

Research on data analysis

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Abstract: In this research, we provide an overview of the concept of data analysis science, highlighting its importance and types. We also discuss the four primary types of data analysis and mentioned the data sources that companies rely on in the analysis process, as well as how to determine their quality. Additionally, we outline the stages that data undergoes during the analysis process before it becomes valuable information for the organization. We also mention various data types and finally how data analysis can contribute to education.

Keywords: data analysis science, organization, education.

1. INTRODUCTION

In this research, we will learn about the concept of data analysis, its capabilities, the most important techniques of data analysis, types of data analysis, and the stages through which data passes before it becomes useful. Information and insights for organizations and institutions

We will also learn about the types and sources of data and how the analysis of this data can be used in education, to provide a variety of opportunities. And options to improve the education process

2. SUBJECT

Topics:

The most important terms in the study and analysis of data in the field of :(electronic) education Academic analytics is the process by which analysis is used to provide organizations with the data necessary to support operational. organizational, and financial decision-making

Educational data mining a set of methods and tools that focus on researching and trying to understand and explore educational data patterns and adapt them to improve the educational process

Learning analytics the processes concerned with measuring, collecting, and analyzing learner data and its contexts in order to understand the learning process and the environments in which learning occurs and to improve the educational process

data analysis process:

Data analysis is the process of arranging, collecting, purifying, and modeling “data” in multiple ways.

To extract

useful information to make decisions in specific areas such as finance, business, health, etc., and the main purpose of data analysis is to extract useful information from it and make effective decisions based on it. This extracted information is also used to explain phenomena that occurred during a specific time, to know the reasons for their occurrence, and to make decisions based on logical data and with a high percentage of correctness.

It is worth noting that data is not information. Data is a set of letters words, numbers, symbols, or raw images related to a particular topic. While information is the result of processing a specific set of data, the result of the processing is understandable to the people involved, unlike data.

That is, the data analyst uses the science of data analysis in dealing with big data to extract useful information from it, at the request of large companies and institutions that have this amount of data and want to analyze it. Programming languages used in data analysis two leading languages in the field of data analysis Python and R. They are the two languages that are convenient and best used in intelligent data analysis. They are one of the easiest languages that can be learned, as they do not require any effort and time to learn, nor any prior knowledge of programming.

The field of data analysis is one of the fields that diverge greatly and contains within it more than one term. These terms generally express the components of this science and its components; Such as the term data analysis, and the term big data, which although closely related to other, are different in their definition each. In order to clearly understand the field of data analysis, we must address the definition of each term individually, and know the role of individuals in each of them, so that we can form a complete picture of this field and its parts related to each other.

Big Data

The term big data is given to ordinary data whose size is huge, and contains a large amount of information, which also has its characteristics that its size increases at a rapid and high rate with the passage of time, in addition to that it is characterized by complexity and overlap in a way that makes dealing with it or even storing it through tools and programs.

Ordinary data management is very difficult.

The main objective of big data analysis is to obtain clear information about the current situation and specific expectations about the future, by studying the behavior of users whose data has been collected in different ways.

There are other goals of big data analysis, such as access to real values that reflect the conditions of companies in global markets compared to their competitors, and big data is relied upon to extract information that helps in studying the motives of crime, or preventing natural disasters, or at the most, preparing for them in an appropriate manner that reduces their risk to the public. Humanity.

The reason the data volume is increasing at a rapid rate is due to the proliferation of devices that users interact with, which depend on the Internet even if only slightly.

At first, it was limited to desktop and laptop computers, and then expanded to include many mobile devices, especially with the release of the Android system.

Which was the basic nucleus for the emergence of tablets, then smart TV, down to devices that depend on the

Internet Things

such as a smart refrigerator, smart cars, or any electronic device that connects to the Internet and has a simple user interface that contains private data that the user interacts with for companies or commercial and economic dealings with big data, all the devices we mentioned previously send their data in one way or another (sometimes with the permission of the user and sometimes without permission at others) to their manufacturers.

