

# **DISTANCE EDUCATION AND ONLINE EDUCATION EMPOWERED BY CLOUD COMPUTING: THE PROPER INFORMATION INFRASTRUCTURE**

**Prantosh Kumar Paul**

FBAS, Bengal Engineering & Science University, Howrah, West Bengal, India

Email: [prantoshkpaul@gmail.com](mailto:prantoshkpaul@gmail.com)

## **ABSTRACT**

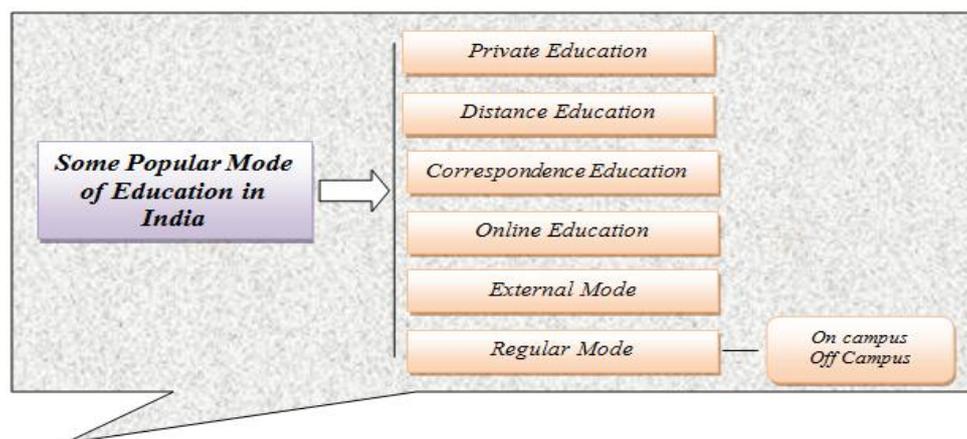
*Education plays an important role for human being for overall development. Gradually development of human being affects community and lastly society. Thus societal development is also lies on right and adequate educational systems. Initially in India, education was offered at 'Paathshala'- the place for primary and life long education. But the growth of educational interest originated several educational system and media. University, colleges, poytechniques, Training Centre and several educational places are involved and change themselves depending upon requirement and time need. Conventional educational systems is actually deals with class room based teaching and learning; though today apart from the several education mediums are evolved and growing rapidly. Distance Education and Online Education is also an important mode of contemporary learning, Cloud Computing and its benefits also affects such educational systems. This paper is talks about Distance Education and Online Education Systems emphasizing challenges, opportunities of Cloud based Education Systems.*

**Keywords:** Distance Education, Information Infrastructure, Online Education, Educational Systems, New Age Learning Mode, Academics, Corporate Education, Universities.

## **INTRODUCTION**

Educational Systems are changing rapidly their characteristics day by day. An earlier conventional education system was main medium at teaching and learning. But several internet and problems lead the cause of other educational mode. Initially private educational mode was originated to some of the people who are not able to join in regular class room based education; due to lower makes, employment and working condition, time schedule universities are allowed to run private education mode, where student just appear examination for the degree based on preparation of his/her self. But doubt and confusion on the topic and educational aspects evolved a new mode of teaching-learning process called Distance Education, Conventional Education around the world and even in India. Internet and computer play an important role for distance education and online education. Today class, reference material, library, group discussion and counselling and material, library,

group discussion and counselling and other activities are fully depends on internet and several computing tools, techniques and mechanism. Cloud computing is an important technology responsible for healthy online and distance education many ways [18].

