Introduction to Lean Construction
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Module 1
Lecture 37
Key steps for VSM, Work: Degrees of Granularity, Measurement Metrics

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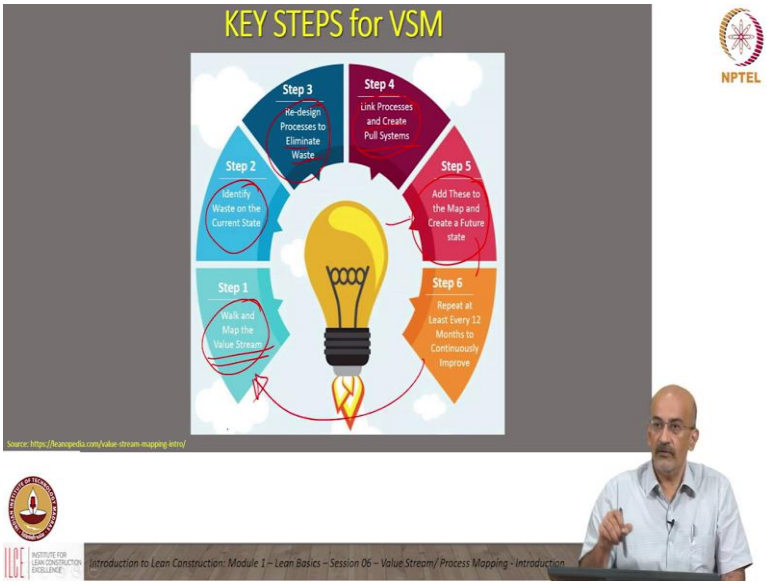

Professor Koshy Varghese: When we go into what are the key steps of developing VSM. So, this is one of the popular representations of the popular six step process. The first is to walk and map the value stream. So, in any process the value stream cannot be mapped sitting in the office, the team or the person responsible or the people responsible, they have to go to the processes look at the processes, keep time charts, take, do a detail analysis and then be able to do and then map, do the value stream.

So, next is to identify waste on the current state which is put very simply here but that is really a very it is a large exercise requires a lot of teamwork then redesign the process to eliminate waste which is the future state. This is one, then this is an even more advanced state, where we are linking process and creating pull systems, the more advanced state and then we create the final future state of the map which has got waste elimination and.

Student: Pull systems.

Professor Koshy Varghese: Different pull systems and things like that and then you have to actually implement this. So, I can have it map current state map and future state map and it

can remain on my wall as a future state map I have to go back and implement this in my site and once I implement it again you go back and.

Student: Improve it.

Professor Koshy Varghese: And try to, the cycle continues almost like the PDCA cycle which we are used to, this is from a Value Stream Mapping perspective.

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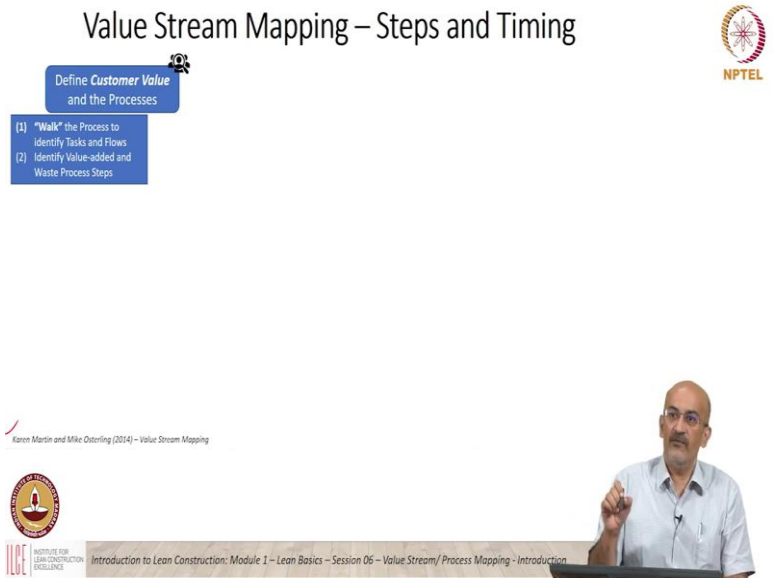

Now, a more detailed way of looking at this and this is taken from the reference you see here, is you define customer values and the process we looked at the rest of the example, what is the value, what is the process you have to look at it and for this you have to walk through the process, if I am going to do a value stream of the restaurant, I have to go, look at the kitchen, look at how the order is taken, look how the order flows to the kitchen, look at how the delivery boy routes, what is the kind of information they have, all of that . So, here you walk the process identify tasks and flows, identify value added and waste steps.