Which in turn analyzes this data with the aim of obtaining information about the user's interaction with the product, his satisfaction with it, dissatisfaction with one of its characteristics, more details about his willingness to buy this product again or improved versions of it, and any information that can be used to predict the user's future behavior towards this the product or its brand.

Examples that fall under the definition of big data:

Stock exchange data.

NASA data.

Social media data.

Behavioral data of users of online store websites users.

Data of smart device users such as smart watches these examples generate data daily ranging in size from 1 terabyte.

3. DATA SCIENCE

Simply put, data science is a science that uses several fields such as programming, mathematics, statistics, and machine learning to access useful information from Big Data .

The science of data analysis is usually used to make decisions and reach expectations by analyzing this data from different trends and factors, some of these factors may be unclear at the present time, which is necessary because this science is relied upon in making future decisions and plans for the long term. the long.

3- The Data Scientist and his role the data scientist analyzes the available data, including images, words, and videos, to create an artificial intelligence capable of performing the analytical tasks of data that usually needs a human element to analyze it.

this artificial intelligence will reach predictions and predictions that can be used to provide clear reports, which help companies access reliable 'information in making decisions regarding the future of these companies activity and increase their success rate .

With the huge amount of data in recent times, the science of data Analysis has become every important. In order to carry out business development and develop strategic plans to excel in the labor market, it is. necessary to master data analysis to improve the decision-making process

In our data-rich age, studies show that at least 2.5 quintillion bytes From the data that is produced daily, it can be optimally exploited to achieve success in the organization and in order to benefit from that data, you must first analyze it.

Data analysis is a vital part of running any successful business. And when You use data effectively, it puts you on the right path to better understanding your organization's performance and improving decision- making regarding its future activities. There are many ways to benefit from data at all levels.

How important is the data analysis process??

Data is considered one of the valuable assets in all establishments, of all type's sizes and activities. There are many uses and benefits of data analysis, some of which are:

You can benefit from management-level data analysis, as it helps you make business decisions based on logical facts, figures, and data that you can present to members and stakeholders with confidence. For example, you can analyze market data to know

Where to invest your money, discover the best growth opportunities for your business, forecast your business income in the coming months, or know the problems you face and then find out the most appropriate way to address them.

Data analysis can be used to learn customer needs and behaviors where you can learn the most used communication channels of your customers, their demographics, interests, habits, buying behaviors, and many more.

Data analysis also gives you the advantage of identifying potential customers and avoiding wasting resources and marketing efforts on targeting people who are not interested in your business or using marketing methods and methods that are useless with your target group.

Track customer satisfaction by analyzing customer reviews or analyzing the performance of your organization's customer service department.

Data analytics can help organizations understand risks and take preventive measures. For example, retailers can use data analysis to determine which stores are most vulnerable to theft, and based on the results of the analysis, they can then determine how much security is needed in stores and stores.

Understand market conditions and trends, build actionable insights about competitors, and identify the best ways to outpace competitors. For example, if you're a retailer and your competitors are changing their marketing strategy or lowering prices, you can adapt to those changes right after you discover them, and buy time

Improving the customer experience: Whether we are talking about e-commerce, insurance companies, or companies that provide software as a service (SAS), they are all now competing to satisfy customers. As a result, organizations use data analysis to optimize the customer experience.

Types of data analysis:

There are four main types of data analysis used. Although experts in the field classify these types into four, they are all related and dependent on each other. The four types of data analysis are:

Descriptive Analysis:

It analyzes whole data or a sample of summarized numerical data. Through it, a set of statistical indicators are shown, such as the mean and standard deviation of continuous data, and the percentage and frequency of categorical data.

Descriptive analysis is the simplest and most common use in business. It answers the question: "What happened?" By analyzing the existing data, to know the problems/events facing the organization.

