

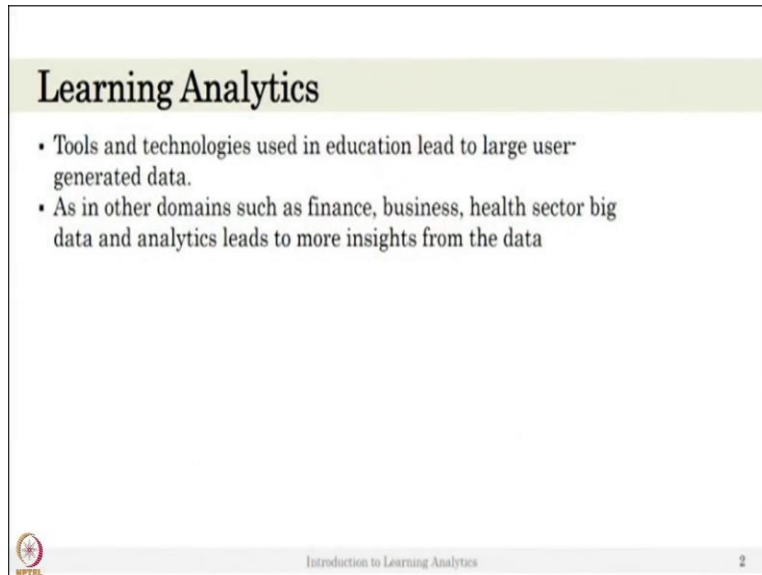
## Lecture 1

### Lecture - 01

#### Introduction to Learning Analytics


Hello and welcome to Introduction to Learning Analytics course.

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**Learning Analytics**

- Tools and technologies used in education lead to large user-generated data.
- As in other domains such as finance, business, health sector big data and analytics leads to more insights from the data

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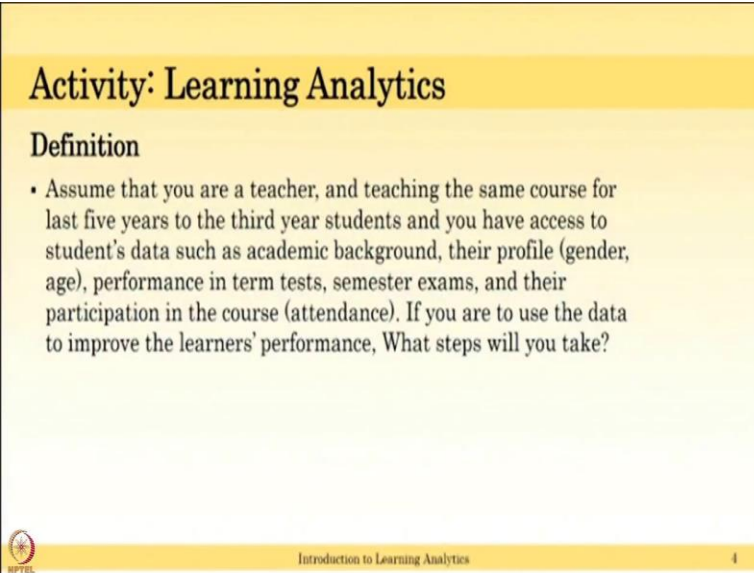
Due to use of digital tools and technologies used in education such as educational apps, online resources, library management systems or learning management system such as moodle, blackboard or the online assessment portals leads to a larger user generated data on education sector. As in other domains such as finance, business health sector or manufacturing or other domains the large data produced from the learner experience with the system can leads to the applying analytics on this data. So, the analytics apply to this large data leads to more insights to teachers to improve the teaching and improves the learners performance.

This course is for the teachers who are interested to understand learner and to improve the teaching performance and also for the students who are interested in learning analytics and also in the education domain, and also for the people who are working in educational sectors. If you have already learnt ML methods and looking for domain or data to apply the methods you learnt then this course might help you.

In this course, in week 1 we will talk about what is learning analytics and what are the types of learning analytics. In week 2 we will learn how to collect data from the different learning environments such as a personalized learning environment to a MOOC learning environment. Also we will talk about ethics and privacy issues to be followed in a learning analytics when you collect a data from the learners, when you collect the learner from the participants what are the ethics we have to maintain.

In a week 3, we learn about descriptive analytics that is how to collect data and how to show the data in the dashboard. In a final week that is in week 4, we will apply a predictive analytics on a learning learner data using a software called weka. This course is created using learner centric MOOC model. If you like to know more about learner centric model you can look at the educational technology website at IIT Bombay or you can take a course in NPTEL.


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**Activity: Learning Analytics**

**Definition**

- Assume that you are a teacher, and teaching the same course for last five years to the third year students and you have access to student's data such as academic background, their profile (gender, age), performance in term tests, semester exams, and their participation in the course (attendance). If you are to use the data to improve the learners' performance, What steps will you take?

