

**Toyota Production System**  
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**Lecture – 22**  
**Become a Learning Organization**

Welcome friends, so far we are into the discussions of various principles of Toyota production system and in our last session we discussed about the process of decision making at Toyota production system and it was basically discussing that if you are having an opportunity to take decision enough time need to be departed, you need to spend lot of time on the understanding of various alternatives.

You need to see what is happening at the ground and then by involving all the stakeholders need to take decision and in a project is spend about 70% of the time in developing the decisions and just 30% of the time is enough for implementation of those decision. And basically the idea behind this slow decision making is not to delay the project, not to have outdated things but to develop a process of learning for your organization.

When you are forcing your employees that you have to think various alternative options for the situation. So they are becoming more and more learning individuals and those learning individuals will make a learning group and learning group will make learning organization. So that is the ultimate idea of Toyota production system that how can we become competitive. We can only become competitive when we are a learning organization.

So this particular session is based on this very idea that to become a learning organization and as we have discussed many at times that Toyota production system is involved into the 4 Ps and this is the 4th P.

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## Section IV:

### Continuously Solving Root Problems Drives Organizational Learning

We are discussing that is talking about that you have to solve root problems. So that your organization becomes a learning organization and based on this idea that we have to be problem solving organization not a problem hiding organization and the idea is with the approach that if you are a problem solving organization you are accepting those challenges therefore you are going to promote the learning of the organization.

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## Principle 14:

Become a Learning Organization Through  
Relentless Reflection (*Hansei*) and Continuous  
Improvement (*Kaizen*)

And based on this the last principle which we are going to discuss now that is becoming a learning organization through relentless reflection you have to continuously introspect, relentless reflection means you have to introspect and that is also going to help in continuous improvement,

Kaizen. So Hansei and Kaizen, these are the two Japanese words, so Kaizen is more popular and this discussion of continuous improvement we will be doing in our next session.

But in this particular session, we are going to focus more on how to become a learning organization through introspection through this Hansei approach which Toyota production system has advocated. Now let us see what do we mean by learning organization first that concept need to be clear. Now here in this learning organization.

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- See errors as opportunities for learning.
- Rather than blaming individuals, the organization takes corrective actions and distributes knowledge about each experience broadly.
- Learning is a continuous company-wide process as superiors motivate and train subordinates; as predecessors do the same for successors; and as team members at all levels share knowledge with one another.

We see errors as opportunities for learning whenever there is a problem, whenever there is some error, some challenge all these are considered as opportunities of learning. If there are no errors, if there are no shortcomings, how will you improve the system? So for improvement of the system, for growth of this system, you continuously need to identify shortcomings, errors. So you need to have that kind of eyes, ears which can continuously identify errors in your system and then you fix those errors and that will create some kind of learning for the organization.

So if you go to the concept of that theory of constraints TOC, in that also the idea of improvement is through limitations you identify your limitations and once you identify your limitations, these limitations need to be overcome and when you are overcoming those limitations this will help in the learning of the organization. So that is the first important idea for learning organization.

That errors, limitations, challenges all these are the opportunities for learning. Then second important thing that is the characteristic of a learning organization rather than blaming individuals, the organization takes corrective actions. So if there is a problem, individuals need not to be blamed in a learning organization because whenever there is a problem, group, the team, the organization as a whole takes the responsibility.

And distributes knowledge about each experience broadly. Then how that problem was fixed, the knowledge generated out of that whole exercise is distributed widely across the organization. So that each one of us is now prepared to handle those situations. So that is the second important aspect of a learning organization. So individuals feel more confident, there is no fear that because of some failure there will be some responsibility assignment to me.

I will be held responsible for those mistakes. So that type of fear is not there in a learning organization. So you can do lot of experimentation and that is what required in today's environment. Next is learning is a continuous company-wide process as superiors motivate and train subordinates, as predecessors do the same for successors and as team members at all levels share knowledge with one another.

So you see it is not depending only on the HR function or on a particular department of the organization that you are responsible for training and development and you have to do organization wide some learning modules. No, no, no, it has to be organization wide and it has to be a continuous process so whether we discussed that function principle where we need to develop leaders from the organization.

So how those leaders will come out of the organization from within the team they will come because you have a system of learning organization, you are training your successors and they will become leader of future. So that type of system is there that will be the learning organization. So these are some of the important things which we can assign with respect to a learning organization. Now why these learning organizations are important. So for that purpose if you see.