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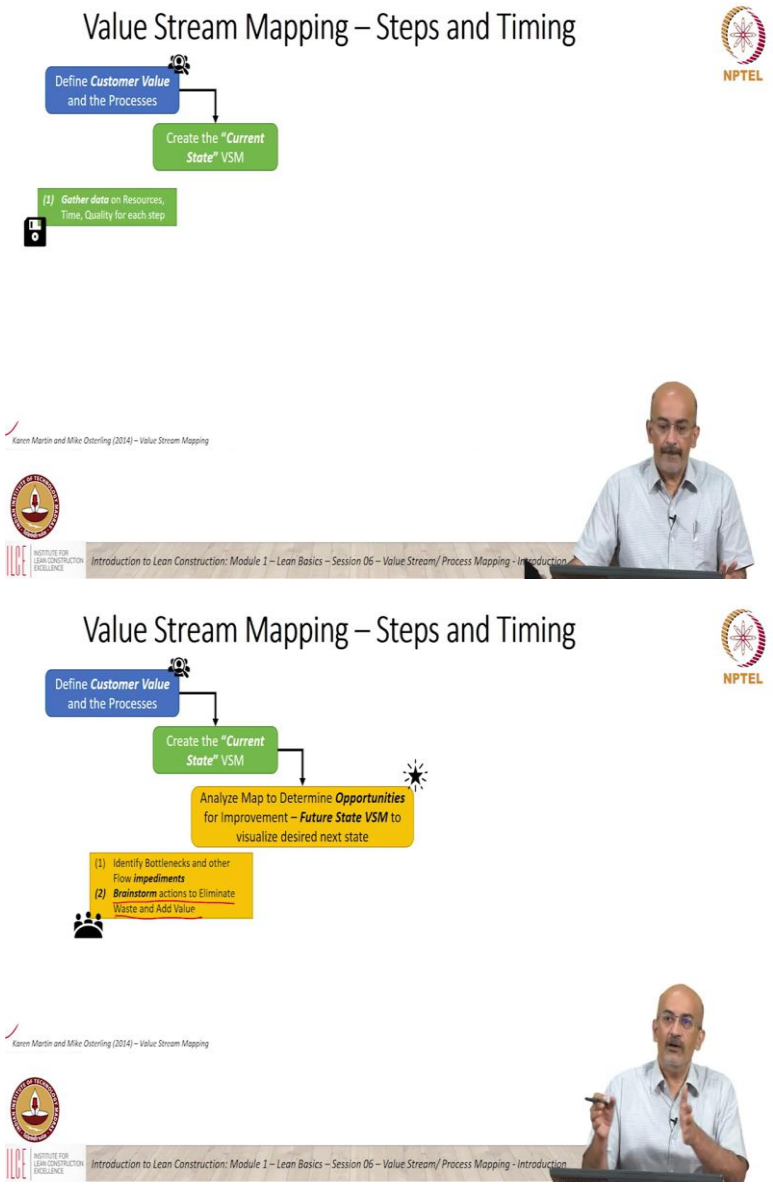

Create the current state VSM, we have to understand what goes into the current state VSM. Then analyze a map to determine opportunities for improvement for future state so this becomes important. We have to look at identify bottlenecks, other flow improvement brainstorm.

So, this brainstorming I will talk about later, value stream mapping is not a single person or a single team exercise, it is a group exercise for both getting ideas into how the whole stream works, because people should normal, generally have a more siloed view, but you need to integrate the silos. So, you need people who can collaborate and understand what happens from sub process to sub process.

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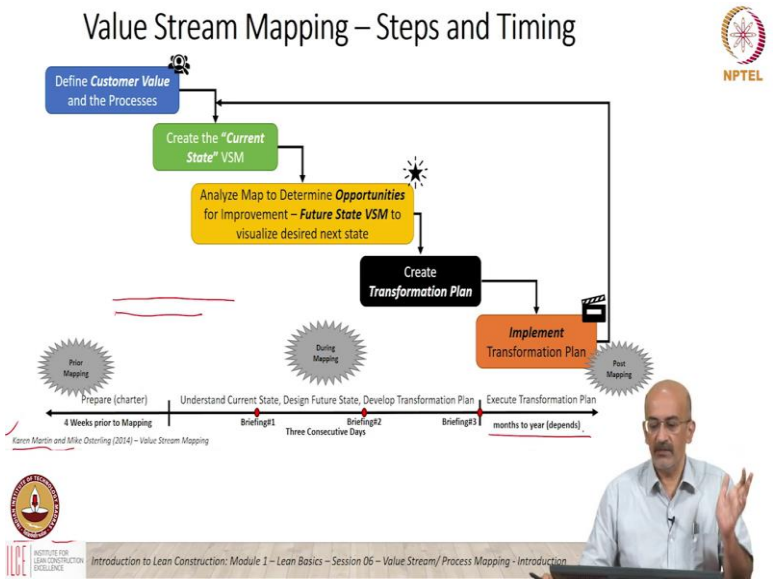

