Learning Analytics Tools

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Lecture No. 4.3

Charts

In this video, we will talk about the charts.

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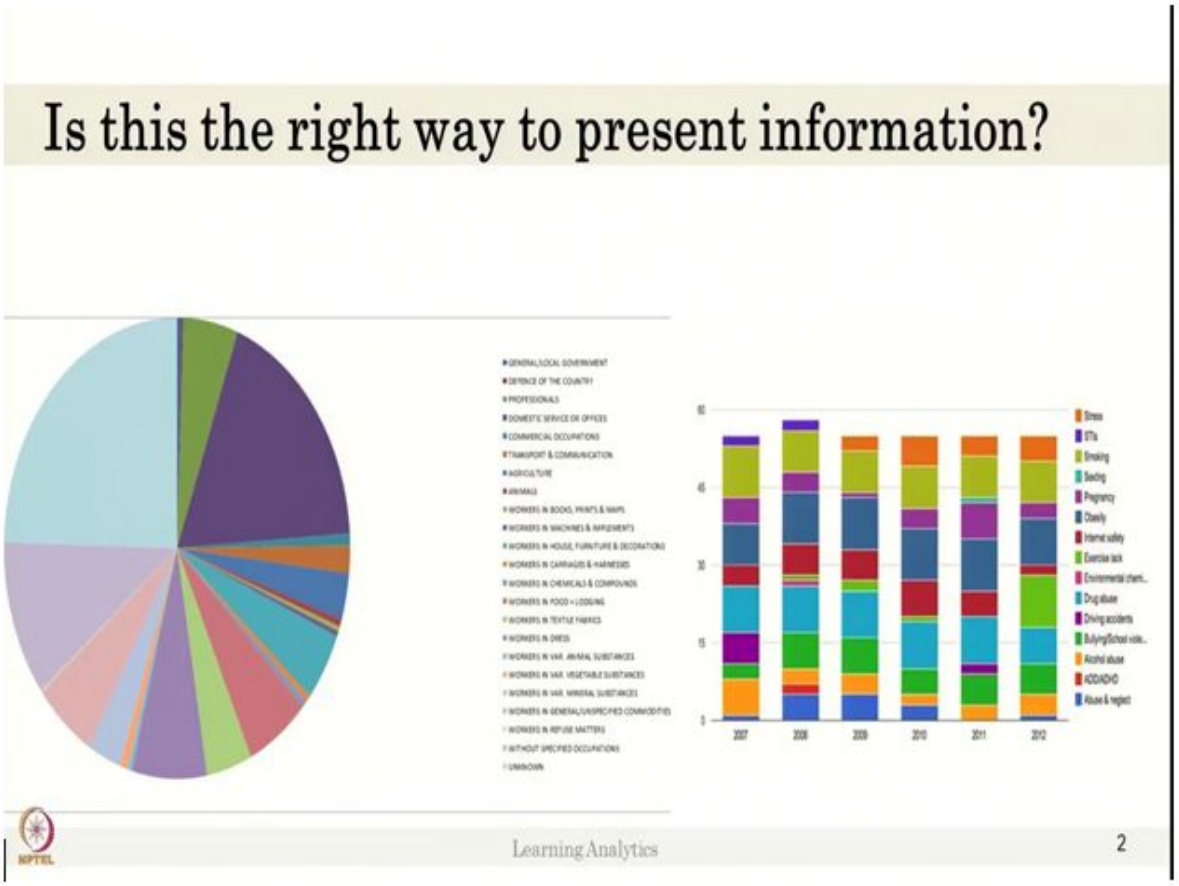

Let us look at here, is this the right way to represent the information? This is a pie chart, this is a stacked bar chart. Is it good? It has a lot of information. Just take a moment and think why this is not the right way to represent. The reason is too much information is displayed. Although it is visually appealing still it is too much information for someone to observe it.

I know the data might be a really complicated data for representing it in form of nice pie chart, still, we are making it more complicated for students to understand or the end-user to understand, maybe how do you compare these two colours, so what this colour means we had to look at it. So, there is a lot of complication in this particular type of representations.

Similarly, in these particular charts, I want to see how this particular one variable is changing over time and it is not easy for me to make the inference from the data. So, what type of chart to use and what other types are there?

