Roll of Big Data Analytics in Higher Education System

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Abstract: In today's time, Big Data Analysis is a very important contribution in the world of education, because now the amount of online education has been increased a lot in the new generation, In today's time, the data is huge, Big Data is needed. With the help of Big Data, we can organize the horizontal data well in seconds. Also using big data analysis, the student's behavior is understood and the student's interests are known thus using big data analysis the dropout rate of students can also be reduced. Data Analysis is also helpful the behavior of the student can be understood and also by studying what is the defect in it based on the result of the previous year. The defect can also be removed using big data analysis. It is very beneficial to make their work easier.Using large data analysis, the students as well as the teachers are also greatly benefited as their work becomes easier. Data Analysis is a great revolution in the education world. Many research papers have been published on it in the last few years.

Keywords: Big Data, Higher Education, Big Data Analytics, Traditional Data

I. INTRODUCTION

The use of big data is very important for higher education. From big data we can organize horizontal data in a systematic way so that we can make huge changes in education field. Specific behavior of students can be learned on learning technology. We can use data tiers. By doing this we can know the goal of the student.By using big data we can know how many marks he or she got in the last semester and previous semester so that we can know the average effort of a student and how much effort needs.

Thanks to big data, schools are able to compare student performance over time and among departments or campuses. This allows you to find out what a system does well and what it could improve in terms of education. Teachers have easy access to data which they can study quickly and act on to meet the needs of students. Besides, decisions in schools like setting budgets, looking at teacher performance and changing the curriculum can be based on reliable data, allowing everyone to see the reasons behind them. Using artificial intelligence along with big data provides more capacity, as software can improve and adapt on its own often. As people understand the lasting value of big data, building strong IT infrastructure is essential for any research institution to achieve academic success and run effectively.
I want many big educational institutions to use big data technology so that it can benefit the students.

II. LITERATURE REVIEW

By using big data we can make a lot of changes in the education sector. Generally many organizations use different analysis techniques to organize the data into a systematic change but those analysis tools are not able to organize the horizontal data well but we can use the big data to organize the horizontal data arrange well.Big data is very big, it contains a lot of data and its processing is also very fast.Even when the data is very large in Terabytes or Petabytes, we can easily manage it by using Big Data to process the data in seconds.

Many experts have pointed out that traditional data handling methods do not cope well with how much, fast or diverse educational data is present, while big data can manage any such challenges. Combining the use of big data analytics and cloud storage is thought to improve access to information and reduce issues, helping educational stakeholders team up

https://doi.org/10.63766/spujstmr.24.000026

more conveniently. Recent studies reveal that creating learning plans based on big data insights leads to students' better achievements and increased satisfaction. In addition, studies from different countries reveal that big data helps schools adjust content for students of different cultures and languages. Issues involving ethics, student privacy and consent related to big data in the educational field are also found in the literature. Most experts say that with strong security steps in place, the advantages of big data are more important than the dangers. In general, the increasing amount of research proves that big data is having a major positive impact on schools today.

Data can be in any format be it audio or video or sensor format with big data we can organize it well.

III. BIG DATA ANALYTICS IN HIGHER EDUCATION

By analyzing big data, we can solve many problems in the field of education. Through big data analysis, we can find out what students are interested in. So that it can be taught easily to the students.

When an epidemic like Corona came, the demand for online courses increased, people started studying online courses, , they started giving online exams, they also started checking results online, this time Big Data played a very important role. All are softwares that store data but using Big Data we can organize horizontal data in a very organized manner in seconds.

Hadoop Analytics tools for Big data with the help of which we can analyse a lot of data in the field of education, by analysing the online course of the student, we can know what students 's interested learning method. Hadoop tool of big data plays a very important role in the field of education.

Big data analyst tool can show good results to the student by showing his/her fault and removing the fault. In education field, with analytics you can observe the activity of the student and create separate group of same groups of students which helps a lot in education field.

Apart from Hadoop, people in academia regularly use Apache Spark, NoSQL databases and machine learning libraries to help with data analysis. With such tools, it's possible to make learning systems that change the course content according to how each student is performing at a given time. The more personalized learning is, the more students interact and the more easily they remember. Furthermore, using dashboards based on big data, academic advisors can check how students perform in classes, tests and assignment delivery. As a result, advisers can identify issues early so they can help students before they get too far behind.

