

Data Analysis
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Abstract:

In this research paper, we presented an explanation of the definition of data analysis science, its importance, and its types. We also explained the four main types of data analysis and mentioned the data sources that companies rely on, the analysis process, and how to know if they are good, as well as the stages that the data goes through during the analysis process before it becomes important information for the organization. we also mentioned Data types and finally how data analysis contributes to education.

Introduction:

In this research, we will learn about the concept of data analysis, its capabilities, the most important techniques of data Analysis, the types of data analysis, and the stages through which data passes before it becomes useful information, and insight 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 educational process.

Subject:

The most important terms in the study and analysis of data in the field of (electronic) education are:

1. Academic analytics, which 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 is 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 is the process 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 improve the educational process.
2. Data analysis, which 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, and health. The main purpose of data analysis is to extract useful information from it and make effective decisions based on said information. This extracted information is also used to explain phenomena that occurred during a specific period of time, to know the reasons for their occurrence, and to make decisions based on logical data with a high percentage of correctness.

It is worth noting that this 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, data analysis is the science of 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 are used in data analysis, and the two leading languages in the field of data analysis are 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 or time to learn, nor do they require 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, such as the term data analysis, and the term big data, which although closely related to other are different enough to warrant a separate definition.

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.

3. Big Data, which is the term 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 over time, storing it through tools and program 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, preventing natural disasters, or most importantly preparing for them in an appropriate manner that reduces their risk to 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 a large number of mobile devices, especially with the release of the android system.

Which was the basic nucleus for the emergence of tablets and then smart TV and other devices that depend on the internet: things such as a smart refrigerators, 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 their permission) to their manufacturers which in turn analyzes this data with the aim of obtaining information about the users' interaction with the product, their satisfaction with it, dissatisfaction with one of its characteristics, more details about their willingness to buy this product again in the future or improved versions of it, and any information that can be used to predict the users' future behavior towards 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.
- Data of users of smart devices such as smartwatches.

The previous example generates data daily, ranging in size from 1 terabyte to 500 terabytes.

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 decisions for the future and plans for the long term.

5-The Data Scientist and his role

Data science analyzes the available data, including images, words, and videos to create an artificial intelligence capable of performing the task of coursing through and analyzing data that usually needs a human to analyze it. This artificial intelligence will reach 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 ever-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 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 there are many ways to benefit from data at all levels.

How important is the data analysis process?

Data is considered one of the most valuable assets in establishments of all shapes and sizes. There are many 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, and 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.

1) 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.

2) 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.

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

4) 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.

5) Understand market conditions and trends, build actionable insights about competitors, and identify the best ways to outpace competitors. For example, if your 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.

6) Improving the customer experience: whether we are talking about e-commerce, insurance companies, or companies that provide Software As 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 samples of summarized numerical data through which 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. He 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 to infer links between them to find out the reasons for the results of descriptive analyzes. 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, they can go back to this analysis and take a 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 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, or experience necessary to implement predictive analysis. Others are not yet ready to invest in hiring specialized data analysis cases. In these situations, companies rely on third-party firms to handle analysis and the aforementioned company will just reap the benefits.

Prescriptive Analysis:

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

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

The third stage: 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 processes 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: 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: Interpreting the data:

In this 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.

The sixth stage: 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 sorting a quantity of unstructured form. Data that may be structured 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 the sources for it are.

The data is divided into two types:

1)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 in 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 asking the questions. The data collected is in the form of notes, audio, or video records. These interviews can be organized through a personal or formal interview by phone or via email.
- 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 methods can be conducted online or on the ground. examples of such online surveys are opinion polls on social media platforms.
- Observation research: the method of observation or monitoring a method of collecting data on a specific topic through observation, where the research 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 form. In this method, data is collected directly by presenting some question(s) to the participants. For example, observing a group of customers and their behavior towards products.
- Experiment: Experimental methods are the process of collecting data through conducting experiments, research, and investigations. The most widely used experimental methods are randomized designs, (RBD), LSD Latin, (CRD) randomized statical experiments, square design, and factorial design.

2)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 and news publications.

□ Sensor data: With the advancement of devices and the emergence of the Internet of Things, devices and 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 analysis needs to be familiar with some areas in order to be able to analyze the data as required of him.

Here are the most important areas to be familiar with:

1) 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, especially since Python is one of the languages Programming that is relatively easy to write, unlike other programming languages such as Java.

2) Statistics

Although programming is a basic requirement to enter this field, being able to program 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 quantities measures that describe the characteristics of a 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, 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.

3) Math

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

4) Machine learning

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 they must know the pros and cons of these examples, as well as when should not use them in data analysis.

5) Data processing

The term data processing or data wrangling means collecting data in its unprocessed form, arranging, and organizing it into data that can be read and understood, and this field needs familiarity with the basics of dealing with MySQL database programs, oracle. You will also need to learn how to format the data into CSV and XM/XML files.

6) Problem-solving

Big data contains a huge amount of information, and despite the technical progress in this field, it is still considered one of the more complex fields, because analyzing this data may take a lot of 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 can 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 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 analysts and the data scientist is working to make

their end product 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. This difference 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 institution -from primary and secondary school to universities and online educational service providers can collect, use, and share data more easily and quickly than ever before with the use of online learning tools and interaction-based programs.

The growth of 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 and we find in-depth data within the learning environment 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 a deep context, and an authentic assessment of the subject area and subject matter of knowledge, as we; as identification of targeted interventions to improve student 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 refer 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, 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:

1) 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 they can adjust the learning process according to the needs of the students, 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 interest accordingly. Each student gets an educational plan based on what they know and how they learn best. Personalized education leads to greater student participation, and the teacher helps to understand the level of each student, which helps him to provide guidance, appropriate guidance, and additional resources to improve the student's academic level. It also helps the teacher to try different methods of teaching and testing the student. Which enables him to discover the most appropriate method and begin to apply it to achieve better results.

2) Universities will be more effective in international recruitment:

Each university possesses a huge amount of data from previous applications. By analyzing this data, recruiters improve the effectiveness of the recruitment process. In addition, the university's employment office can analyze student data at a global level, and they can identify countries whose students have the best potential.

3) 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, but now, they 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.

4) 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 projects? 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.

5) 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, but they can also rely on feedback. They monitor the situation in the classroom and instantly add relevant data to their dashboard. And they track the progress of the student from every aspect, so the teacher can evaluate the students more realistically, reflecting their true level.

6) 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.

7) Improving student outcomes:

All the data that teachers get give 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. Whoever owns the information owns the power and the

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, and computers, websites, and social media platforms produce 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 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, video, and others. Its analysis requires perfect processing, analytical capabilities, and high skills. In the field of education, everyday educational institutions receive a huge amount of big data, which includes many details about learners, their attendance participation, educational experience, test scores and economic conditions, and social interaction among others. If it is effectively analyzed this data can significantly affect all employees, including teachers, students, trainers, administrators, and others. This data can also enable educational institutions to provide personalized learning and competency-based learning or training. Learning for all students 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 and 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 student 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: (Map Reduce), (Grid Gain) and (Hadoop) which are used by.

Linked In is one of the most famous of these tools and it is an open-source software platform that is used to store and process huge data distributed on several devices, in order to speed up the processing results. These usually consist of three parts Data Mining tools Data Analysis tools and Dashboards.

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 the 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 toward 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 and a nonprofit 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 dropout rate in half.

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