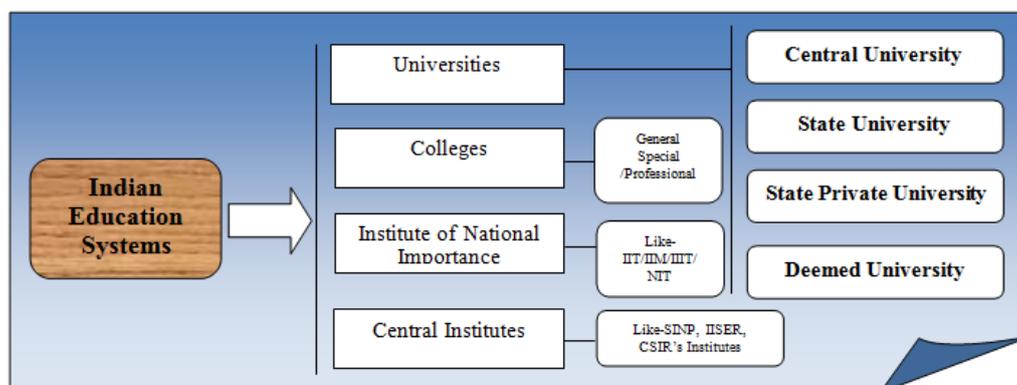


**Fig: 1.** Some popular mode of education ion Indian Universities and Higher Educational Institutes

## OBJECTIVES

The main aim and objective of this study

- To learn about Education and Educational Systems in India;
- To get contemporary idea on online and distance education and some new domain of education;
- To learn about cloud computing and its challenges;
- To find out main opportunities and possibilities of cloud computing based education systems;
- To find out emerging scenario of cloud computing in distance and allied education.



**Fig: 2.** Depicted Indian Higher Education Systems at a glance

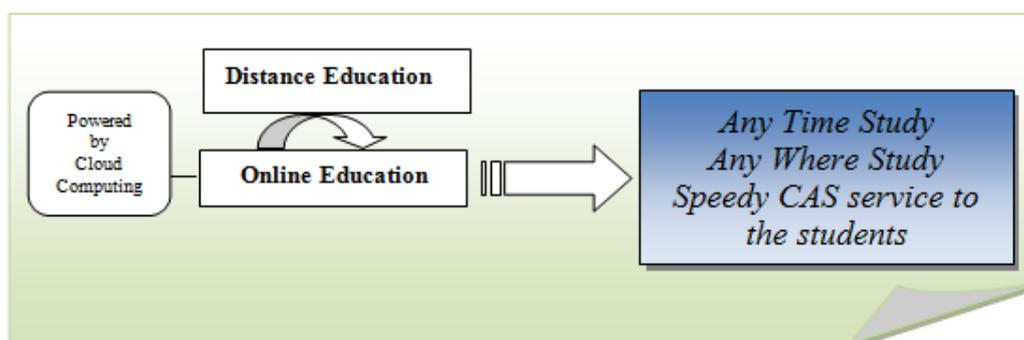
## Education and Educational Systems

Educational Systems are mainly constituent with universities, colleges, schools. But apart from these, training centre, polytechnique, corporate school, finishing schools are also important name for healthy education systems. Regarding educational mode we may see some of the attributes like Regular Mode, Private Mode, External Mode, Distance Mode, E-Learning Mode, Online Mode, Self Learning Mode and most recently Corporate Mode and Industry Integrated Learning Mode [12,18].

In private mode of learning, students need to prepare syllabus and curriculum of their own by collecting books and other material. Most of the cases during examination they need to attach with the university and need to apply examination [22].

Distance Education Systems is mainly dedicated to strong connection between the students and university from the beginning of the course. And here universities provide study material, group discussion and lecture session; depending upon nature and need of the course. But in this method one may work or engaged other work and side by side keep education.

Online Education Systems is advance form of learning of distance education; where one can take education from his/her place with the help of computer and internet connection. Here classes may be conducted via internet and V-SAT and one may view the whole lesson by the computer. Even concerned person may record the video depending upon need. E-Learning, Computer based learning just synonymous to that.



**Fig: 3.** Depicted Transformation of Educational Mode powered by Cloud Computing

### Distance Education and Online Systems: Benefits and Cloud Computing

Cloud Computing is actually kind of virtualization method or technique which is allows software, hardware, IT Infrastructure, Application packages access remote place any time with the help of cloud computing architecture based on internet and broad band connection.