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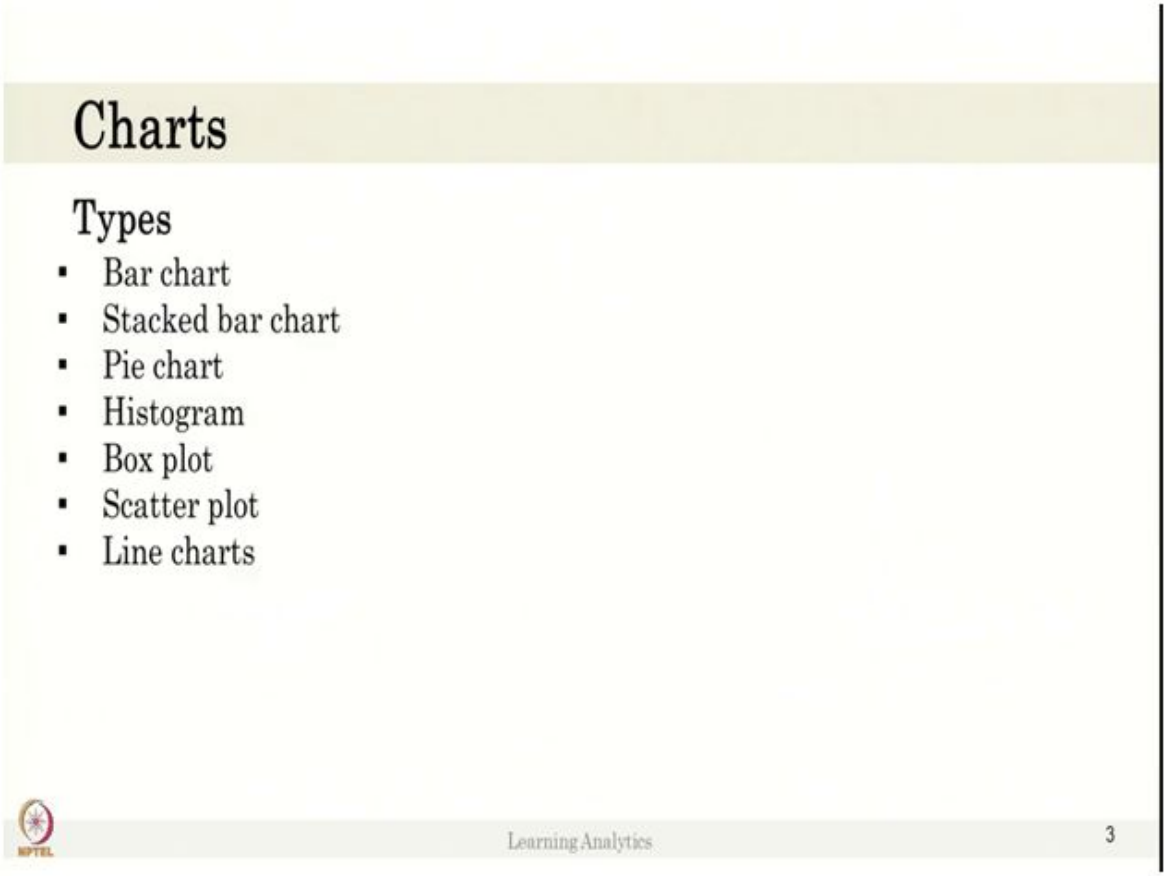

So, there are many more types of charts or plots or graphical representations basics ones are - bar chart, stacked bar chart, pie chart, histogram, box plot, scatter plot and line charts. And when we can use these charts and when we cannot use the charts? So, we will go into each of these types of charts in detail.

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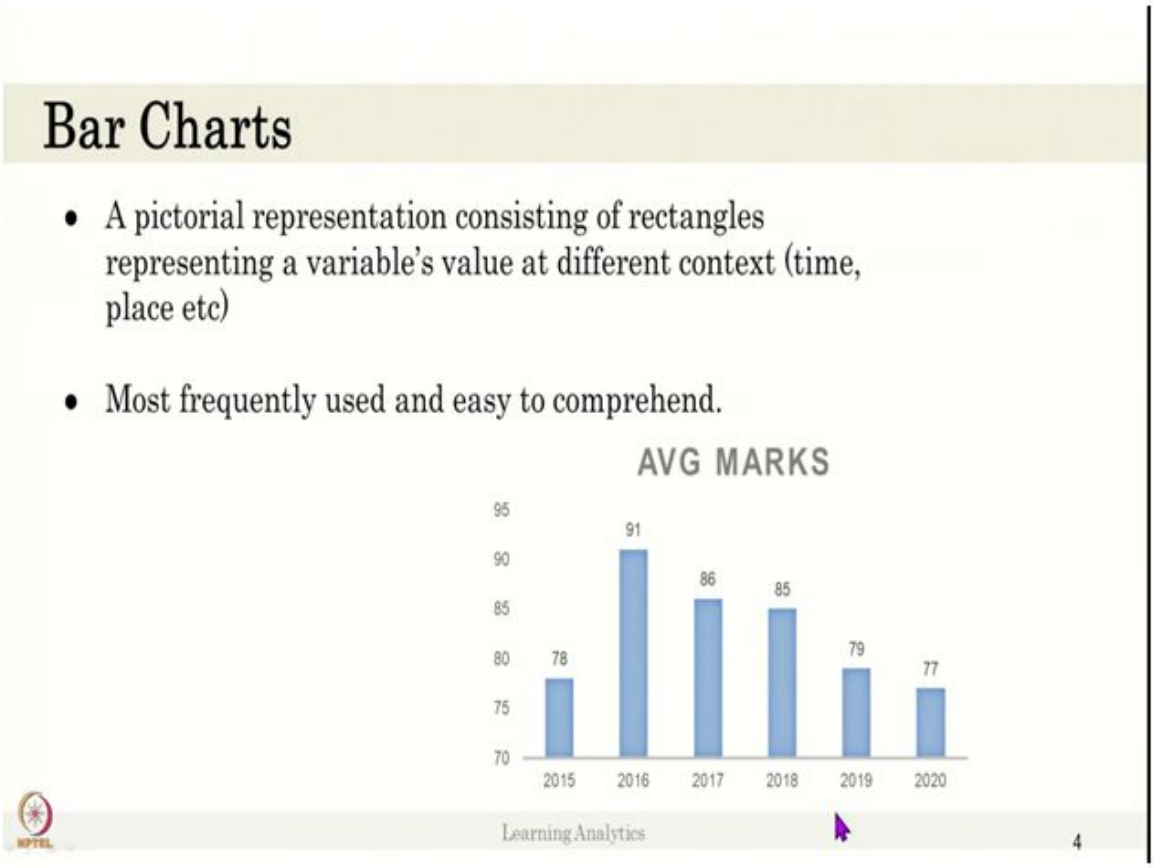

