Toyota Production System
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Module No # 03
Lecture No # 14
Standardization of task

So, friends, I welcome you again to this session on Toyota production system, we are already in the discussions of various principles of Toyota production system and we are almost halfway through in that discussions of various principles. In our last session, we discussed about very important pillar of Toyota production system that is the concept of Jidoka that you need to empower your processes, you need to empower your employees.

So, that you built quality into it, you need to build quality into your processes, you need to built quality into your employees and then only a quality output will come then only a quality product will be produced. Many a times as manufacturer, we try to develop quality into the product on the cost of employees and processes. But this Toyota production system is that philosophy where we say that, if right people are around you, if right processes are around you, then automatically right kind of product will be produced.

So, that was the concept of judo which we discussed in last session know, for Jidoka to achieve that how to develop our processes. So, that quality can be built into it. For that purpose, we are going to have this particular session where we will talk about a standardization of the processes, how can we standardize our task and that is again requires your careful participation in this session.

Because whenever we talk of standardization, we go back to era of scientific management, we start thinking about FW Taylor, who is known to be father of scientific management. So, that is one approach of standardization. On the other side, we say that we want flexible organizations, we want more and more flexibility.

And therefore, the Toyota Production System need to be understood in the right lenses that what is the meaning of flexibility, what is the meaning of standardization and when we are thinking

about standardization of task as one of the principles of Toyota Production System, what does it mean? So, we start this session by introducing this particular concept which was given by FW Taylor.

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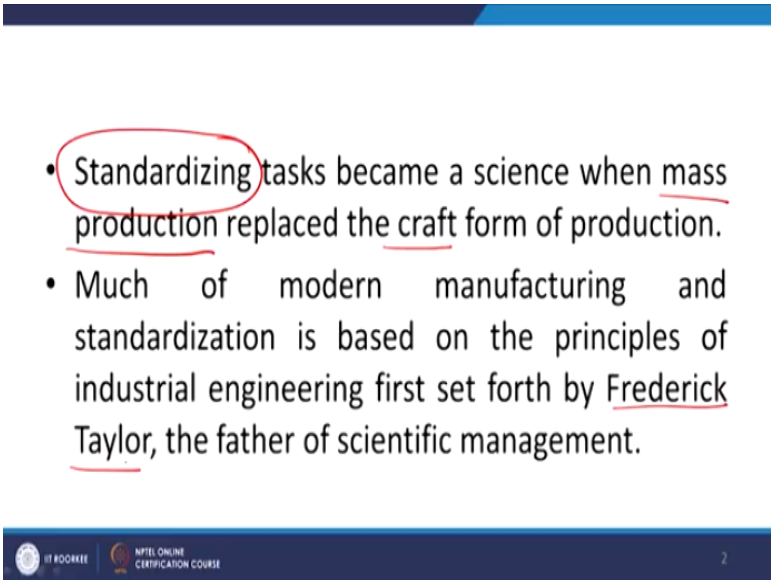

And in that scientific management concept of FW Taylor, that came because at that time, we were having the crafts era that one craftsmen was producing almost everything related to that particular product, whether it is finishing, whether it is basic prototype, whether it is any other kind of machining, whether it is any other kind of fabrication work related to that part. So, everything was done by a particular craftsmen.

And the volume of production was also very low and there was no standardization of the process. So, the first standardization concept came when we moved from that era of crafts to mass manufacturing. So, this was the first important thing, where we started talking of this term standardization. Now, in this term of standardization, we attribute a lot of you can say characteristics of this standardization to this person, that is FW Taylor, who is a very well-known personality in the development of management thought known as the father of scientific management.

And in this whatever the concept of the standardization was given. So, most of the industrial engineers started following that very concept of standardization.

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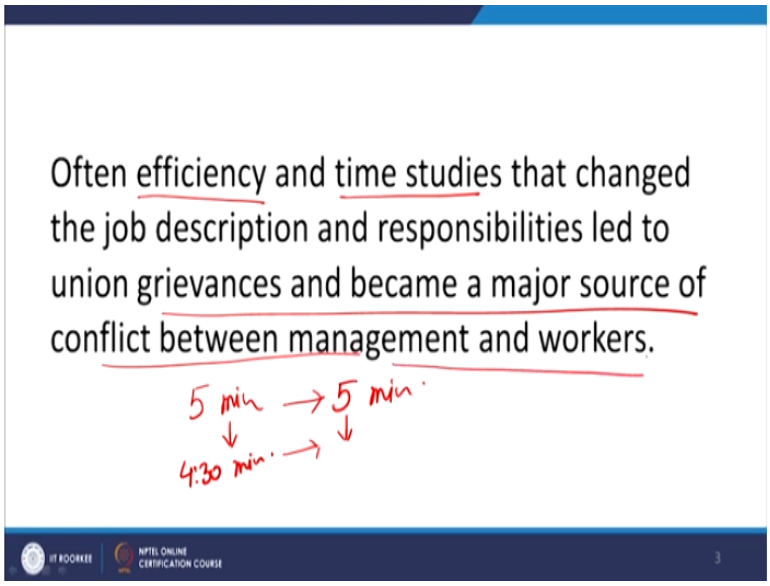

