Learning Analytic Tools
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Lecture No. 1.4
Four Levels of Learning Analytics Overview -II

Welcome back to Learning Analytics course. So, in the last video, you have performed a diagnostic analytics such, as why a student did not pass the exam, why the student was not able to answer certain questions.

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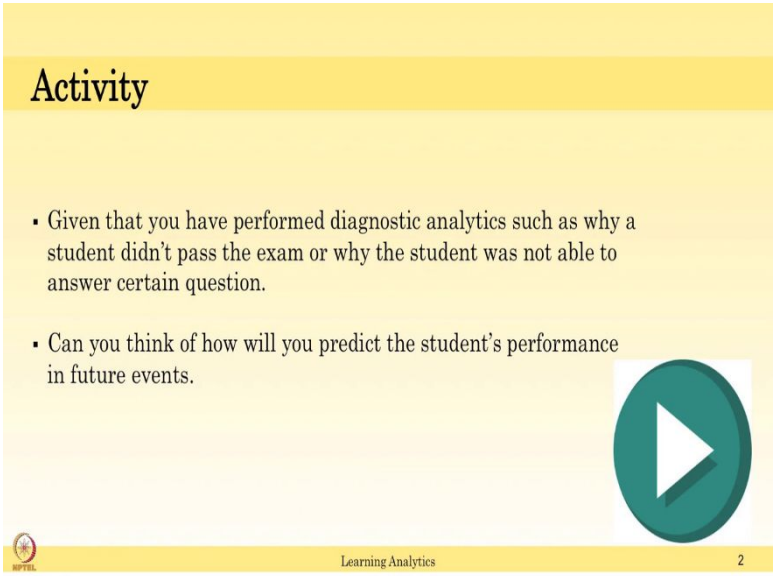

You collected the data such as student's performance, also the attendance. Now I want you to think, how will you predict the student's performance in a future events. For example, you found a correlation that student's attendance and performance as high correlation. Can you predict what will happen in future? Please pause this video, write down your answers. After writing it down, resume the video to continue.

So, what is predictive analytics? So, it is predicting what will happen next."So, which course will have a less number of registrations?" this can be predictions.

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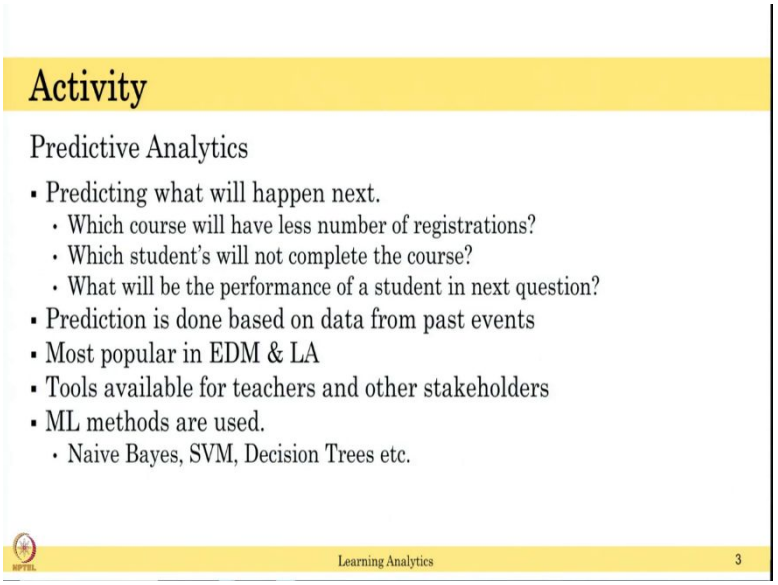

Because based on the last featured historical data, we can predict what will happen in next year which students will not complete the course. Based on the students' attendance or students' other interaction behavior, you can predict whether the student can complete the course or not, and this again by using the model which you created using the historical data.

What will be the performance of the student in the next question? So, you can go much finer level like if he is interacting with the intelligent learning environment or technology enhanced learning environment, what will be the student's next set of actions? "Will the student able to answer the next question correctly?" all those final level analysis, we can do.

So, prediction is done based on data from past events, in the sense that, if you are teaching a class in this year, you cannot predict, create a model using current data, instead, you have to use the data from last 4 or 5 years' data. Like as I mentioned, your have last 5 years' data, from that historical data, you might be creating the model and apply that model in this year data. That is what it says that, you have to create the model based on past events.

Also, in some cases, we will use the present data also, because that will help to improve the algorithm to predict it better. It is most popular in educational data mining, it is called Learner Modeling, we try to model the learner and also it is popular in learning analytics. There are a lot of tools available for teachers and other stakeholders to perform the predictive analytics.

For our work, we need to understand what algorithm to apply and what data will suitable for it and you have to understand how to interpret the results when the algorithm is given. So, we will talk about Naive Bayes, Decision Tree in this class and the tools like Orange and use these algorithms on education data.

So, in short, predictive analytics is extracts information from data sets in order to obtain pattern and predict the future events. It uses both past and present data and offer prediction for the future and those model predict what is happened in the future, given the present data.