First, we will start with bar charts. A bar chart is nothing but a pictorial representation of consisting of rectangles representing a variable value at different contexts like a time, place, etc. And it is most frequently used and it is very easy to comprehend. So, we see the bar chart everywhere.

So, it is kind of this like I was talking about the average marks over several years 2015, 2016, 2017 if you have a particular course, the particular course is average mark over say last 6, years

you can draw this graph chart. So, this bar chart tells you that a student's performance in 2015 and 2019, 20 is comparable but 2016 batch did really good.

You might have used some new teaching strategy, the students are exceptionally good, or something happened there, or you might know what has happened there that will be diagnostic analytics. But by just describing this data in a bar chart you get some indication, there is something good here.

And here these two batches has consistently done well compared to the other 3 batches like 2015, 19 and 20. So, might be something happening in these two areas. So, this kind of simple representation using rectangles represents as a bar chart using inference that comparing one-year data to other year data and different times. Also, this is most frequently used and easy to understand.

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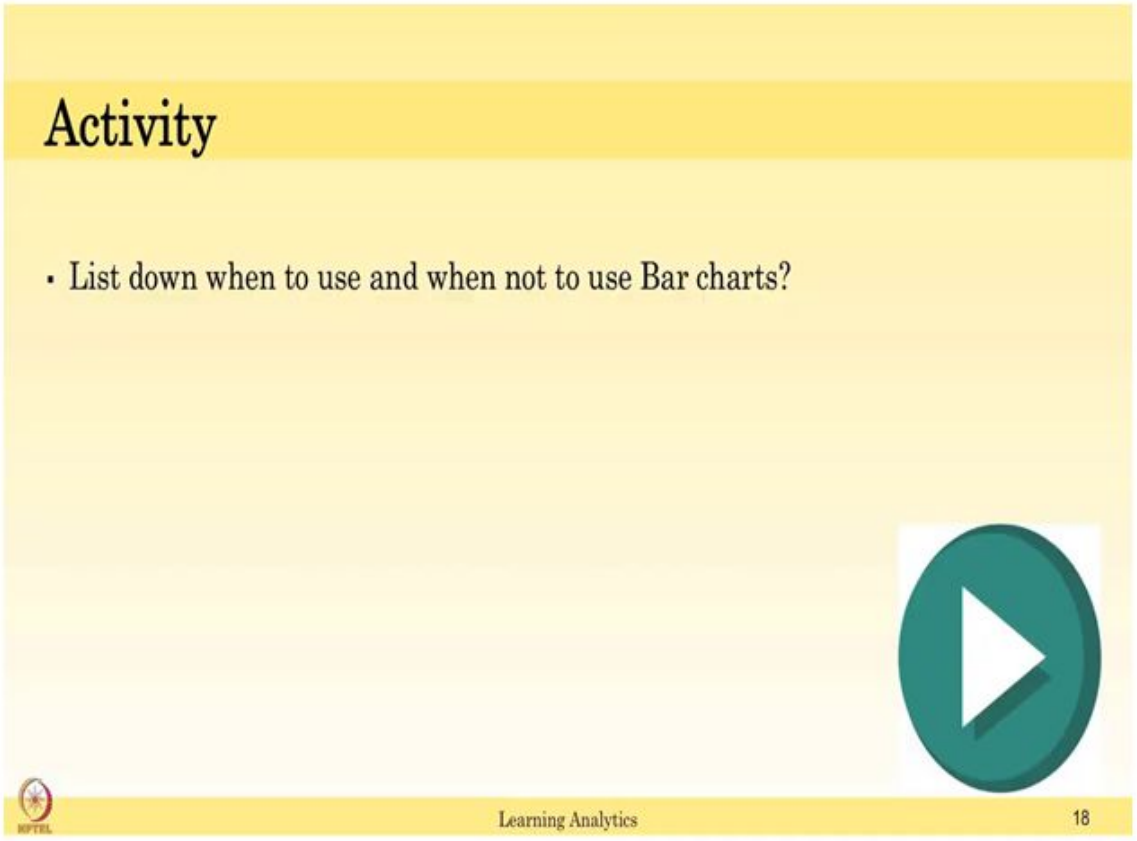

So, you know the bar charts, just saw an example also. Now, consider when to use these bar charts and when not to use these bar charts? At least list down two points for when to use and list down two points for when not to use bar charts. After writing down an answer resume to continue.