Then you create the transformation plan. And then, like we discussed implement the transformation plan. It is, again, easy to put it on paper, but it is a challenge, but then you go back to, again, repeating as we did earlier, so you need two views, this is a more detailed view.

Student: Sir, why the transformation plan is not going to satisfy customer first, first?

Professor Koshy Varghese: Yeah, here, they are definitely assuming that it is the same process and the customer values already and making the same thing.

Student: Same.

Professor Koshy Varghese: But if I am going to change my product or something I definitely will have to go. And, this is kind of a timeline that is, given. Based on what this group has experienced. But again, this might be different for different groups. I think this is only a guideline that is given here.

Will have take it implemented and see how it moves. So, you can, see they have given, they, what they said, they are prepared a charter actually go to the reference form for a charter, they talk about how to do, what to do the preparation, the briefing 1, briefing 2, briefing 3 and the transformation plan as you can see, it is months to years and it depends on several circumstances in which the situation or the processes being mapped and needs, changes need to be made.

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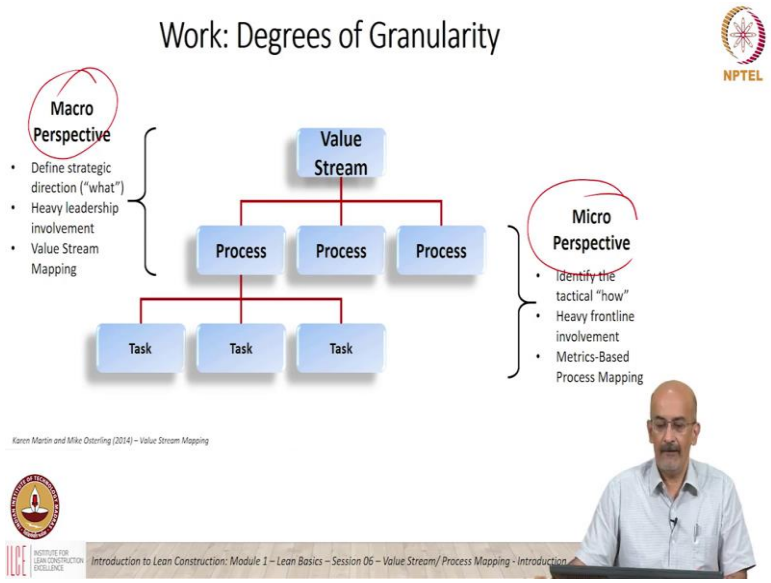

Again, I come back to this because this is important. We have value stream, we have processes, we have task, we have the stream we have sub processes, we have tasks in the processes and we have the macro perspective and we have the micro perspective. I am not going to repeat this because I think I have emphasized it but this is just another way of showing the same information.

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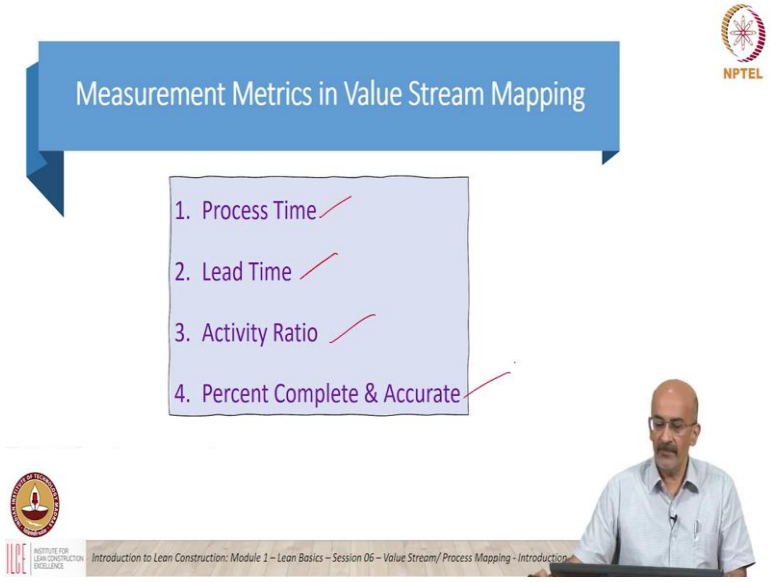

Now we go a little more, we discuss the metrics. I think all of you have an idea of what the metrics are, but let us go with a little bit of formal definitions. So, we these are the metrics we looked at, we looked at process time, we looked at lead time, activity ratio, percentage complete and accurate.