So, let us move on to the last activity of this week. Now that you are able to predict whether the learner will continue your course or drop it, assume that, what measure will you take?

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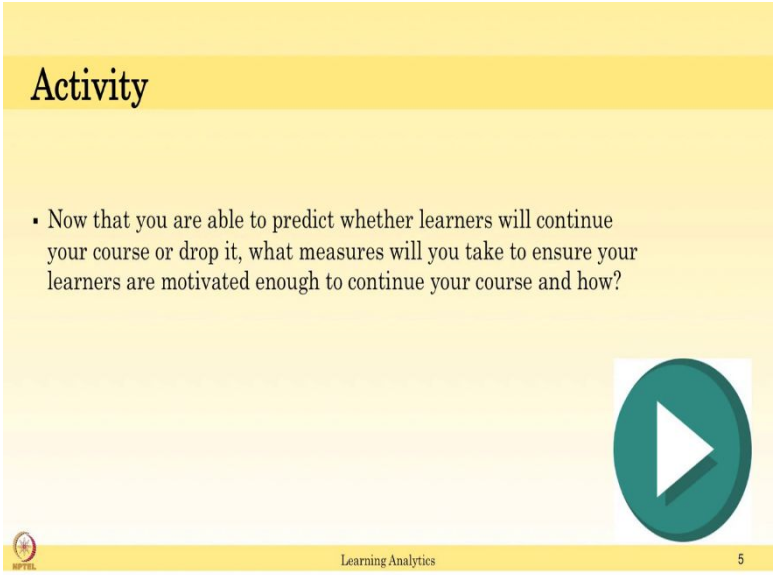

To ensure your learners are motivated enough to continue your course and how? For example, assume that you have created a correlation between attendance and performance. And you know that learner correlation is high with attendance. Using that information, you can predict whether the learner will drop the course, or whether the learner will fail in the exams. If you have that prediction, what measures will you take in order to motivate the students and continue doing the course? Please pause this video, write down your answers. After writing it down, resume this video to continue.

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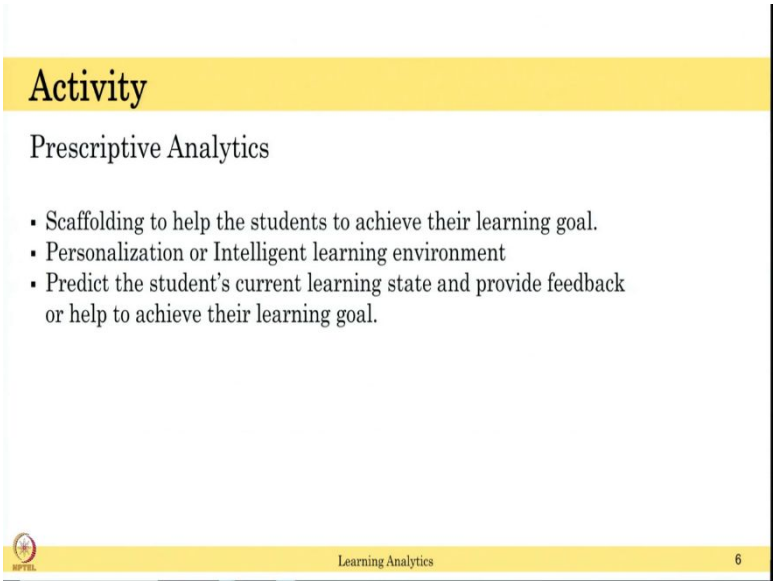

Prescriptive analytics is if you say that I want scaffold to students, give hints or feedbacks, tell students to achieve the learning goal that can be one of the prescriptive analytics. Or you can use a personalized or intelligent learning environments, where based on the students' interaction and performance, the system gives feedbacks and hints and adapts the content or you can predict the learner's current state and provide feedback and help them achieve their learning goal. So, you can have special classes and you can talk to them what is the problem. It is not that student will fail, a student will drop out. You would not understand why? Also why the student will not able to complete the course. If you know why, the reasons, then you will be able to provide a proper informed feedback or adaptive content.

So, the prescriptive analytics is a process of analyzing the data and providing instant recommendation to how to optimize the learner's learning process.

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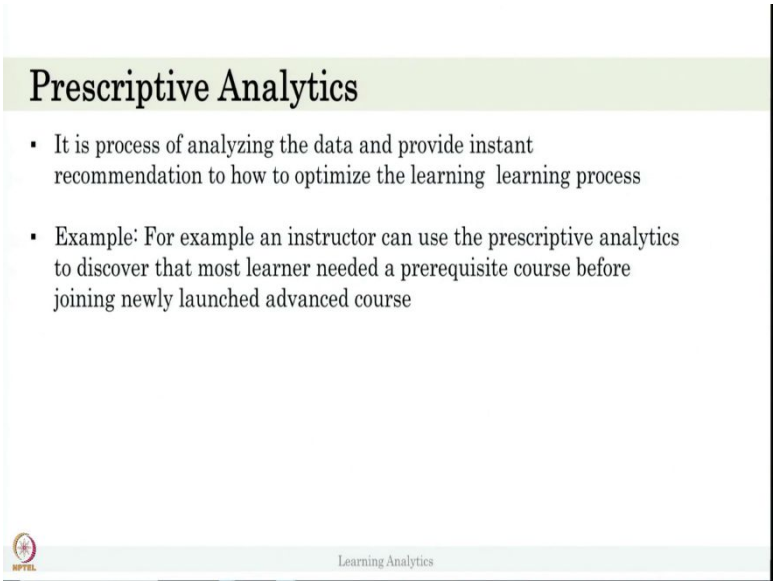