Diagnostic Analysis

This type of data analysis is useful in identifying data patterns and helps you find solutions to problems that may arise in the future for your business by finding patterns similar to those problems and providing solutions to them.

After asking the first question: "What happened?", the next step is to delve deeper into the event and find out the reasons that led to its occurrence through the question "Why did it happen?" Here comes the role of a new type of data analysis, which is diagnostic analysis.

This analysis uses data mining techniques and infers links between them to find out the reasons for the results of descriptive analyses. Organizations benefit from this type of analysis as it creates more connections between data and identifies patterns of behavior. When the organization faces a new problem, you can go back to this analysis and look at the previous results and do not have to start from scratch to analyze that problem.

Predictive Analysis:

This type of data analysis makes predictions about future results based on the data collected and the accuracy of this type depends on the amount of detailed information that is collected and purified correctly.

Predictive analysis answers the question: "What is likely to happen?" This type of analysis uses past or current data to make predictions about future results, such as: assessing risks, forecasting sales, and knowing customer segments.

This analysis is based on statistical modeling, which requires resources, techniques, and people with specialized skills. It is worth noting that forecasts are only estimates; The accuracy of forecasts depends on the quality and detail of the data entered.

Unlike the previous two types, many organizations find it difficult to implement predictive analysis within their activities and businesses, as some of them do not have the manpower, tools, and experience necessary to implement predictive analysis. Others are not yet ready to invest in hiring specialized data analysis cases, companies turn to consultants, teams or training existing employees. In these data analytics solutions provided by third-party

Prescriptive Analysis:

Mandatory analysis is the final limit of data analysis capabilities, as it is not satisfied with forecasting or forecasting, but rather suggests options to take advantage of previous results and determine the methods and methods to be taken in the event of a future problem or a decision to develop business.

Prescriptive analysis for its implementation requires modern techniques and practices related to mathematics and computer science. It is worth noting that few organizations have the capacity to perform this type of analysis; Because of the resources, techniques, and specialized skills that it requires in this regard.

Statistical Analysis:

This type of data analysis includes the process of collecting, analyzing, interpreting, presenting and modeling data, as it analyzes a set of data or a sample of it.

What stages do you go through when performing data analysis?

The first stage: Determine the goal of the data analysis:

At this stage, you define the goal for which you will analyze the data, what type of data analysis you want to do, and what techniques and tools you will use to conduct that analysis.

This step can start with general and simple goals, for example: “Your goal could be to increase sales or increase revenue during a certain period.” Hence that objective should become clearer after consultation with relevant stakeholders and departments. The overall goal becomes more specific. Referring to the previous example, the goal will become as follows: “The company’s goal in the analysis is to find products that have a chance of success based on customer purchase history”

The second stage of data analysis Data collection:

In this stage, you will collect data from various sources to work on analyzing it to find data related to the problem or to support an analytical solution for the stated goal. This stage may involve carrying out several tasks to obtain data, such as referring to databases, selecting data from different sources, submitting requests to other departments to obtain data, or searching for external sources of data.

The third stage of data analysis: Data cleaning:

Your task at this stage is to clean up the collected data to avoid any errors during the data analysis process. This stage is one of the most dangerous stages that you will go through when you perform a data analysis, because the process of professional data purification effectively contributes to extracting high quality results that serve the goals set for the success of the business.

The fourth stage of data analysis Data Analysis:

After you have collected, purified, and processed data, you can now perform professional data analysis by using data analysis tools and software that will help you understand, interpret and draw conclusions based on previously set goals.

The fifth stage of data analysis: Interpreting the data:

In this important stage, you will interpret the results obtained from the data analysis process, through a detailed report, table, or chart, and use these interpretations to determine the best course of action

Sixth stage of data analysis: data visualization:

At this stage, you will work on visualizing the data through charts and graphs so that it is easy for the human mind to understand and process. This method gives you the ability to monitor relationships and compare data sets, enabling you to discover new information that contributes to the success of the business.