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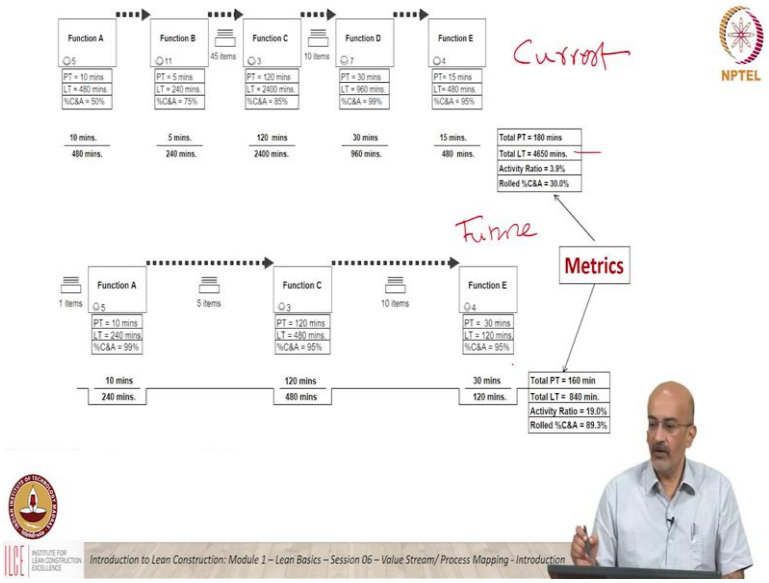

We looked at this comparison which we did last time and you saw, we did, we went through these calculations. I am not going to go through it again.

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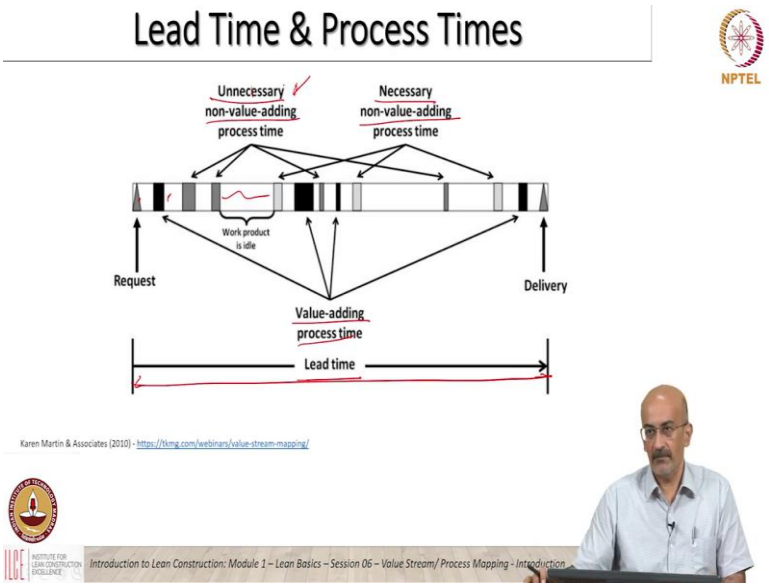

But if we go into a graphic represent, I think you can visualize this. So, if this is the lead time, what you see here. The process time is what are, what is the shaded areas. The total of the shaded areas. Now, the process time can have value adding parts and it can have non value adding unnecessary, necessary non-value. So I can reduce lead time by reducing idle time, reducing the idle parts of whatever is there. I can reduce lead time, I can reduce processing time also by removing unnecessary non-value.

So, both improvements are possible. And here we are looking at might be we are looking at within a process, if we look at this, this could also be across processes, but basically the concept of reducing both lead time as well as reducing process time by eliminating waste is it.