In Distance it is possible to offer several educational services through the cloud computing architecture. Online Education is the largest user of cloud computing in some of the universities around the world. Some of the uses of cloud computing and virtualization in educational sector are as follows:-

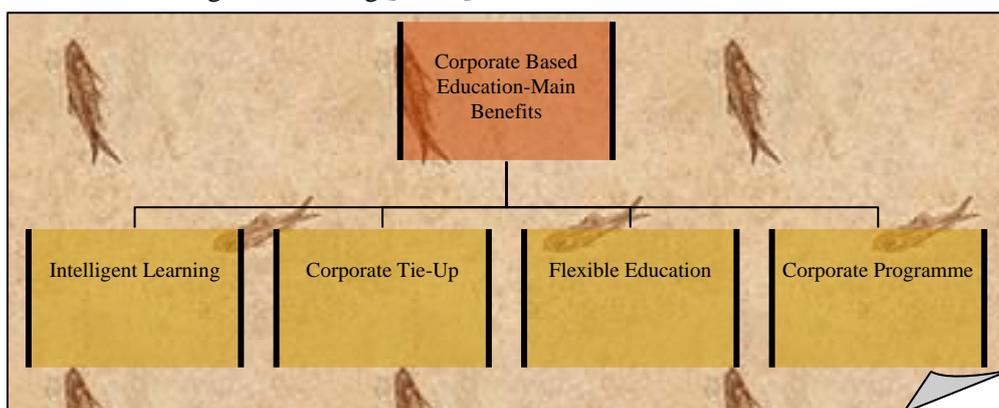
- Course Ware delivery through online is heavily possible with the help of cloud computing architecture model;
- The video and audio can directly seen by the concerned registered in this system. This will much faster and buffering free than earlier system of online education. Any where and any time sophisticated secured information and knowledge delivery on concerned time and future is possible with the help of cloud computing;
- The PDF material and printed Electronic Digitalised material may avail any time and any where by this;
- Information and Reference centre is consider an important wing of any kind of educational institute; the information storage and retrieval sources may gain rapidly with cloud based information systems and services;
- Cloud computing is allows mobile based computing. Thus distance and online education may avail the benefit of mobile cloud computing; where one may get his/her class room education, storaged study material, any kind of information and so on;
- Cloud computing based education saves time of the conventional education programme and offer directly A/V Material to the student to the dedicated network;
- Cloud Computing saves future cost of computing and IT to offer course ware;
- SMS alert, communication between the number of student allows cloud computing;
- Here universities no need to install IT Infrastructure at their own; thus a small and less IT systems are required;
- Cloud computing also promotes the educational programmes through the value added services;
- Cloud computing may help in Intra communication between university departments, university to another university, to colleges and so on;
- It also helps in building Information and Knowledge Network for healthy educational systems [05, 22, 18].

## **Cloud Based Education and New Paradigm**

Cloud Based Education Systems helps education systems several way; cloud computing promotes some new educational systems and mode;

Industry Integrated Learning is such an education plat from which is allows to gain education at the industries point or corporate houses; this type of education programme not burden for the people who are in working stage. Any one can get degree in this medium with out hampering work and education. Cloud computing based industry integrated learning' one can get study in the corporate houses during free time and even allow live lecture session.

- The industry integrated learning is also known as Corporate Education. Today many universities are launching separate university department and wing deals with such type education mode. Industry Integrated Learning in India offered by some of the universities such as Manipal University, BITS-Pilani, NIIT University and so on Full-fledged manner, where one can get course ware in association with corporate houses;
- Cloud computing based industry integrated learning need initial initiative in many cases. The future growing is positively possible with the help of cloud computing based learning and teaching [08,13].



**Fig: 4.**The origin of Corporate Education with the efforts from Cloud Computing and Virtualization Systems

## FINDINGS

- Education and educational mode are rapidly changing; several new mode are emerging with the advent of technologies;
- Industry integrated learning, corporate education, may gain rapid popularity with the help of cloud based education;
- Though it is initially costly but further enhancement in very healthy for sophisticated education development;
- Developed countries such as Japan, USA, UK are the pioneers in such educational mode;
- The regular education may also get the benefit of cloud architecture.