Data sources used during the data analysis process:

The stage of data collection is the process of obtaining, collecting extracting, and storing a quantity of unstructured form.

data that may be in a structured or in the data analysis process, the “data collection” stage is the first step before beginning to analyze patterns in the data. The data to be analyzed must be collected from different valid sources. The main objective of data collection is to collect data that is rich in information and related to the problem that needs to analyze its aspects or anticipate future actions.

The data collection process begins with asking some questions such as what kind of data should be collected and what are the sources for it.

The data is divided into two types:

Primary data:

Raw data extracted directly from official sources is known as raw data. This type of data is collected by performance and social conversation techniques such as questionnaires, interviews and surveys. It must be ensured that the, data is collected from the target audience on which the analysis is being conducted, otherwise it will constitute a burden at the stage of data processing.

The methods of collecting primary data are:

Interview: An interview with a person or group of people who fall within the scope of your target audience during which some basic questions related to the business are asked. The data collected is in the form of notes, audio, or video records. These interviews can be organized through personal or formal interviews by phone, face to face, or via e-mail.

Statistical Inquiry: The survey method is the process of searching for answers through forms, in which a list of related questions is asked. The survey method can be conducted online or on the ground. Examples of such online surveys are opinion polls on social media platforms.

Observational research: The method of observation or monitoring is a method of collecting data on a specific topic through observation, where the researcher carefully observes the behavior and practices of the target audience using some data collection tools, and then stores the data in the form of text, audio, video, or any primary forms. In this method, data is collected directly by presenting some questions to the participants. For example, observing a group of customers and their behavior towards products

Experiment: Experimental method is the process of collecting data through conducting experiments, research, and investigations. The most widely used experimental methods are: randomized designs (CRD) randomized statistical experiments, (RBD), LSD Latin square design, and factorial design.

Secondary data:

Secondary data is data that has already been collected and reused for other purposes. This type of data is recorded by the primary data. Among the secondary data sources are the following:

Internal sources: These types of data can easily be found within the organization such as market records, sales, business transactions, customer data, accounting resources, etc. The cost and time of obtaining internal sources is less than that of other sources.

External sources: Data that cannot be found within the organization and that can be obtained through external resources of third parties are considered external sources. And it consumes more cost and time to collect it. Examples of external sources are government statements, news publications.

Sensor data: With the advancement of devices and the emergence of Internet of Things devices, the sensors in these devices collect data that can be used in data analysis to track the performance of products.

Satellite data: Satellites collect a lot of images and data every day through surveillance cameras.

Work requirements in the field of Data Analysis

As we mentioned earlier, the data analyst needs to be familiar with some areas to be able to analyze the data as required of him.

Here are the most important areas to be familiar with:

Programming

Programming is an important part of the field of data analysis, and if you want to start in this field, you need to be familiar with at least one programming language, so experts in the field recommend learning the Python and R programming languages as a start to be able to deal with data analysis libraries such as reshape, and 2scipy since Python is one of the,

languages Programming is relatively easy to write, unlike other programming languages such as Java.

Statistics

Although programming is a basic requirement to enter this field, knowing it without having a basic knowledge of statistics is a waste of time, because statistics is one of the first steps in the process of data analysis.

Be sure to study both descriptive and inferential statistics, as the former refers to quantitative measures that describe the characteristics of the sample, while the latter is intended to be predictive measures that deduce the characteristics of the larger population through the interpretation of the sample.

In general, you will need to know the basics in statistics, but do not worry statistics is a fun science as some of the concepts may be familiar to you, and you may remember them easily since you often studied them in high school.

Math

The product of the data analysis process is the numbers, so a knowledge of mathematics is essential to being a data analyst.

In principle, you need to be familiar with the science of algebra, and how to formulate problems on the ground into mathematical equations that can be understood and solved

Machine learning

Machine learning, or machine learning, uses algebra and statistics to make accurately calculated predictions based on the data being processed.