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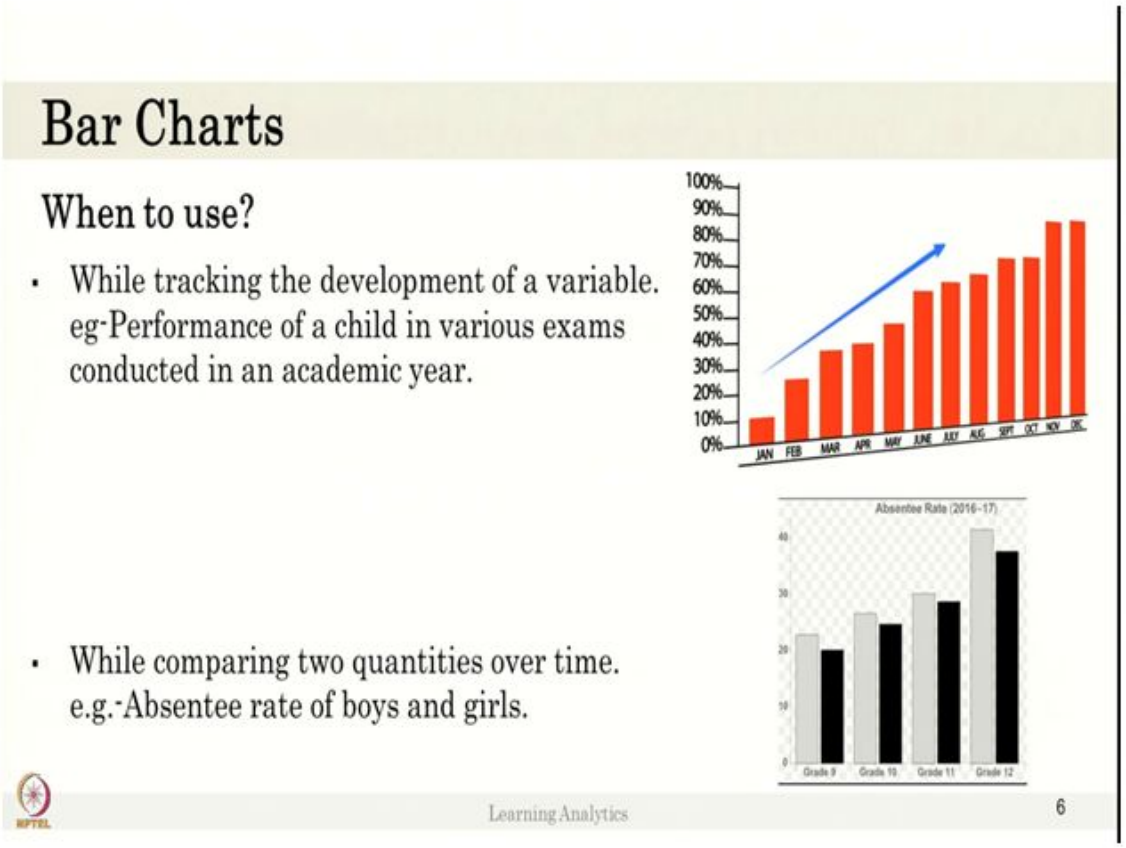

So, when to use bar charts

- while tracking the variable; development of variable from say, year 1 to year 2 to year 3 you can use it. For example, here a child's growth in every year, or the child's growth in every month something like that.
- while comparing two quantities over time, for example, you want to compare the absentee rate of boys and girls, different grades you can these kinds of charts. So, here the boy's data is like in a light grey colour and black colour represents the girl's data, so

you can compare this data. So, we can say consistently the absent rate across grades is higher for boys and class 9 students absent rate is less compared to the class 12 students, so you can infer more information from this graph.

So, to compare and also to show the trend, also to compare the data at several years the bar charts can be used.