And we see that what are those concepts that means efficiency and time studies. These are two important objectives for standardization, how to have higher efficiency from your production process. And that was the obsession of the industrial engineers in 1940's, 1950's, 1960's, that how to have more and more production from my plants. And we discussed in this session of Jidoka, that it was almost considered like a crime, if you stop the process.

Because mass manufacturers were obsessed with the higher volume of production and they wanted to produce more and more even at the cost of poor quality. So, that was the era of mass manufacturing, where efficiency and time studies were very important. And because efficiency and time was very important. So, what used to happen, if I just give you a glimpse of those periods.

So, industrial engineer is walking through the production plant and in industrial engineer observed that how workers are working. And if industrial engineer observes that worker is working very fine, and this task is taking as per his calculation, five minute and worker is able to achieve this task in five minutes. So, as a result of that, the industrial engineer will raise the standard and now industrial engineer will say that I need to redesign this process.

So that it can be completed in 4 minute 30 seconds. And that pressure will come on this worker to achieve the new raised bar and therefore, many workers if you read literature of that time, you will find that many workers used to underperform whenever industrial engineers used to walk in

the shop floor they used to underperform because it they perform well or if they think that because engineer is walking and we need to perform with best of our efficiency.

So they know that without getting any advantage, their standards will be raised and they had to work harder to achieve those standards. And therefore, in that era, there were continuous problems of industrial relations managers, the management and the workers, their unions, they used to have a lot of tussle with respect to this discussions of productivity and efficiency of the workers because industrial engineers were obsessed about efficiency.

So, they were continuously looking for improving the standards by following the concept of standardization, but there is a limit workers cannot be treated like machine. Unfortunately, in this scientific era scientific management period, workers were considered like machines. So, industrial engineer thought that you can take any amount of output just by standardizing the process, which is actually not true.

So, therefore, we need to understand that this was a major source of concern and conflict between management and workers were very often there used to be a lot of strikes, lockouts, gherao, so, all those IR problems used to be there. And one important reason of those IR problem was the obsession of industrial engineers towards efficiency and productivity, do not considering the requirement of employees, the manpower, the people, they are not machines.

Now coming to the other side of this is standardization. Now, when we are discussing this principle of standardization of task as one of the aspect of Toyota production system.

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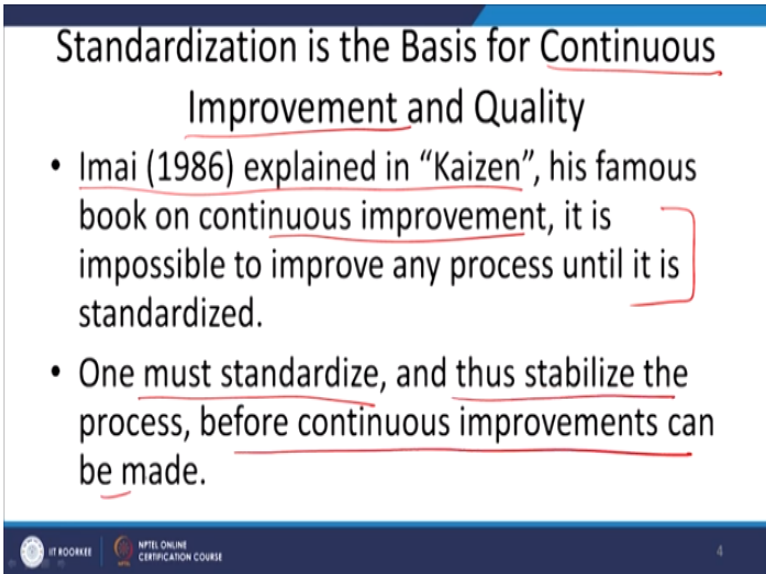

So, one very important author Imai who came with a book known as Kaizen**,** we all know is the book of continuous improvement. And in that book itself, this Imai mentioned that it is impossible to improve any process until it is a standardized. So, on one side we saw that those industrial engineers they created a lot of law and order situation in various manufacturing organizations, because of higher standards because of raising the bar of productivity.