As a data analyst you only need to know a few examples in the field of machine learning algorithms such as Principal Component Analysis, Neural Networks.

It is important to know that the data analyst does not need to know the theory of these algorithms or even the details of their work, but he must know the pros and cons of these examples, as well as when he should or should not use them in data analysis.

Data processing:

Also known as data wrangling, involves collect raw data and organizing into a format that can be easily understood and analyzed. This field requires familiarity with database programs such as MySQL and Oracle, as well an knowledge of how to format data into CSV and XML files. To be successful in data processing, its important to have a solid understanding of these tools and techniques.

Problem solving

Big data contains a huge number of information, and despite the technical progress, this field is still considered one of the complex fields, because analyzing this data may take a long time and effort, and they are two factors that are not available sufficiently. For example, when you go deeper as an analyst in this field, you will encounter many problems, (don't forget that you analyze data of human users whose behavior changes according to many factors, and sometimes (these factors may not be clear .Therefore, your task always revolves around solving any problems that hinder your understanding of this behavior, and analyzing the data in a way that achieves the maximum benefit for the party you work for in the least possible time and with the least effort, to the extent that you are able to do the analysis process itself, giving you enough time to use this data in forecasting. If you are a data scientist or know and measure current conditions and conditions on the ground if you are an analyst.

Data into a visual image

Although it is not mentioned enough when talking about the field of data analysis, the section of data visualization or converting data into) simple visual forms) is one of the important sections in the field of data analysis. Its importance lies in the fact that the process of data analysis must have an output that non-specialists can understand; This output may be a graph, a chart, or any other visual form that can be understood by decision makers such as CEOs and stockholders. The importance of this field is not limited to the fact that it refines and arranges the information contained in the big data and presents it in images and graphs to decision makers, but it is considered the final product for everyone, meaning that both the data analyst and the data scientist are working to make their end product is the set of images Or charts and graphs, which show the meaning of the data they have analyzed in a neat and tidy manner .

Data Analysis Role

like a data scientist the data analyst performs the same analytical role; with a fundamental difference, which is that the analyst does not provide predictions for what could happen in the future, he only analyzes the available data to analyze the current situation of giant companies and

Institutions

The most important entities that rely on data analysis:

Universities.

banks.

communications companies.

pharmaceutical companies.

top manufacturers.

science laboratories.

Social media platforms.

e-commerce sites.

Education and analysis data:

The use of big data has radically changed most fields, and education is one of the most prominent areas affected by this change. Educational institutions - from primary and secondary schools to universities and online educational service providers - are able to collect, use, and share data more easily and quickly than ever before the use of online learning tools and interaction-based programs increasingly in the field of education has led to an increase in the volume of data, and the difference in the quality of big data that can be collected from learning environments, here we find big data about learners, learning experiences of learners, and we find in-depth data within learning environments. And data about social interactions in learning environments, and detailed data on learning activities from texts, media, videos, etc., and these data vary in quality and depth to varying degrees.

can be leveraged in education, to provide a variety of opportunities and options to improve student learning through adaptive learning or competency-based learning, resulting in better learning as a result of faster and more in-depth diagnosis in cumulative real data of learning needs or troubles encountered during the learning process, including assessment of skills such as structured thinking, collaboration, problem solving in deep context, and an authentic assessment of the subject area and subject matter of knowledge, as well as identification of targeted interventions to improve student success and lower overall costs for students and institutions, and use of existing environments and complex information in decision-making This data can provide modern and effective tools for measuring students' performance of educational tasks, and can also help in the design of learning environments tailored to the specific needs of students, and can give a clear analysis of individual and group reactions to a range of educational issues and other advantages .

The term big data refers to huge amounts of different information,

which is difficult to collect and evaluate through traditional techniques. In addition, it is characterized by the need for rapid processing, so that it is possible to display the common points, trends, and patterns in the behavior of the target group. in the education sector; Data analysis can have a major impact on all staff, from teachers, students, and even coaches to educational leadership and management.