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Traditional Business Environment	Present Business Environment
Long Product Life Cycle	Very Small Product Life Cycles
Less Competition	Cut Throat Competition
Homogeneous Markets	High degree of customization
Quality, Cost, Delivery	Adaptation, innovation, and flexibility

The traditional business environment and the present business environment, there are few things which you can understand in black and white. Like in the earlier periods, we used to have long product life cycles. We had Fiat cars, we had Ambassador cars in India and those cars were there for long without any change. Nowadays after every six months you find new models of cars coming on the road.

So the product life cycles are shortening day by day and if you talk in terms of your electronic gadgets, these life cycles are further becoming smaller. So that is one visible change we all can see. There were few products in the market in earlier periods but now cut throat competition is there. In each category, there are large number of products and many at times as a customer we even do not remember that how many products are available in the market.

So earlier period was having the less competition, present period has cut throat competition. The markets were homogeneous earlier almost similar kinds of customers were there and most of the products were there for mass produced, assembly line systems were there. But nowadays high degree of customization is happening. Each one of us required some kind of different product. So therefore that is another challenge on the companies, on the marketers.

Earlier we were expecting either high quality, low cost, faster deliveries, these were the popular idea for operations management. Nowadays new terms are coming adaptation, innovation,

flexibility, these are the new expectations of the market. QCD have slightly taken a backseat adaptation, innovation, flexibility, these are the new buzz word in the business arena and therefore to achieve all these things, you have to be a learning organization.

Because innovation which requires lot of thinking and thinking that is not possible without becoming a learning organization. So learning organization is important for seeing this present business condition.

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Peter Senge popularized this concept in his book, *The Fifth Discipline*, over a decade ago, defining a learning organization as a place (Senge, 1990): ...

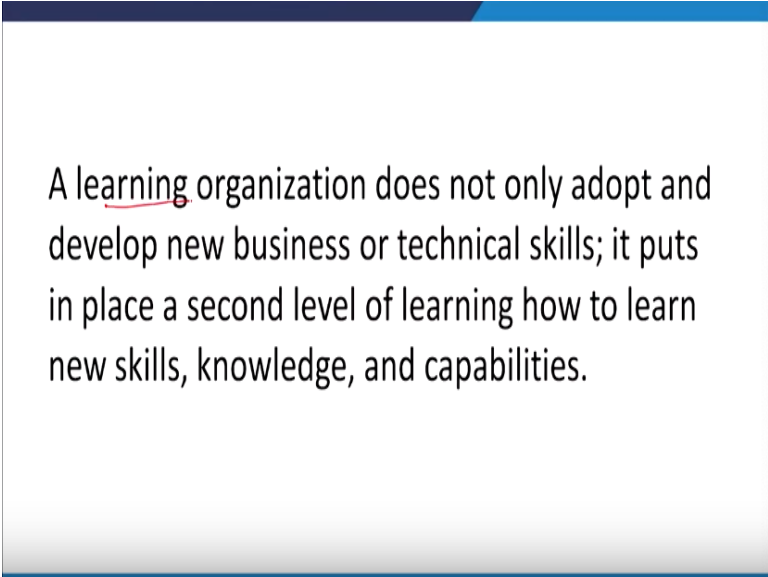
*“where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.”*

Now in a book which is one of the very popular book about this defining the concept of learning organization by Peter Senge and it came in the year 1990 around 3 decades back and in that book he mentioned that what is the meaning of learning organization and here according to Senge's word where people continually expand their capacity to create the results they truly desire, that is first aspect that people continually expand their capacity to create.

So they are able to create more things than they truly desire where new and detailed patterns of thinking are nurtured that is the second point, where collective aspiration is set free that is the third point and where people are continually learning how to learn together, this is also very important, learning to learn. So these are the 4 dimensions which Peter Senge mentioned in his book, the fifth discipline.

And in that book you can find one, two, three, four dimensions of being a learning organization that people should be able to create new things as per their desire, their thinking is nurtured and finally we also need to learn how to learn. So these are the definitional part or the academic part of the concept of learning organization.

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A learning organization does not only adopt and develop new business or technical skills; it puts in place a second level of learning how to learn new skills, knowledge, and capabilities.

So what we understand from this definition that a learning organization does not only adopt and develop new business or technical skills, but it is a second level of hue that how to learn new skills, knowledge and capacity. So since six sigma is being developed somewhere, since Toyota production system is developed somewhere, since benchmarking concepts are developed somewhere so I should be able to adopt those things that is not a learning organization.

