing as part of IT strategy, the data capacity without compromising security or requiring of school, college, or university to make heavy infrastructure investments can be increased with low cost of ownership. Usage of Cloud Computing while put into use Virtual Learning system can immense influence in Education System. Virtual learning is really the new age of learning. The future of V-learning is very bright. This idea has been mounting at a very rapid rate as more and more uses for the computer in education have been discovered and attempted in West Bengal educational scenario. There is an explosion in information and it is beyond the edge of places. It is available everywhere. Interactive web is creating new thresholds of the hour. V-learning is the future of e-learning.

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