An educational institution receives a large amount of information on a daily basis, as it gets details about attendance and participation, and test results, as students evaluate professors, provide details of their socio-economic status, and share their level of satisfaction with the education they receive Practical methods To collect and analyze data, educational institutions can begin to provide more personalized education.

Ways in which big data helps in the development of the education sector:

Data Analytics Enhance Effective Learning:

Every day the teacher receives all kinds of data about the student, such as: attendance data, test results, personal assessments, health issues, learning difficulties, the types of questions the student asks frequently, and other types of information.

The teacher analyzes this data gradually, so that he can adjust the learning process according to the needs of the student, and this is the personalized learning method which is an educational approach that aims to customize , learning according

to each student's strengths, needs, skills, and interests, and accordingly each student gets An educational plan based on what he knows and how he learns best.

Personalized education leads to greater student participation, and the teacher helps to understand the level of each individual student, which helps him to provide guidance, appropriate guidance, and additional resources to improve the students' academic level. It also helps the teacher to try different methods of teaching and test the student, which enables him to discover the most appropriate method, and begin to apply it in order to achieve better results.

Universities will be more effective in international recruitment: Each university possesses a huge amount of data from previous applications. By analyzing this data, recruiters can select the countries and universities that send the best applicants, which in turn will help recruiters improve the effectiveness of the recruitment process.

in addition to, The University's Employment Office can analyze student data at a global level, and they can identify countries whose students have the best potential.

Big data helps students set career goals:

The teacher or supervisor can analyze the data to create a performance report, and if this student turns out to be a talented artist, the report will recommend a career in that field.

That's exactly what career advisors do, but they're used to drawing conclusions after several interviews, and class assessments. and now; They now have access to big data that will show that the student is a talented artist, as well as good at math and physics too, and according to this example: architecture would be best suited to him, so the recommendation would be more specific.

Universities can limit the number of students who drop out:

The professor can include other types of data in this analysis such as: How many students are late in submitting the project? Attendance rate, and how does it compare to other courses? What about student dropout rates for this course? The professor can compare this data with previous years and identify the negative trend that causes students to drop out. This information helps professors and colleges identify reasons for dropping out, so they can help by including practical solutions to this problem in their academic curricula, and they can also revamp course programs to make them more attractive.

Evaluate the student more accurately:

Some students cannot write well, but they are good at solving practical problems, and some of them suffer from severe test anxiety, which does not allow them to give their best during the test.

Big data can change all that; Not only will teachers rely on tests and papers when grading, they can also rely on feedback. They monitor the situation in the classroom, and instantly add relevant data to their dashboards. And they track the progress of the student from every aspect, so the teacher can evaluate the students more realistically, reflecting their true level.

Improving decision-making processes:

Big data and its technologies can help schools and universities analyze outcomes from a variety of settings and predict trends to enhance teaching methods. Instead of trying to think about why students are not making progress, they will dig into the data and identify the exact factors. and then; They will make changes that remove obstacles and encourage learners to move forward.

Improving Student Outcomes:

All the data that teachers get gives them insight into student behavior in the long run, and they can put their results into an analysis algorithm; To understand the factors that affect them. Test results are not the only indicator of success, the teacher can also monitor the amount of time a student needs to answer questions and can identify the types of questions that cause problems for students, and in addition, they can compare the preparation process among students, and determine the types of resources that students use the most successful, and then can recommend similar preparation techniques for the whole class.

Data is the lifeblood of the decision- making process: - Who owns the information owns the power The information and communication revolution has led to a massive and steady increase in the volume of data in the world, as the use of digital

devices, mobile phones, computers, websites, and social media platforms produces a huge amount of data, amounting to more than (1.7) trillion bytes per minute. This data, which is called “big data”, constitutes a great wealth if it is collected from different systems, processed, analyzed accurately, and used in many fields, such as the military, medical, economic, educational, and others. In the field of education and training, the use of big data contributes to improving the educational process and achieving the uniqueness of education, because data is the only way to adapt the teacher's style to each of his students.