## SUGGESTION

- Depending upon need the universities may choose type of cloud services; but initially private cloud may solve IT Infrastructure problems;
- Depending upon need the regular programme may initiated cloud based services;
- Universities, association and institutions may establish cloud computing systems and architecture based education.

## CONCLUSION

Cloud computing is a wonderful virtualization mechanical systems deals with sophisticated software, hardware, IT Infrastructure. Educational organization and institutions are launching several new educational aspects in the curriculum. The mobile based education, sms alert, recorded video and similar type of education may avail with the help of cloud computing based learning. Funding, planning and initiative regarding launches of cloud computing still a big issue in the countries like India.

## REFERENCES

1. Danielson, Krissi (2008-03-26). "Distinguishing Cloud Computing from Utility Computing". Ebizq.net. [http://www.ebizq.net/blogs/saasweek/2008/03/distinguishing\\_cloud\\_computing/](http://www.ebizq.net/blogs/saasweek/2008/03/distinguishing_cloud_computing/). Retrieved 2010-08-22.
2. "Cloud Computing: Clash of the clouds". The Economist. 2009-10-15. [http://www.economist.com/displaystory.cfm?story\\_id=14637206](http://www.economist.com/displaystory.cfm?story_id=14637206). Retrieved 2009-11-03.
3. "National Science Foundation press release. September 2008. "National Science Foundation Awards Millions to Fourteen Universities for Cloud Computing Research." Retrieved 2010-03-01". Nsf.gov. [http://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=114686](http://www.nsf.gov/news/news_summ.jsp?cntn_id=114686). Retrieved 2010-08-22.
4. Myslewski, Rik (2009-12-02). "Intel puts cloud on single megachip". Theregister.co.uk. [http://www.theregister.co.uk/2009/12/02/intel\\_scc/](http://www.theregister.co.uk/2009/12/02/intel_scc/). Retrieved 2010-08-22.
5. "Nicholas Carr on 'The Big Switch' to cloud computing". Computerworlduk.com. <http://www.computerworlduk.com/technology/internet/applications/instant-expert/index.cfm?articleid=1610>. Retrieved 2010-08-22.
6. "IEEE Technical Committee on Services Computing". Tab.computer.org. <http://tab.computer.org/tcsc>. Retrieved 2010-08-22.
7. "Cloud Computing : the future of computing is here" Microsoft Interface | April - June 2010
8. Abdul Azeez, T.A. "How to Design A Digital Library" SRELS Journal of Information Management Vol. 40, No. 3 September 2003 Paper Z. p267-273.
9. Adhikary, Madhabmohan, And Amitava Nandi "Ideas of Ranganathan's Classification Theory Pervaded by Oriental Philosophy" SRELS Journal of Information management Vol. 40, No 3 September 2003. Paper AA. P275-284.
10. Agarwal, Ritu and viswanath venkatesh. "Assessing a firms web presence: A Heuristic Evaluation Procedure for the measurement of usability" information systems research 13, no 3 (September 2002)
11. Aladwani, Adel M "An integrated performance model of information systems projects" journal of management information systems 19 no 1 (September 2002).
12. Alleman, James "Real options real opportunities" Optimize magazine (January 2002)
13. Aparajita, "Virtual Information Center: How Close To Reality." SRELS Journal of information Management, Vol. 42, No. 4, December 2005, Paper A.E. p419-426.

