

# Big Data Analytics in K-12 Education

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## Abstract

Big data have proven the substantial values of our perception and forethought into the world. With the swift growth of digital applications and mobile devices, educational industry have been engendered at an incomparable bound. The evolving vastly stretchable and accessible methodologies to handling of data and analysis of data permit us to abstract new visions and noteworthy data from educational domain that can assist the students, teachers and the entire learning network. In digital teaching space, educators and learners use big data techniques to collect data about their wards to improvise their modified learnings. This leads to valuable source to educators to stimulate their learning pathways to a knowledgeable one.

**Key words:** big data, big data analytics, educational data mining, K-12 education

## INTRODUCTION

Organizations routine is to collect, store and analyze large amounts of data and increase helpful visions into day today life. In education sector, futurist idea of classroom lectures tacked with continuous audio, videos that capture elaborate facts of students like their expressions, physical movements and interactive with other students. The learner and educators have to relate with each other for every statement. Big data holds vital and important prospective for the

forthcoming educational era. We suggest to emphasize the teachers to guide the students about the courses and content reference that increase students' in the learning skills, area of interest. The method of the students' learning process and to recognize the ideal method plays a vital role in the knowledge acquisition process that would be the tip to determine the improvements in the achieved academic performance and to preserve the knowledge in the future. We acquaint the optimization methods and try to frame their career through personalization of the individual students' drives through the education framework.

## INNOVATION IN EDUCATION SECTOR

Coronavirus completely transforms the universe into digital world. The education sector, and the absolute scale of its is highly depend on online education. In this crisis, technology plays an inevitable part of reality, and the latest technologies like google classroom, moodle, and other online courses are used to enlighten the practices, models, and processes of learning. Technology used in education was already underway before the pandemic, but the crisis has enhanced the transformation. Perhaps, education is the only sector which holds the maximum prospective. Instructors and learners who were used to customary



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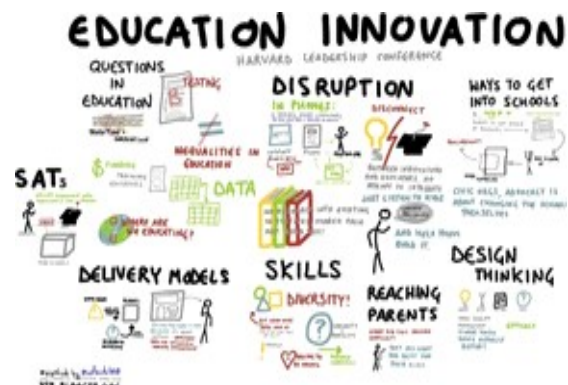


Fig 1. Educational Innovation

classroom procedures have to move quickly to tech-led holistic keys.

### TAILORED CORE CURRICULUM FOR UPGRADED LEARNING OUTCOMES

Traditional teaching space have an inert learning plans that are useful for all learner, irrespective of their learning dimensions. Big Educational technology is to assist the progress of new educational models. In today's digital world some devices will amuse, but the other educational application or online education websites are playing vital role to the learners and to develop the excellence in education. In the online classroom, educators use big data to collect information about students and improve customized learning plans. This provides a valuable resource to educators to enhance their learning paths. Using advanced big data systems, schools, college and universities are implementing blended learning that fuse the traditional classroom and curricula with the online learning.

### USING BIG EDUCATIONAL DATA TO PROGRESS STUDENTS PERFORMANCE

Education is shifting the learners to new era through online education. As technology evolves, big data systems assist instructors to realize the learner's behavior and interest. Contemporary educators use this technology to identify the learner's problem areas, rather than trusting on usual test to solve the issues and by adapting the new learning techniques, learners can occupy the time efficiently to through stimulating subjects to keep pace with the rest of the class. Education help the teacher to evaluate the students perfectly, while they are constantly and continuously observing their activities and progress of improvement.

### THE NEW PATH TO LEARNING POSSIBILITIES

Traditional teaching methods direct the students to advance the students based on their age. Extraordinarily capable students may enter innovative learning pathways. Using big data systems,



Fig 2. Educational Big data

educators can measure student performance continuously and advance students accordingly.

### DEARTH OF DIGITAL CONTENT FOR ONLINE TEACHING

In present state, all educational institutions have come across many shift overs from traditional classes to online classes and digital applications and tools. To develop a informative content for online class have to easy and ready to access to the learners which is the need of the hour. During this pandemic all the schools, colleges and universities are preparing for the new reality online platforms Schools are tailored their web-based learning platforms for their various age groups, whereas, in higher education sectors, colleges and universities custom-made their digital contents according to courses offered by them.

### ASSESSMENTS AND EVALUATING PROGRESS

One more contest for instructors is in what way to involve and occupy their wards constantly and keep their progress continuously to high scales. Assessment and valuating their test scripts are essential part to evaluate their understanding capacities, and based on that we can propose their future teaching-learning activities.

Digital tools like Kahoot, Google classroom, are used in educational institutions that assist to keep track of learners performance remotely. Applications such as Google Docs, Sheets, Slides and Forms are used to enhance the teaching - learning presentation skill. Online tools helped in streamlining and automating of teachers' and their managerial work.

### COLLABORATION

In digital education, there are also concerns about social skills and lack of interaction among students. This has directed the educational institutions to give significant importance to maintaining their wards' curricular and co-curricular activities. Schools, colleges and universities have online counselling to students to help them in this pandemic situation. In addition, institutions have also started to counsel the parents to keep their child active.

### USAGE OF BIG DATA ANALYSIS IN EDUCATION SECTOR DEVELOPMENT

#### Enhances learning effectiveness

The instructor collects all types of learner's data, such as attendance, exam results, weekly or monthly assessments, health related data, learning difficulties, queries or clarifications from the learners.

The instructor examines these data regularly and progressively, so that instructor can plan their teaching classes according to the needs of the student, and this

is the personalized learning method, which is a program that allocate knowledge according to each learning capacities.

Education leads to great student participation, and the teacher also understands the level of each student



**Fig 3.** Contribution of Big data

individually, help him to get appropriate guidance, and additional resources to improve students' academic level.

#### **More Effective in International Employment**

By analyzing these data using Educational data techniques, learners can select international universities and their courses and universities are also having their admission accordingly.

The university's employment office can analyze student data globally, and they can identify countries where its students have better potential.

#### **CONCLUSION**

When the educational sector re-opens, the technology will be integrated into the curriculum – especially if teachers have a varied of students.

There is no specific method to adopt these changes, but it is the need of the hour and inevitable one.

Students feel more comfortable in online format and they do have more options to clarify their doubts using chat box and sending e-mail.

Teachers have to be very focused on how they are going to connect and engage their wards. Teachers have to evaluate their wards in knowledge and in skillsets. Digital learning is playing a vital role and emerging as an advanced method in education.

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