But in place of that I need to have that how to create new skills, how to create new knowledge and how to create new capabilities that is the meaning of learning organization. So the meaning of learning organization is not limited to learn new things from other organization rather your abilities to create new things, new knowledge, new skills, new capabilities and how to develop the entire ecosystem of your organization.

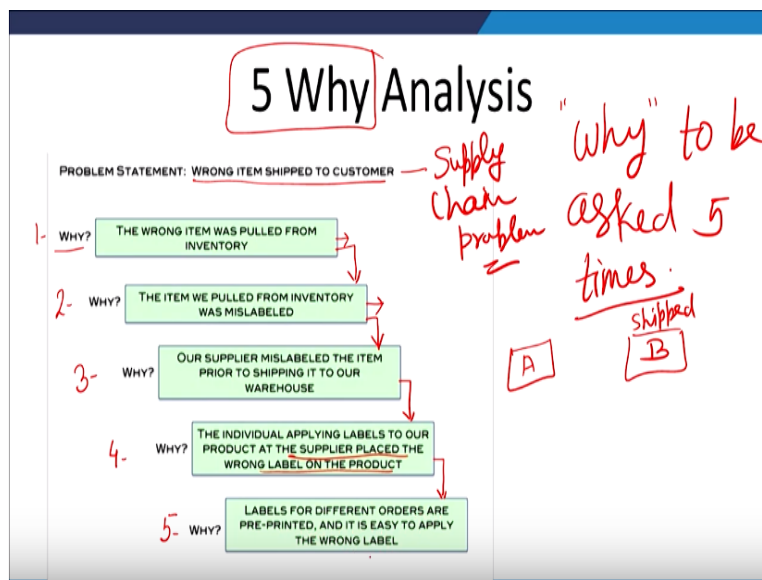
Which can enable the creation of these new things that is the ultimate objective of becoming a learning organization and that is what the definition of learning organization where Peter also means and the idea of Toyota production system is to create that capabilities of the organization.

So finally you can understand that it is not about the copying the system of Toyota production system that what Toyota plants are doing.

You copy the same thing in your organization that it means you are limited understanding of Toyota production system. Rather developing your own capabilities to contribute in making these things more effective and efficient that is the true understanding, true implementation of Toyota production system and now based on that we are going to discuss this five why analysis which we have talked many at times that when we are talking of problem solving.

We are going for the root cause analysis that how to go to the root of a particular problem and Toyota system says that if you ask this question why.

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Why to be asked 5 times, the skill is that what type of question you will ask and if you ask appropriate questions so when you are asking why fifth time you should be re able to read to the root of that particular problem. And here we are starting with the very simple example, there some wrong items are being shipped to the customer. So it is basically a supply chain problem. So nowadays lot of ecommerce companies are there and this example can be very useful for them.



That sometime customer has ordered particular product A but because of some issue product B has reached the customer. So you need to do and if it is happening again and again in your organization then we discuss that we need to go for this root cause analysis. And this root cause analysis is a very imparted for becoming a learning organization. Now the first question, first why which you will ask, the wrong item was pulled from inventory.

Why the wrong item was pulled from the inventory? So you will get some answer. The second why, why the item we pulled from inventory was mislabelled because you got some answer of this that the item was pulled because of mislabelling because the customer ordered product A shipped product B but because on product B the label of product A was placed. Therefore, the wrong item was pulled from the inventory.

So the second question automatically comes that the why the item we pulled from inventory was mislabelled, why it was having the mislabelling. This will create the third question why, why our supplier mislabels the item prior to shipping it to our warehouse. So somebody told that at our end we did not mislabel. It was already received from the supplier and it was available in our warehouses with that mislabelling.

So this answer lead to this third why. Now the answer of third question will lead to fourth why and that is why the individual applying labels to our product at the supplier placed the wrong label on the product. Now because somebody says that a supplier mislabelled the item and the answer of this third question leads to so each such answers are leading to new whys. So the fourth why says, why the individual applying labels to our product at the supplier place the wrong label on the product.

