Chapter 10
Cloud Computing Applications in Education through E-Governance: An Indian Perspective

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ABSTRACT

Cloud computing is the new style of distributed computing that aims to provide computing resources through the Internet, on a pay-per-use-basis, as a variety of services to the cloud consumers. With the emergence of newer technologies, the extensive use of ICT in every field of life is compelling the migration of e-governance services to the cloud environment. In this context, in India, the National e-Governance Plan (NeGP) has been introduced which is the flagship e-governance project. This comprises 27 Mission Mode Projects relating to Health, Education, Public Distribution System, etc. By the inclusion of education in the NeGP, the concept of effective governance of education sector is thoroughly innovated in connecting the various state governments for the effective handling of the new challenges confronting the education sector. This chapter attempts to provide a model for e-governance in the education sector using cloud computing. It is suggested that the proposed educational e-governance model can facilitate in improving transparency, providing speedy information dissemination, improving administrative efficiency, and providing public services in all aspects of the provision of education. There is no doubt that the quality of output of the education system will substantially improve if the e-governance in the education is implemented using the cloud technologies.

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INTRODUCTION

E-governance (Electronic Governance) is the use of Information and Communication Technology (ICT) at all levels of Governance in order to provide services to the citizens, interaction with business enterprises and communication and exchange of information between different agencies of the government in a speedy, convenient, efficient and transparent manner (Government of India, 2008). It is viewed as a vehicle to initiate and sustain reforms by focussing on three broad areas such as governance for enhancing transparency and promoting a democratic society, providing efficient, cost-effective and convenient services to citizens and businesses, and the management of voluminous information and data successfully through safe and secure communication (Swamy, 2011).

The main objective of e-governance is to support and simplify governance for the government, citizens and the businesses (Backus, 2001). The Gartner group has formed the four phase e-governance maturity model which can serve as a model for India in the evolution of an e-government strategy. In the first phase, the basic information is provided to the public through the website. In the second phase, the government will interact with their citizens through their web sites with the features of email facility, online payment etc. At the third stage, integrated web sites enable the complete transactions in a safe and secure manner. As an example, the online execution of public services such as payment of account balances and receiving licenses. In the fourth phase, government transform the current operation process to provide more efficient, integrated, unified, and personal service through the Internet (Khatib & Hala, 2009).

Education system plays an important role in the growth of any developing country. Most of the Universities and colleges are already providing their services through the e-governance. Since the use of ICT is increasing day by day and data is becoming big, there has to be a solution for governing the increasing load of information. The cloud computing technology is the most appropriate solution for the extensive use of e-governance. It allows us to share and use the existing infrastructure and the applications from anywhere.

The future of education technology is all about the anywhere-and-anytime access as well as the teaching and learning to be a social activity (Britland, 2014). E-learning aims to change the teaching and learning processes. Here, students can learn from anywhere and teachers can teach from anywhere which is useful for the students in the rural areas. Furthermore, the cloud-based system enables students to access learning material free of cost, through their basic, low-cost mobile devices (Jasmine, 2014).

In this chapter, we first present the concept of e-governance and the current rating of e-governance for various governments around the world. We also discuss the emerging cloud computing paradigm with the benefits it provides and the inherent limitations. This chapter also discusses the implementation of the cloud computing paradigm in India and present it as a case study. The chapter also proposes a cloud model of e-governance for the education sector.

E-GOVERNANCE

The worldwide revolution of the Internet is changing our lives in the way we work, learn and interact. Now the government is providing most of the services through online portals. Over the last few years, the cost of the hardware has been continually decreasing and the cost of the data storage, maintenance
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