14. A P J Abdul Kalam "IT Strategy in Defense Environment." DESIDOC Bulletin of Information Technology, Vol. 20, Nos. 1&2 2003. P 7-12
15. Aries, James A Subhankar Banerjee, Marc S Brittan, Eric Dillon, janusz s. kowalik and john p. lixvar. "Capacity and performance analysis of distributed enterprise system" communication of the ACM 45, no 6. 2002.
16. Attewell, Paul and James rule. "Computing and organization: what we know and what we don't know" communications of the ACM 27, No 12. 1984.
17. Is cloud computing Green by Tom Raftery  
<http://www.enterpriseirregulars.com/44736/is-cloud-computing-green>
18. Paul, Prantosh Kumar, Bibhuti Bhusan Sarangi and Dipak Chaterjee "Cloud Computing and its strategic and technical application in Information Networks in Indian Scenario accepted in IEEE sponsored- National Conference on Information and Software Engineering, AVIT, VMU, 9-10 March. Paper published
19. Paul, Prantosh Kumar, Bibhuti Bhusan Sarangi and Bhaskar Karn "Information Systems & Networks :Emphasizing issues and challenges of subject based ISN" accepted in IEEE sponsored- National Conference on Information and Software Engineering, AVIT, VMU, 9-10 March. Paper published
20. Paul, Prantosh Kumar, Shyamsundar Bairagya, Bhusan Bhusan Sarangi 'Expert System and Artificial Intelligence: its evolution and contemporary scenario with special reference to its uses in Information Science (IS). in IEEE/IETE/CSI Co-sponsored 'National Conference on VLSI, Embedded System & Communication Technology', Department of Electronics & Communication Engineering, AVIT (AICTE-NBA-VMU approved)
21. Paul, Prantosh Kumar, Bhusan Bhusan Sarangi, Asok Kumar 'Information Systems and Networks (ISN): its types, components with special reference to utilization and role of Networking and Communication Technologies in ISN –Contemporary Scenario' in IEEE/IETE/CSI Co-sponsored 'National Conference on VLSI, Embedded System & Communication Technology', Department of Electronics & Communication Engineering, AVIT (AICTE-NBA-VMU approved)
22. Paul, Prantosh Kumar, Dipak Chaterjee and Bhaskar Karn 'Information Management: emphasizing traditional and technology focused approach – An Overview' accepted in IEEE/CSI/AICTE co sponsored National Conference on Paradigm shift in Education Technology & Content Management, DIT, Techno India (AICTE-NBA-WBUT approved) Paper published
23. Paul, Prantosh Kumar, Mrinal Kanti Ghose, Dipak Chaterjee 'Education Technology: its benefits and utilization with special reference to EduNxt, Knowledge Delivery Model of Sikkim Manipal University-A Study' in IEEE/CSI/AICTE co sponsored National Conference on Paradigm shift in Education Technology & Content Management, DIT, Techno India (AICTE-NBA-WBUT approved) Paper published
24. Paul, Prantosh Kumar, Dipak Chaterjee and Bhaskar Karn "Cloud Computing: Issues and challenges with probable solution in Indian Perspectives" IJIDT International Journal of Information Dissemination & Technology, MMU, Ambala. Vol-2 .No-2.

## **ABHINAV**

**NATIONAL MONTHLY REFEREED JOURNAL OF RESEARCH IN ARTS & EDUCATION**

**[www.abhinavjournal.com](http://www.abhinavjournal.com)**

25. Paul, Prantosh Kumar, Dipak Chaterjee and Bhaskar Karn “Information Management: Emphasizing its different angel and view with special reference to manpower development programme in India” IJIDT International Journal of Information Dissemination & Technology,MMU,Ambala. Vol-2 .No-2.
26. Paul, Prantosh Kumar,Shyamsundar Bairagya, ‘Management Science and its increasing influence and interaction with Information Science (IS): an Overview’ in International Conference on Emerging Market and Issues in Management, [ICEMIM-12], VIT University,Vellore,16th March,2012.
27. Paul, Prantosh Kumar ,Kalyan Kumar ‘Information Management & Its Needs with Focus on Job Based Versatile Academic Programmes in India in International Conference on Emerging Market and Issues in Management, [ICEMIM-12], VIT University,Vellore,16th March,2012.
28. [www.en.wikipedia.org](http://www.en.wikipedia.org)