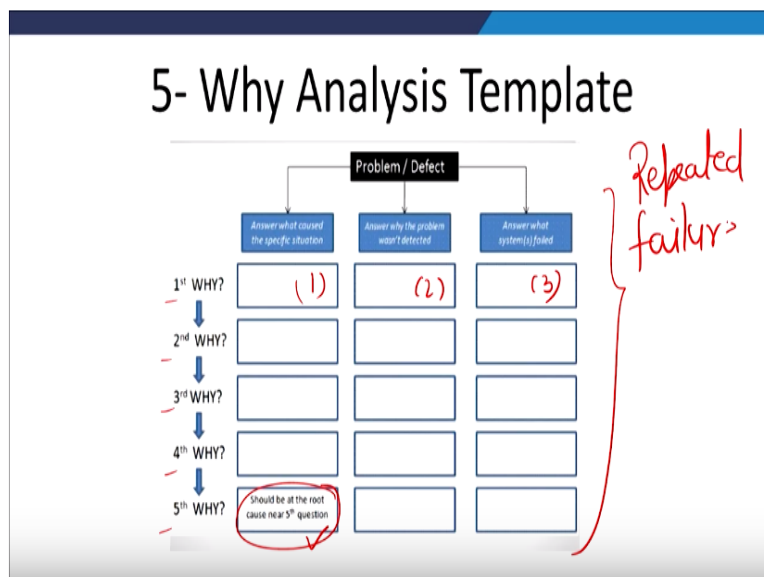
Since the label was placed at the supplier end. So now the question is that why that supplier placed or why that individual at the supplier's end who was supplying product to us mislabelled the product supply to us and then the answer of this question will lead to final why and probably at this you will get the root cause of this problem. The answer is and the question because of that is label, why labels for different orders are pre-printed.

And it is easy to apply the wrong label because at the supplier's end. The all labels are pre-printed and then somebody is placing the labels on the product. So because the labels are pre-printed there are high chances that mislabelling is possible. If labels are printed after the order is received, then as per the order you will place the label. So therefore the solution is in the line of these whys.

And now you got the reason you got the root cause that because of pre-printing of labels at the supplier end there are chances that you can ship a wrong product to your customer. So you need to find the solution that labels at the supplier end will be printed only after the order was given to that supplier. The supplier should not keep pre-printed labels and if pre-printed labels are there, this type of problem will happen.

So this 5 why analysis and obviously it will be a matter of practice that how these questions are designed. So that each why should take you closer to the root cause. So that is very important thing that each why should take you close to basic issue of the problem. And further purpose, now I am discussing a generic template for 5 why analysis.

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And here you see that first why, second why, third why, fourth why, fifth why and fifth why should be at the root cause near the fifth question. What I am saying that, that why a particular thing has happened so this is there and answer why the problem was not detected and then

answered what system failed. So these 3 things are there in each why, so these 3 things will make you can say that 1, 2, 3.

So these 3 things are making your questions and because of these 2 and 3 your next whys will come and finally this in the fifth why, you will get the question that will give you the root cause of your problem. So that is a genetic template you can use in any situation whenever there is a failure and particularly repeated failure, this is will be used for repeated failure. If there is a random failure you may take it way chance that because of randomness also there may be some defect.

But if the same defect is coming again and again you need to go for this five why analysis, you need to see that why the same defect is coming again and again. So you unless going to the root cause of that problem will not be able to address that particular problem. So repeated failure is mainly require this type of root cause analysis. And you see that how we take counter measures for different levels of problem. Again it is an example of five why.

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Level of Problem	Corresponding Level of Countermeasure
There is a puddle of oil on the shop floor	Clean up the oil
Because the machine is leaking oil	Fix the machine
Because the gasket has deteriorated	Replace the gasket
Because we bought gaskets made of inferior material	Change gasket specifications
Because we got a good deal (price) on those gaskets	Change purchasing policies
Because the purchasing agent gets evaluated on short-term cost savings	Change the evaluation policy for purchasing agents

*Why?* (written vertically next to each row)

*Low Cost* (handwritten next to the 4th row)

*KPI Cost Saving* (handwritten next to the 5th row)

So now there is a puddle of oil on the shop floor. There is a you can say some dirty area because of some oil in the shop floor and we have already learned that we need to have a clean, neat 5S type of system in our shop floor. So the countermeasure is clean up the oil. You can do that

cleaning the oil so that it becomes a neat and clean area. But this is creating a question and because of that question that why this oil is there.

So you get the answer because the machine is leaking oil. So now because the machine is leaking the oil that oil is going to the shop floor. So the second countermeasure you need to take you have to fix the machine. Now a third is because the gasket has deteriorated. Now why there is a leakage from the machine that is even serious problem that if oil is leaking from the machine. So why the oil is leaking from the machine.

