Chapter 8
Role of Cloud Computing in School Education

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ABSTRACT

Government and non-government organizations throughout the world are investing a lot in education because it is a primary tool to reduce poverty and crime in society. Still, the drop-out rates in primary as well as K12 education creates big worries for upcoming demands. This requires new strategies to make education motivating and improve student's commitment in learning. Student learning needs to be more flexible in time and place with interesting assignments and engagements. Technology can play a vital role in this and can enrich the student leaning in many ways. However, with the advent of new educational tools, their affordability and access has become a significant concern for the schools. The cost factor for adopting technology in education can be addressed by cloud computing technology. School education on cloud computing platform will facilitate the low-cost technology access with inherent features like flexibility, privacy, scalability, provisioning, reliability, and security. Cloud computing-based school education infrastructure will inculcate the participation and self-evaluation skills in the students. This chapter reviews the educational attainment and educational challenges in indifferent countries including the choice of subjects in K12 education for students as well as the technology options available for the students. It then outlines the school education improvement strategy with integration of cloud computing benefits in the school education system.

INTRODUCTION

Education is the backbone of human life and is a basic tool for economic and social development (Sabi et al., 2016; Kumar & Nanda, 2019). School education with primary standards, high school and K12 are essential for career prospects and future growth. A survey done by UNESCO (United Nations Educational, Scientific and Cultural Organization) has found that population of 25+ years who have attained at least

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Table 1. Education attainment for population 25+ years (both genders)

Country	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Average
Bangladesh	47.62	47.62	48.79	54.75	56.3	51.016
Colombia	73.57	74.51	75.4	76	77.06	75.308
France	98.45	97.9	97.54	97.52	97.63	97.808
Germany	100	100	100	100	100	100
United States of America	98.79	98.87	98.79	98.77	98.88	98.82
Turkey	86.96	87.3	87.83	88.28	80.94	86.262

primary education i.e. standard 1 or higher in different countries is not very much consistent across the world. Table 1 shows this data of different countries in years from 2012 to 2016 and their average (http://data.uis.unesco.org/#). If we consider the population of students entering and completing the K-12 education, the drop-out rate is very high. This is typically true for the Science, Technology, Engineering and Mathematics disciplines (STEM). A review of the world wide scenario has been presented by Kumar & Sharma (2017). On the other side, availability of teachers for the school students also does not show a very rosy picture and the ratio of student: teacher is generally very high. This student to teacher ratio is one of the important parameter in determining the effectiveness of school education in any country. The average of pupil – teacher ratio head count basis of years 2012 to 2017 as reported by UNESCO (http://data.uis.unesco.org/#) has been presented in Figure 1.

Choice of Subjects in K12

Student passing from Junior School i.e. 8th class are influenced by the experience of seniors, friends and relatives in making choices of subjects for K12 studies. The exposure to subjects like Science, Commerce and Arts helps them in selecting pathways. The over-all performance of school students in different fields, Classroom teaching, Teacher knowledge and Skills, LMS (Learning Management System) etc. always remain a guiding tool for this selection. Also, the target of any student to become Engineer, Doctor, Manager or Administrator guide them for selection of subjects. However, if we consider the Information Technology area, generally there are seven pathways available as a choice of subjects for

Figure 1. Comparison of student-teacher ratio