But on the other side without a standardization, it is also not possible to improve your system and Toyota Production System the Japanese philosophy of management is based on this idea of continuous improvement. Now, on one side, we saw some kind of limiting aspects, some kind of challenges, some kind of, you can say anti human approach of the concept of scientific management that was the downside of the scientific management.

But, on the other side, people like Imai advocated that without a standardization, continuous improvement is not possible, you cannot improve the quality of your organization. So, whether you thought a line of Taylor, who was advocating the standardization for efficiency and productivity or you talk of Imai who is advocating a standardization for the sake of quality of the organization.

So, if we try to summarize we see that, whether it is a continuous improvement activity, which is coming from Japan or whether it is FW Taylor's scientific management, somehow the standardization is very important thing for improving the efficiency, productivity or quality so,

that agreement is there. Now the important thing will be how to develop the human side of this standardization because the scientific management approach is anti-human approach of standardization.

So, we also need to see that there has to be a strong human element into this process of standardization, because Toyota production system giving lot of emphasis on using people for solving your most of the problems. So, that is what we will be discussing now. So, what Imai says that one must a standardized and then stabilize and then go for continuous improvement. First you standardize then stabilized and then go for continuous improvement.

And you can understand this with the help of examples coming from the field of sports. So, when we take any example whether it is golf or cricket or any other sport you consider. Now all top players in any sport, they have their own style of playing the game. So, whether you talk off the Virendra Shewag or you talk of Rahul Dravid, so, they have their own style of batting. But when a small kid goes to sporting coaches, so, the sporting coach tells you some basic ABCD of that particular game, some fundamentals of that particular game.

So, that fundamentals are like a standardization of the process. And then because you are going to be a good sports personality, you practice those fundamentals you practice and you practice that is the second step that from a standardization, you are now moving into the stabilization. So, you have a stabilized the fundamentals and then you start innovating once you have created the perfection in the standardization, then you start improving on your own particular style.

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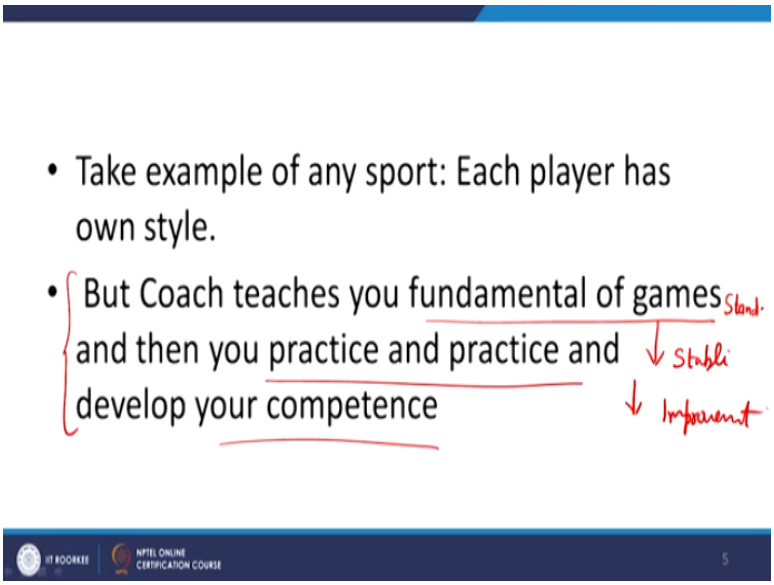

So, that is the stage through which each top player passes that first you understand the fundamental of games, then you practice and practice and then you develop your own competence, your own style. So, it is almost impossible that without knowing the fundamentals, without knowing that standard process, you can go for improvement in that process. So, that is what we discuss that first is standardization, the second is stabilization and third is improvement.

So, this type of sequence is to be followed and therefore the standardization basic need for the continuous improvement. So, whether you are accepting the idea of scientific management or not, but a standardization is necessary for improving your process. If you do not know what is the basic process? How will you improve it? If each one of us is given complete freedom to do things the way we want.

So, randomly sometimes we get success and sometimes we fail. So, the process of improvement cannot be taken into account because you do not know which process to improve. So, standardization will help you to do things in a systematic manner. Now when we are talking of this development of standard systems, the standardization now we see that the idea of scientific management which was given by Taylor created more kind of bureaucratic the mechanistic type of organization structure.

And we need to create an enabling environment where people can continuously improve the process people can continuously improve themselves also with respect to providing quality to the customer.