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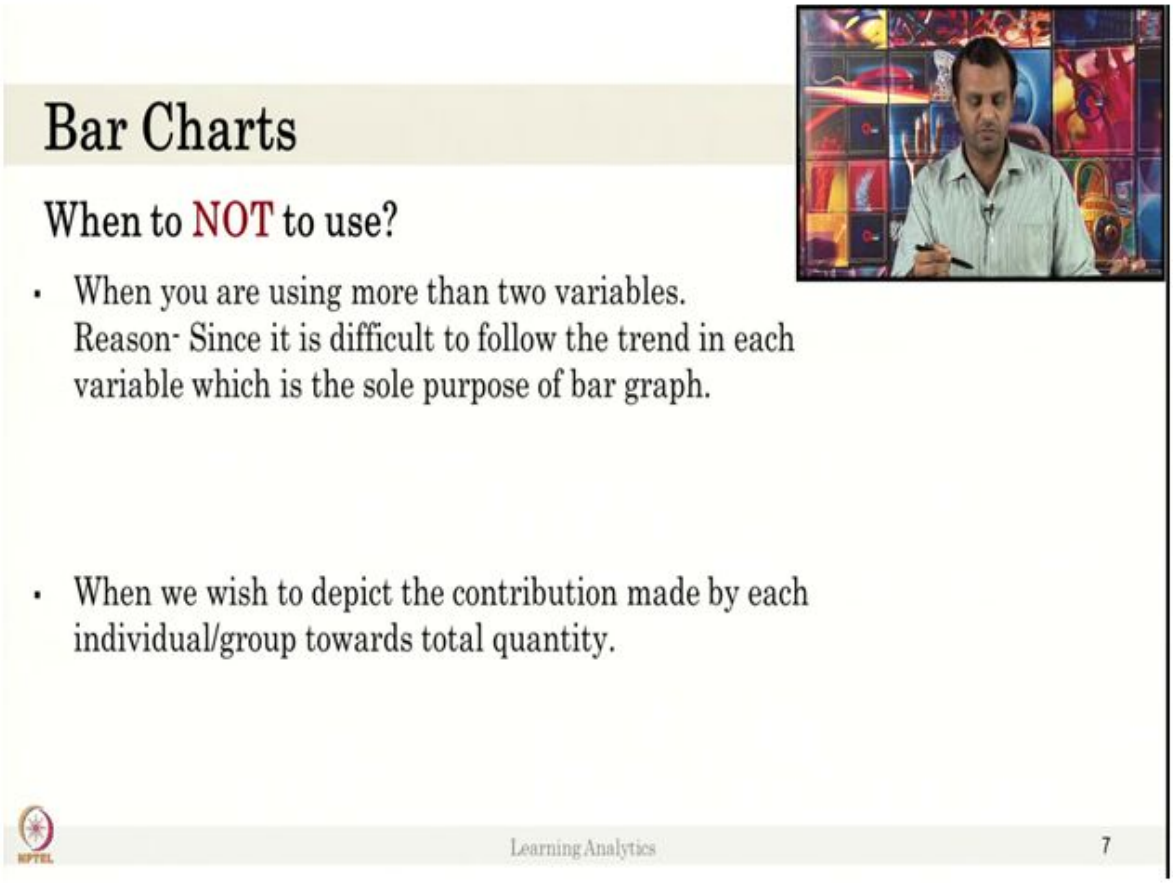

When not to use bar charts?

- When you are using more than two variables or if you want to compare student's performance in 7 courses of an average over years. So, when you use more than two variables then do not use the bar charts.

- Also should not be used to depict the contribution made by each individual towards a total quantity.

And the bar chart will not show all the statistical information of the data you provided, for example, the average, who got the minimum score in that particular year, who got the maximum score. So, the bar chart is not good for representing the contribution of each individual, also to represent the statistical features of the data.

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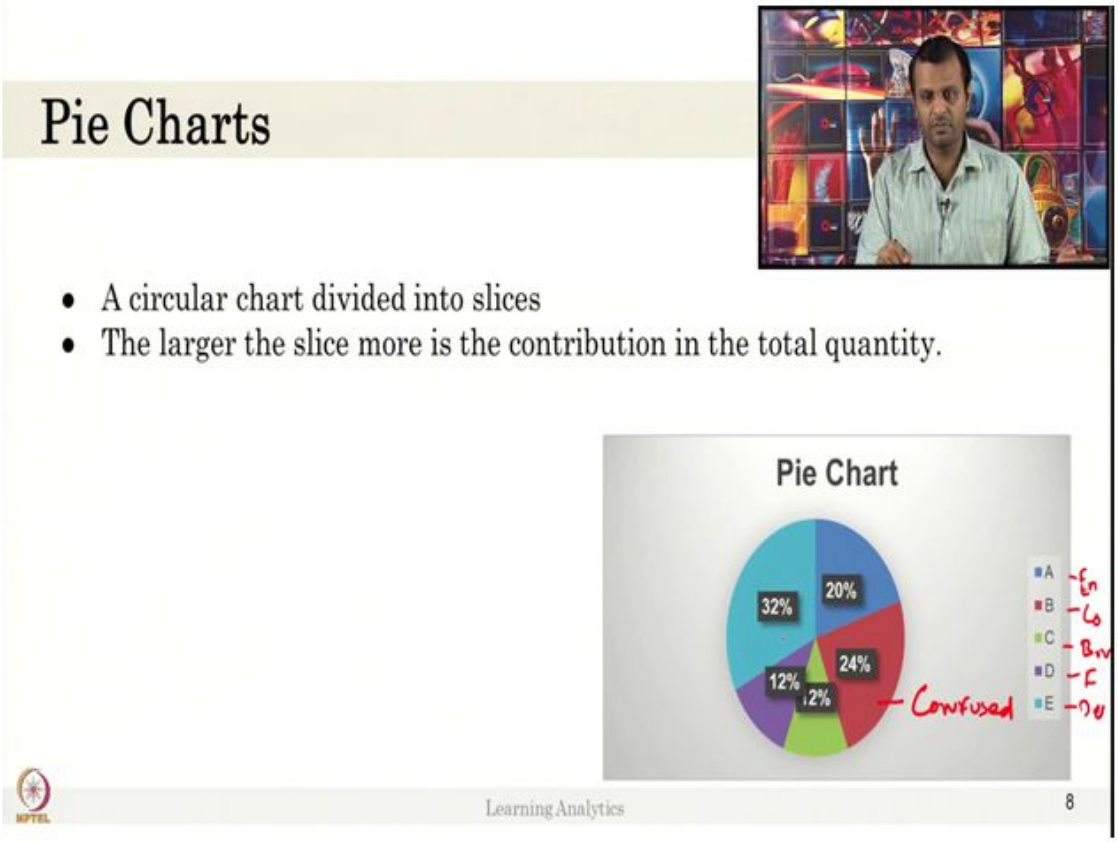