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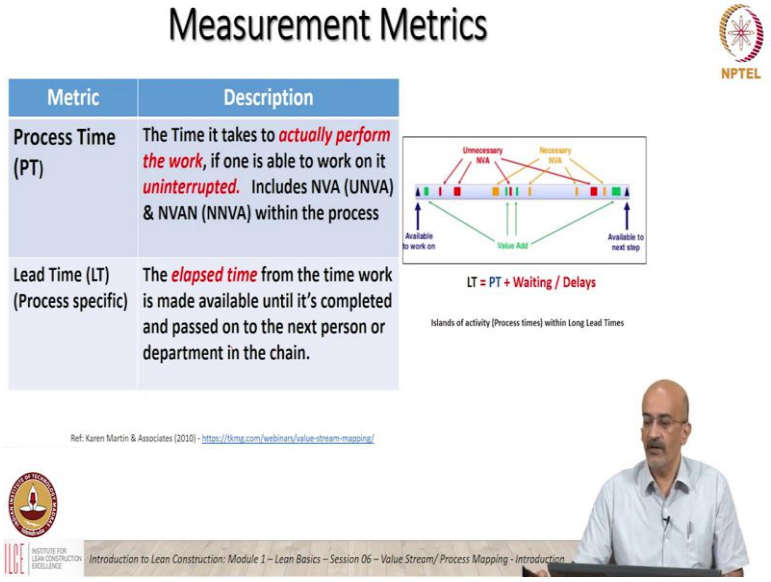

So, if I look at the definition of process time, is the time it takes to actually perform the work, if one is able to work on it uninterrupted. Includes the, what you call the 2 unnecessary non-value added and necessary non-value added. We have seen these definitions from work sampling and all of that. So, the same concept comes in.

Lead time is elapsed time from the time work has been available until it is completed and passed on to the next person or department, so that is a lead time. And, it is a same graphic you can see, just color coded for little more visibility of what, which element comes.

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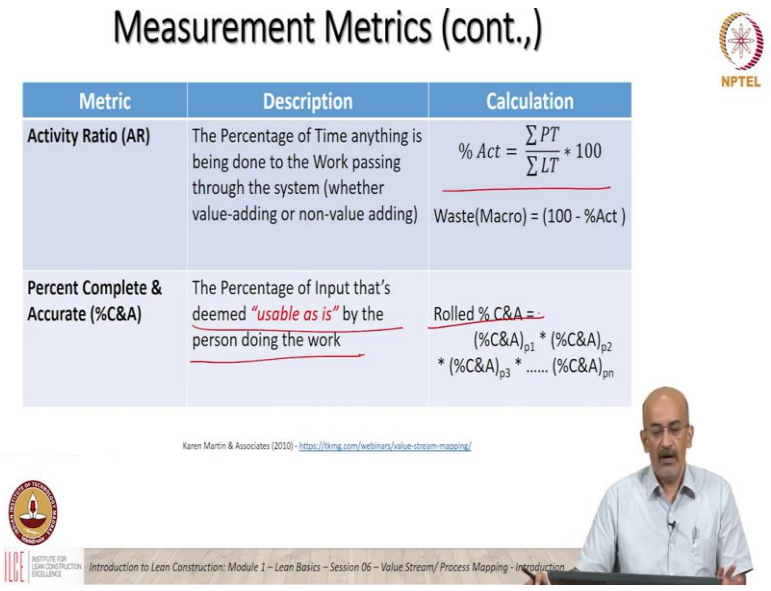

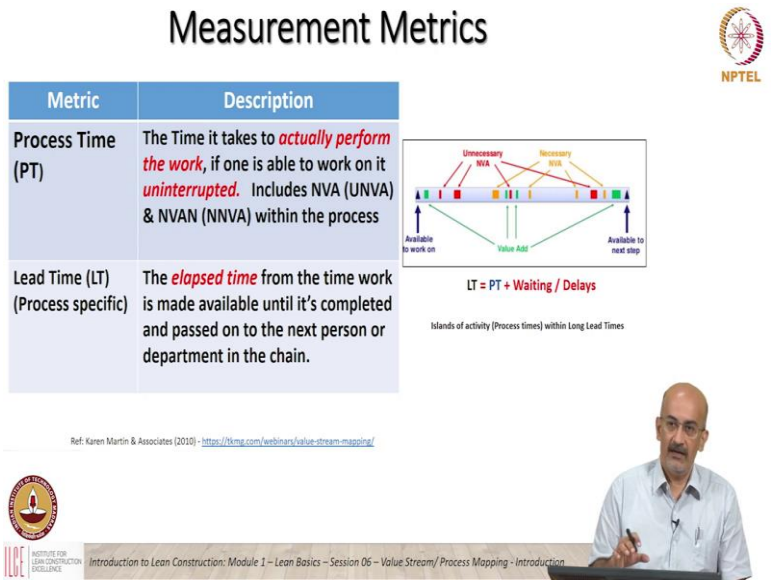

Now, activity ratio is the percentage of time anything is being done to the work passing to the system whether value adding or not, so we can see that this is, that is the process time and lead time. And, if we actually look at the waste at a macro level, it is 100 minus the actual value. The percentage complete and accurate, of input that is deemed usable as is by the person doing the work. That is one process and if you take the rolled percentage, it is the product of percentage completed.