So then you got to the problem because the gasket has deteriorated. The gasket which is used for sealing the oil inside the machine. So you have to replace the gasket that is the countermeasure for that. Then again why gasket is deteriorating so you got to know because we bought gaskets made of inferior materials. So the quality of gasket is not good because you purchase the gasket of a inferior material.

It is not up to the standard so therefore they may not be able to withstand the temperature at sector. So you need to change the gasket specifications. So that you purchase gasket of superior specifications and who told you to go for those inferior gaskets because we got a good deal price wise on those gaskets. So now you have to change your purchase policy because you are focusing on low cost.

And because of low cost you compromised the quality of gaskets and therefore those gaskets got deteriorated and lead to the leakage of oil and now finally, the next question is because the purchasing agent gets evaluated on short-term cost saving issues. So the purchase has the role that how much price you are saving, how much cost you are saving and their KPI key performance indicator is based on the cost saving.

So you have to see that change the evaluation policy for purchasing agent that because you are asking them to save the costs. So therefore they are looking all such kind of majors that to buy from lowest possible cost sources. Now you see 5 why system of evaluation that there was

simply some oil at the shop floor that oil at the shop floor let do this kind of evaluation that we need to change the policy of evaluation of our material management department.

That cost saving should not be the criteria rather how long lasting equipments or maybe some other brainstorming is required. But that is the beauty of this 5 whys system that each question will generate a new type of answer and because of that new answer you will have a further new question and this will create a sequence of question answer and finally you will be able to reach the root of the issue.

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### 5 Why analysis of e-mail problems

What is the problem?	Employees are frustrated and complaining about the new e-mail system.
Why?	Employees do not understand how to use the functions of the system.
Why?	The employees didn't receive adequate training on the new system, a manual they can use, and didn't give input on their needs for the new system functions.
Why?	The IS manager had a poor planning process: didn't ask employees about their needs on system functions, didn't plan for training up front, didn't notify employees using multiple communication channels, didn't review the manual with employees (pilot group).
Why?	The manager didn't get direction and support from his boss, or receive planning process training.
Why?	The company as a whole does not have effective internal processes in place, nor is it disciplined in using good process.
Why?	Senior management hasn't worked to create a work culture that encourages and reinforces effective internal processes.

Similarly, here we have another example that how 5 why analysis is done for e-mail problem. This is another example, now what is the problem in this particular case. There is a new e-mail system which company wants to implement. So employees are frustrated and they are not very happy with this new e-mail system. So now you are asking sequence of whys and by sequence of whys you are able to reach because the first question you are asking employees do not understand how to use the functions of the system.

And by a sequence of these questions you finally reach senior management has not worked to create a work culture that encourages and reinforces effective internal processes. So though the problem is started from e-mail but it reached to organization wide system that there is not proper communication between the top management and other hierarchies of the organization and they

have not motivated, they have not encouraged the people for a developing some kind of a strong internal processes.

So variety of cases you can do, you can find the various problems around your area and those problems if you start doing this kind of 5 why analysis will lead to some very interesting root causes that the symptom is something different that because of which you start doing this analysis but when you do this 5 why you will reach to a very different level of route that will give you a very different kind of insight.

So this whole idea of becoming a learning organization that you should be able to identify your problems and those identification of problem will give opportunity of learning. So with this we can also see or we can also finally comment that creating a learning organization is a long term journey.

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You cannot create a learning organization within a day or two. Toyota took more than 10 years to develop a fully independent American plant because of their own understanding that it cannot develop in a day or two. So they took enough time for getting first American president for their Toyota Motor manufacturing company. So it is a very slow process of developing a learning organization.

And it is a very important cultural issue also. Now in this particular diagram we see the very popular Deming cycle that is PDCA and we had trying to super impose the cycle of problem solving that surface problems, countermeasures, evaluate results and create flow so that how PDCA that is going to be discussed in our next session which is based on Kaizen and the issue of creating a learning organization by going to the root causes of that problem are possible simultaneously.

And we will discuss in more detail about the each of these aspects that surface problem itself though we have a combined it with plan countermeasures we have said it is do, evaluate result is c and create flow is act. But at each of these level there is a separate PDCA cycle which is possible. So that is what we are going to discuss in our next session and with this we are coming to end of this session. Thank you very much.