Let us move on to pie charts. Pie charts is a circular chart divided into slices, the larger the slice, the more contribution it has made to the total quantity. Here is an example pie chart. Let us consider this is the distribution of emotions in an online session, let us consider student A's engagement. This is students delight and less frustrated, confused, bored.

So, if you want to represent, out of the total time in the online session, say 20 per cent of the time students is engaged, 32 per cent they are delighted and 12 per cent they were frustrated and 12 per cent bored and 24 per cent of the time they are confused. So, data can be used to represent this kind of information, student's information and with respect to the overall behaviour of the students.

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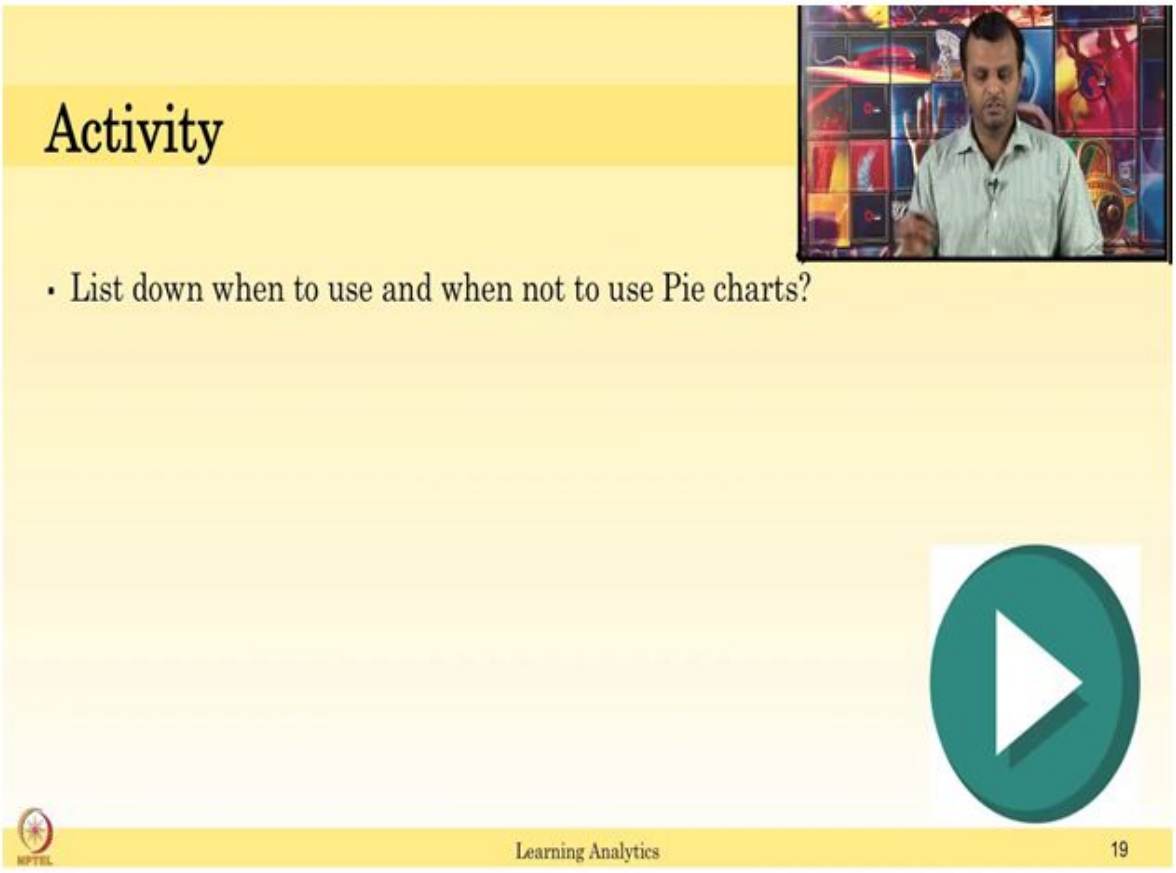

So, similar to the last activity please pause this video and write down when to use a pie chart, when not use pie charts.