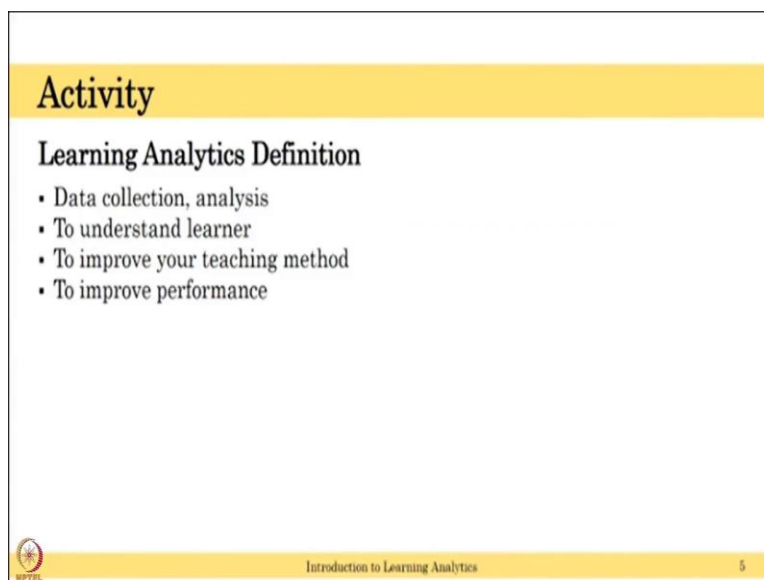
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What is learner centric model? In learner centric model, you will not have a series of videos to learn instead you will do lot of activities and you to interact with the peers and learn from them. This course is the first course in the learning analytics package in next semester we will offer a twelve weeks course about learning analytics tools.

As I mentioned, this course will have lot of activities let us start the first activity. This activity I will explain the problem then you need to take time to come up with the answer then we can discuss the results. Assume that you are a teacher and teaching the same course say the course for a 3rd year engineering you are teaching the same course for last 5 years you can be a student, but please assume that you are teacher. You are teaching a course for last 5 years to third year students and you have access to students' data such as the academic background, the profile, age, gender the performance in the test like a term test, midterm, semester exams and on the students' participation in the class that is the attendance or number of books they had taken from the library.

If you were to use the data to improve the learners' performance what step will you take? You can pause this video while you answer this question and resume once completed.


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**Activity**


**Learning Analytics Definition**

- Data collection, analysis
- To understand learner
- To improve your teaching method
- To improve performance

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If your answer contains words like data collection, analysis, I want to understand the about learner, I want to improve the teaching method my teaching method or I want to improve about the students' performance, then you are thinking about learning analytics.

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**Definition**

**From LAK 2011, conference webpage:**

- *"Learning analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs"*
- SoLAR · Society of Learning Analytics Research
  - LAK Conference, Journal, and LA summer institute

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So, what is learning analytics? From LAK conference in 2011, the webpage says that learning analytics is the measurement, collection, analysis and reporting of data about learners and their context, for purpose of understanding and optimizing learning and the environment in which it occurs. What it says is learning analytics is collecting the first measure the data, collect data, analyze the data and report the data to the stakeholders about the learner and the context what reporting about the learner. In order to optimize the learners experience or providing the adaptive content or improve the teaching strategy also the environment the students working in.

So, learning analytics is about collect data analyse to understand the learner to improve the learners' performance. So, there are many definitions for learning analytics it is still debatable, I am pointing to the one particular difference from the LAK conference. Why LAK? Learning analytics is a relatively new field. LAK is the part of Society Of Learning Analytics Research called SOLAR and there are three main events one is LAK conference it happens every year and they have a LAK journal, journal of a learning analytics and also they have a learner analytics summer institute.

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**Learning Analytics Definition**

- What is the purpose?
- Data collection
- Analysis and Why?
- Reporting and to who?

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So, from the learning analytics definition what is the purpose? The purpose is to understand and optimize the learning experience of the learners in other words it is to predict the learners performance and also provide a recommendation for the future learning. Data collection what data we want to collect you can collect using a software tools or manually observe the human behavior or you can collect data from the student's interaction with the different apps and educational settings. And analysis what kind of analysis and why we have to do analysis? The analysis such as, from the data you can apply machine learning methods or statistical methods like in educational data mining, you can apply different analysis methods in order to understand students' learning.

The analysis actually to understand student's behavior will be reported to the stakeholders. Who are the stakeholders? Stakeholders can be teachers, the stakeholders can be the students, the stakeholder can be the organization or the school principal or the head of the institute or the district education officer something like that.

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## Learning Analytics Definition

- LA is a relatively new field compared to ML or AI.
- There is no standard text book for LA
- Refer "Handbook of Learning Analytics" from SOLAR for this course
  - Compilation of research articles published by researchers in this field



Learning analytics definition is not a solid one, it is because it is relatively a new field compared to a machine learning or artificial intelligence and this definition is still evolving over the years. The learning analytics field is getting matured in the last couple of years, but there is no standard textbook for the LA.

However, for this course you can refer to the book called Handbook of Learning Analytics from the SOLAR community. In fact, this book, handbook of learning analytics itself a compilation of research articles published by the researchers in the field of learning analytics.

So, each chapter in this book will contain its own introduction, research problem and their own conclusion. So, it will not be like your regular book where you talk about what is learning analytics from first two chapters and what are the components and how to apply to a different fields it will not be like that.

So, how to read this book? Please read first two three chapters or first 2-3 papers in the book to understand about what is learning analytic, what is the context and everything. The rest of chapters you can read like where it is applied how learning analytics applied to a different problems and what is the results.