Now, in most applications of Value Stream Map, this is used very commonly process time and lead time. These metrics are not used very commonly, but they are interesting metrics to have and probably interesting to be able to see how the future state map compares with this.

Especially the percentage complete and accurate. Obviously, the activity ratio we can derive from the earlier two metrics.

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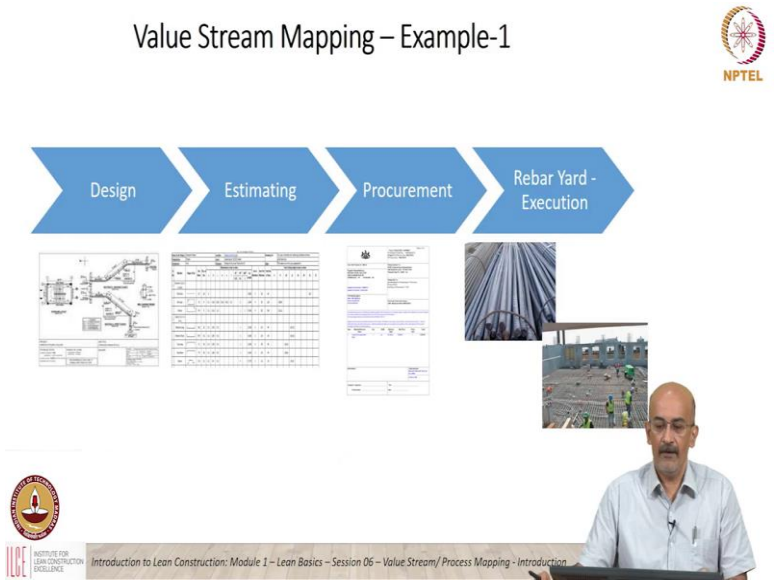

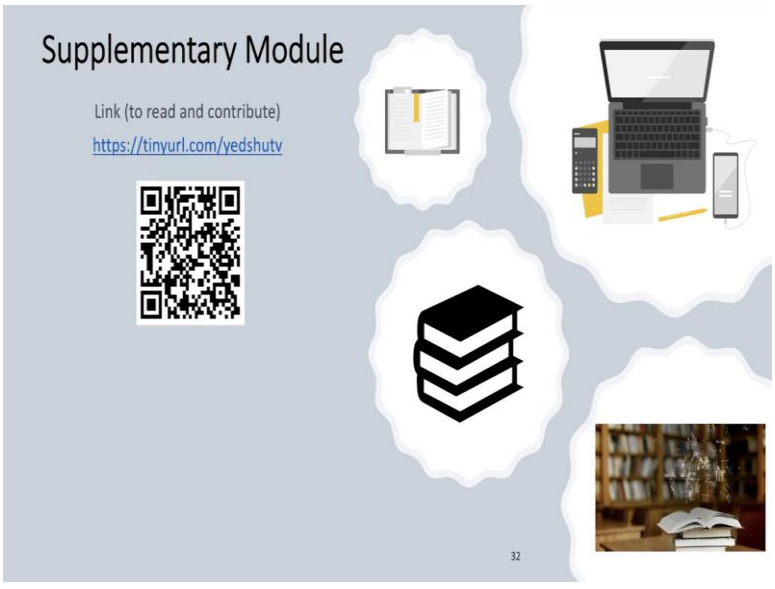

Quiz

1. Consider the following statements and select the correct option: with respect to value stream mapping

Statement 1: The development of the current state VSM is optional

Statement 2: The future state VSM need not to be developed through brainstorming

Statement 3: For the successful implementation of the VSM transformation plan, ONLY people at the site level should agree

Statement 4: VSM should be done only once forever

a) All Statements are True
b) All Statements are False
c) Statements 2 and 3 are True
d) Statements 1 and 4 are True
e) None of the above

b) All Statements are False