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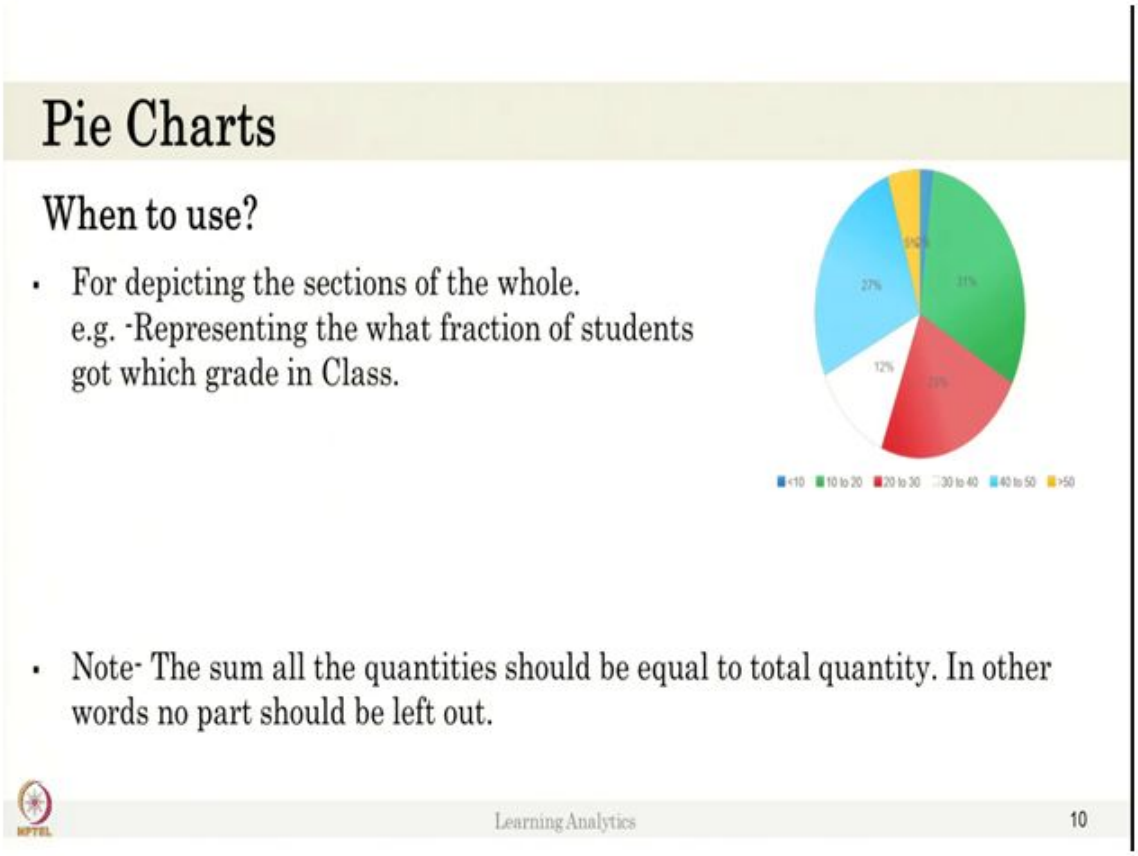

So, for depicting the sections of the whole i.e. representing the fraction of information compared to the whole information, the pie charts can be used. So, for example, in the class what fraction of students got which grade in the class? So, to represent that the class distribution of marks is can be used a pie chart. So, the important information in a pie chart is to make sure the sum of all the values equal to the total quantity, do not miss out the values and compute a pie chart.

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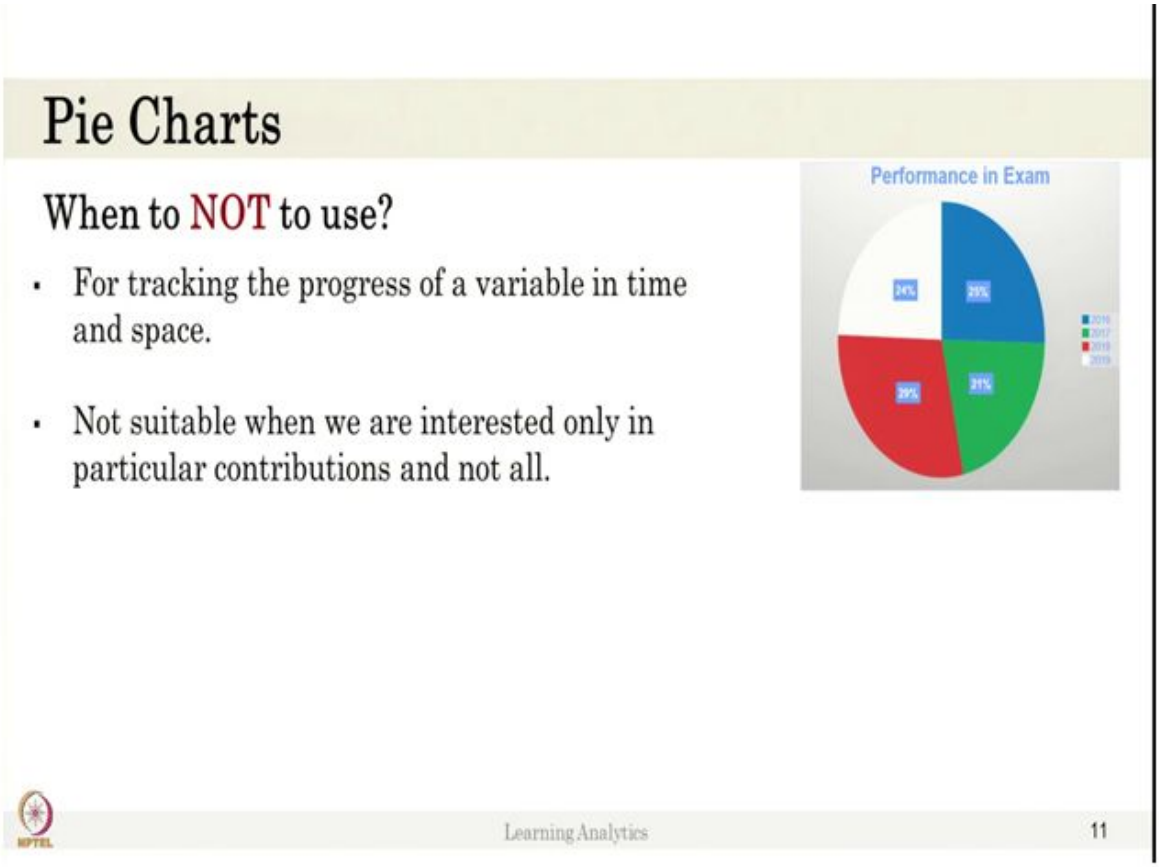