Increasingly, big data is used when developing education materials. Using the results of course feedback, student results and new trends in employment, universities can make sure their syllabi stay relevant and challenging. Additionally, online conversations and surveys are reviewed by institutions to discover what students think and how they feel. With this information, administrators can set up classrooms that help students perform better academically. Faculty development can also gain from these reviews, since using students' feedback and suggestions helps teachers increase their effectiveness. All of these strategies, based on analytics, support a lively, flexible and accepting environment in higher education.

IV. METHODOLOGY

Big data plays a very important role for higher education. Helping data analysis we can study the behavior of students. By collecting and grouping the last year data for this we can use different methods. We may collect data using methods such as questionnaires or standard deviation.

Based on the result of the behavior behind it we can evaluate it and we can know that the student has the same interest and we can make a separate group of students with the same group this will be very beneficial this will help the student to know the interest. So that we can give him education accordingly and by bringing the data of student online education we get an idea of which subject the student is more interested.There will be a huge revolution in the world of education which will benefit not only the students but also the teachers who teach the students and this will make their work much easier.

A different method uses learning analytics systems to collect data in real time from digital learning platforms. Data collection from these systems includes clicking on our pages, time spent interacting with different features and discussion participation, providing close feedback on learning engagement. By using decision trees and support vector

machines as supervised learning algorithms, educators are able to group students by risk or interest. Unsupervised clustering allows students to be organized by similarities in results or behaviors, without any labels having been provided initially.

Psychometric analysis can add value to survey methods by measuring someone's mood, level of motivation and how much stress they feel. By including academic results with these observations, we can see the student situation in a broader way. By using both big data and interviews, universities can better discover what students really need. These findings provide direction to teaching practices within each classroom and also influence important decisions throughout the organization.

V. RESULTS

Data analysis throw student behavior can be understood, it can know what the student is interested in, it can know the reason why the student drops out, it can reduce the number of students who drop out of higher education and how to learn what the students are interested in. If you know that the method seems simple, it can be taught well, this benefits the students as well as the teachers and administrators.

Big data analytics have found that using predictive alerts and individual guidance greatly lowers the likelihood of academic problems. Adopting data dashboard solutions led to a 10 to 20% increase in students staying enrolled at a number of schools. Used in conjunction with clustering student actions, these learning interventions have made students more active in their lessons and better at supporting one another. Students working in the same performance group or preference area typically work harder when they work together.

Analyzing big data has revealed that some people have less access to learning tools, so institutions can now help these groups by providing appropriate resources. A review of data found that students who mostly watched lectures on their phones received scores that were lower than usual which encouraged activating mobile access. That's why more organizations are using big data to make strategic improvements.

VI. DISCUSSION

Online education has increased in today's internet generation and as a result the roll of big data has become very important. Huge amount of data can be sorted and organized in seconds with the help of bigdata. Bigdata analysis is mostly used in education sector to study student behavior. Many review papers have also come out on it.

Because digital learning is growing so quickly, we now rely heavily on data in education. With big data, schools can improve how students learn and also support their planning, accreditation and compliance. When universities offer more courses online, big data helps record student achievements and maintain quality.

Many recent conversations in academic settings point out that educators and administrators should be offered training in data ethics. This helps students who use analytics get a better education, while still staying protected from privacy issues. Because biometric and emotional recognizers are used more in education, big data's role will get even bigger and more complicated. Now, making ethics part of how data is used is considered an important priority by those involved in academic talks.

VII. CONCLUSION

Big data analysis has an important contribution in education. Data analysis is very beneficial to the student. With the help of data, the activity of the student can be analyzed whether it is online learning or mobile learning. It can be known what he or she is interested. In today's internet era where the amount of online education has increased Data analysis plays a very important role.By analyzing the data of online education of the student and analyzing the result of the previous year, his aptitude can be known and the shortcomings can be removed.

Many papers have also been published on Big Data Analysis being most used in the field of education as it benefits the students as well as the teachers as well as the course makers and the management and ever since the advent of online education the analysis of Big Data has become very popular in education field play an important role.

The use of big data has helped shape the future of higher education by giving useful information that improves how colleges are run and taught. Big data guides both the identification of those needing extra help and the creation of appropriate learning plans. As new advances take place in education technology, data control, safety and ethics will become more significant. Institutions that keep upgrading their big data tools can help achieve a better education system for all people everywhere.

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