For example, instructor can use prescriptive analytics to discover that most of the learners needed a prerequisite course, before joining a newly launched advanced course. So, based on the previous experience or based on the teaching experience, you can so, say that for the newly launched advanced course, given the learner's entry exam, you might need a prerequisite course. So, the teacher might conduct a test before learner taking the course. Based on a student's performance, a teacher can decide whether the learner needs a prerequisite or not. So, that is based on the teaching experience or the predictive model you have created. I want to inform you that we saw the 4 types of analytics in last couple of videos.

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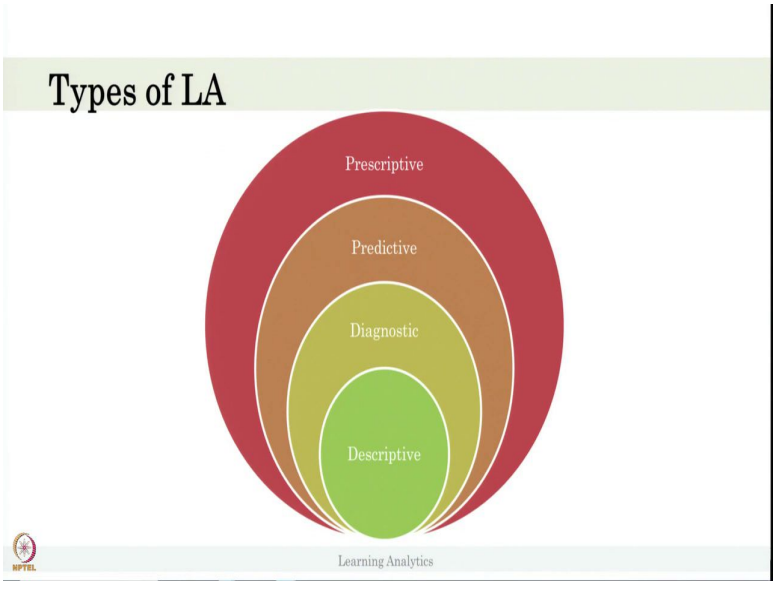

So, if we talk about prescriptive, it subsumes predictive, diagnostic and descriptive analytics, which means if I am doing a predictive analytics, I should be doing the descriptive and diagnostic analytics also. It is not that I can pick and do only the predictive analytics or I can pick only do the prescriptive analytics. So, you can start always with the descriptive analytics, then do the diagnostic analytics then go further predictive analytics.

In this course, we will cover the 3 types of analytics like descriptive, diagnostic and predictive. Prescriptive analytics is beyond the scope of this course, well, because prescriptive analytics is designing a intelligent tutoring systems.

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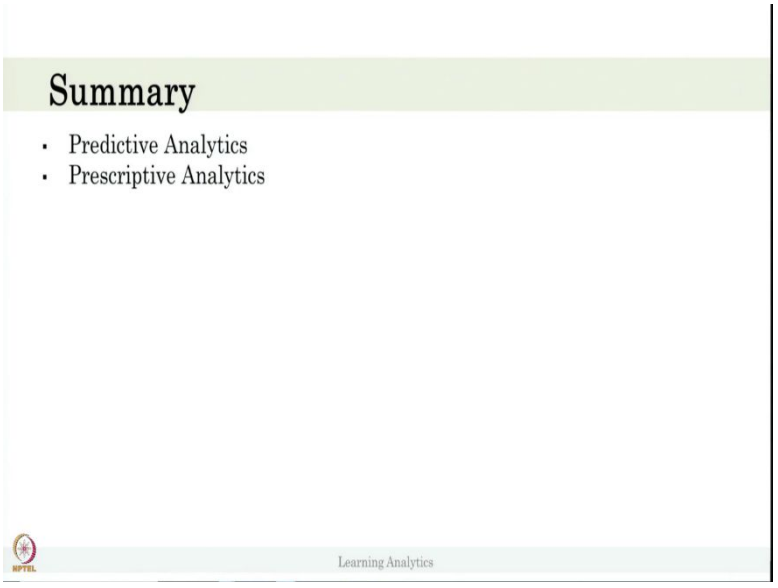

So in this video, we described what is predictive analytics and what is prescriptive analytics. And you might have had some idea on that. We will in detail discuss about these two type of analytics in our course. Thank you.