The term Big Data refers to a set of data that is characterized by its huge size, speed and diversity that requires innovative and effective forms of processing, so that it helps its users in improving vision and decision-making. Big data is actually a field of computer science that is concerned with the methods of analyzing and processing large volumes of data, extracting useful information from it and presenting it in a way that helps in making informed decisions. Big data takes many forms such as images, text, audio, videos, and others, and its analysis requires perfect processing, analytical capabilities, and high skills. In the field of education, every day, educational institutions receive a huge amount of big data, which includes many details about learners, their attendance, participation, educational experiences, test results, family and economic conditions, social interactions in learning environments, evaluations of teachers and courses, and their satisfaction with education, among others. If it is effectively analyzed, this data can significantly affect all employees, including teachers, students, trainers, administrators, and others, and this data can also enable educational institutions to provide personalized learning and competency-based learning or training. Learning for all students, and (helps them in making decisions and defining appropriate policies.

In addition to the above, big data helps educational institutions, especially universities, in improving the effectiveness of the process of employing graduates locally, regionally, and internationally, and enables them to reduce the number of students who drop out, who leave their studies for various reasons. Through the analysis of big data related to tests and student behavior, educational institutions can also improve their academic achievement and develop tests and assessments in line with students' progress and success. Moreover, thanks to the results of big data analysis, educational institutions can early identify and predict “at-risk” students At Risk Students help and rescue them, and this prediction is done through what is, (known as Predictive Analytics.

It is worth noting that there are many tools and techniques that are used in big data analysis, the most famous of which are: (MapReduce), (Grid Gain) and (Hadoop), which is used by . (LinkedIn is one of the most famous of these tools, and it is an open-source software platform that issued to store and process huge data distributed on several devices, in order: to speed up the processing results. These tools usually consist of three parts Data Mining, tools Data Analysis tools, and Dashboards.

4. CONCLUSION

Big data in education means, what the outputs are, how they impact the lives of students, teachers or coaches and players, even the differences between basic types of data.

So, what if teachers had a more sophisticated way to track students' progress and get indications of why some of them gave wrong answers or struggled to understand some concepts. Education technology companies are now using big data analytics to give teachers a new tool for ensuring success by using personalized tests to create detailed student profiles that collect about ten million interface points for each student.

Imagine that a high school student takes an IQ test; With this analysis, the answers can be monitored if the student chooses an answer and then reconsiders it. The student's probabilities can now be monitored for the logic behind the moment of doubt and used to measure how he or she responds to information given through e-learning tools or books; To find out what works and what needs to be reconsidered.

The idea is to personalize each student's learning experience, just like when a user watches a YouTube video and turns on the Autoplay feature to watch all the videos of the same quality. The more electronic use increases, the more data is generated, and that data collected will inform us about the user's behaviors towards the educational medium.

Big data or educational data mining focuses on developing algorithms for teaching data, discovering data patterns considering the sequence of topics most effective for the student, which student actions are associated with grades, which actions indicate interaction and satisfaction, and how the student can develop from his e-learning by choosing the best feature that led to a better learning experience.

When a student learns or studies online, he uses an e-learning system of big data” analytics, which can interact with the student by delivering “personalized content and assignments. This set of data is collected and stored in a database to produce predictions about the student's future performance.

These expectations are displayed in visual dashboards that help students personalize appropriate learning materials, matching their interests and performance levels. The same results are sent to teachers to help the student as much as possible

US school systems recently launched a data analytics system using big data technology by making a computer system store data in a common and secure format that gives schools complete control over the data they collect, how it is used, and with whom it is shared. The software is open source that a not-for- profit foundation was formed to run with \$100 million in assistance from the Gates Foundation and Carnegie Endowment; This increased the success rate by more than 10% and cut the school dropout rate in half.

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