When not to use pie charts? We saw the example that last 6 year's score. Consider the average score is to be represented in the form of the pie chart. So, such a place is like when you are comparing the progress over time do not use pie charts. And also similar to a bar chart if you have an interest in only one particular type of data, one particular user's information, one user's contribution, a pie chart may not help.

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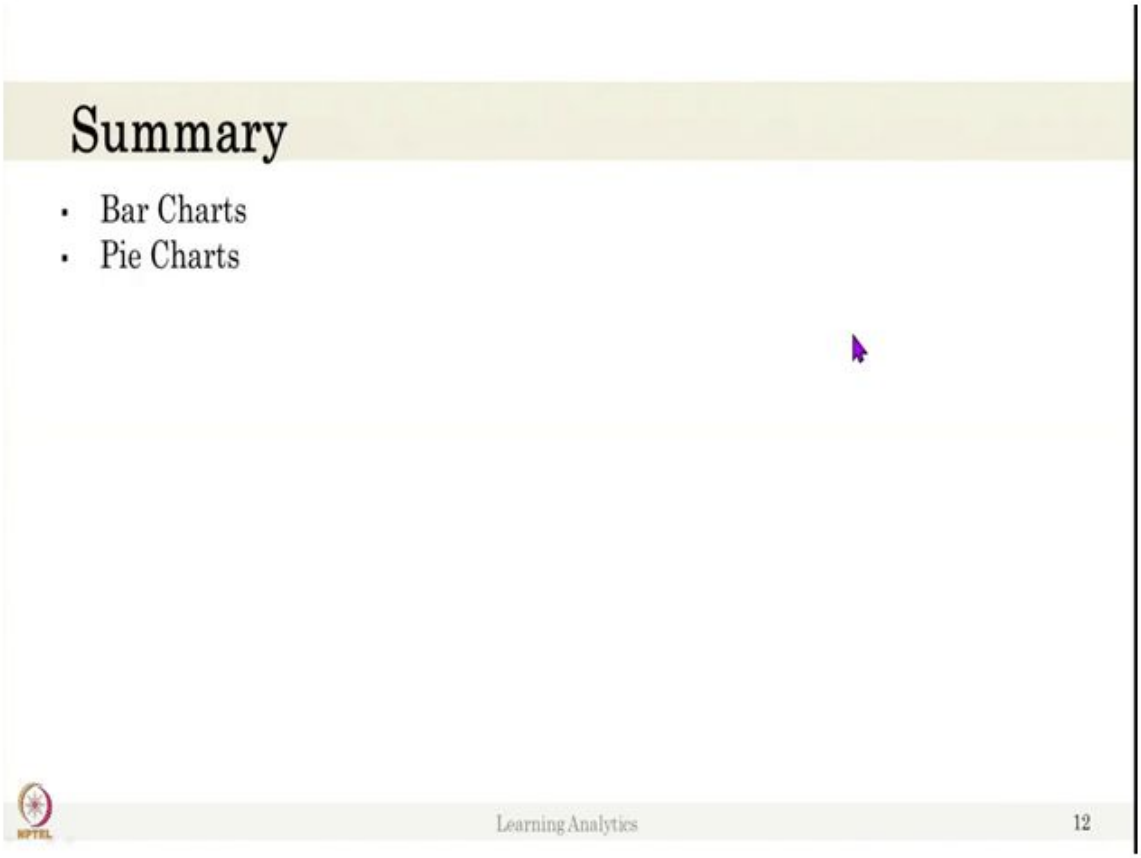

In this video, we saw what is bar charts and what is pie charts. In subsequent videos, we will have a more detailed discussion on other types of charts and also we will talk about which charts to be picked up for what kind of data. Thank you.