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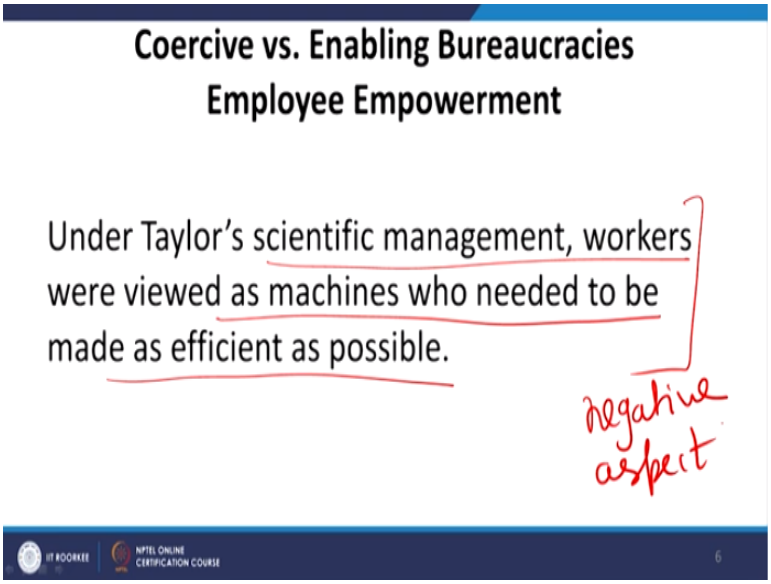

So, in this particular say, when we have already discussed that according to Taylor workers were viewed as machines who needed to be made as efficient as possible. So, this is the negative aspect if I see from today's point of view, that viewing your employees as machines, and you just want to extract the maximum output from them, that is a very important negative point in the scientific management concept of Taylor.

And as a result of that, how you we were implementing this idea of that machines are there workers are machine and you have to take maximum work out of them.

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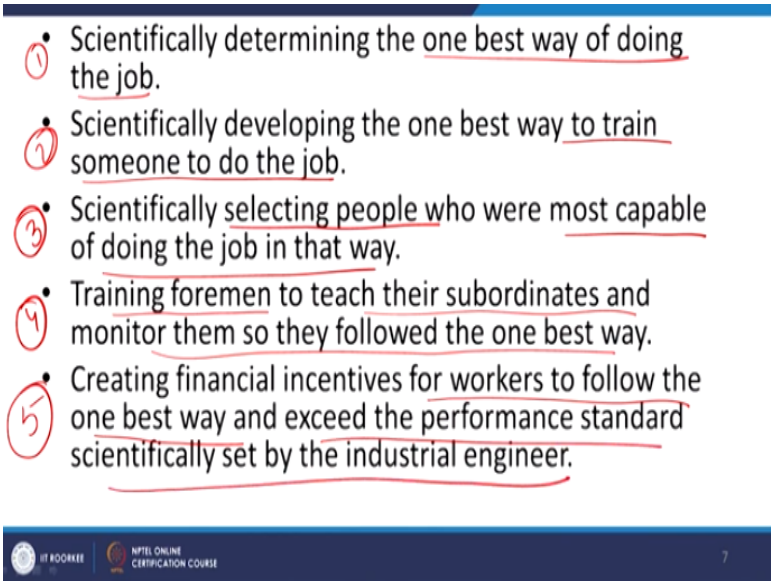

So, scientific management was of the idea that there is one best way of doing a particular job. Nowadays, we believe that there can be many ways of doing a job, but the idea of scientific management says that there is one best way of doing a particular job. Then, the second point is once you have identified the best way of doing the job, then you need to train someone to do the job in that particular manner.

You have identified how to lay the bricks and you have identified the best way of laying the bricks and now you will train your employees to lay the bricks in that particular fashion. So, that is the second important thing in the scientific management. Now, then, third aspect is you have to select people scientifically those who are capable of doing the job in that particular way. Because now you will like to create force of people that they all are doing the job in the similar manner and that is third important aspect.

Now, fourth is after selection, then you will train your foreman your employees foremen is a particular designation that used to be there in the manufacturing organization to teach their subordinates and monitor them. So, they followed the one best way that you will teach your foreman, supervisor foreman is like a supervisor.

So, you teach your supervisor and the supervisor will teach the subordinates to do the task in the best way and will continuously monitor their performance, whether they are doing the work as per the best way or not. And fifth point with respect to this scientific management is that creating

financial incentive for workers to follow the one best way the idea of Taylor was that people will do work more efficiently if we offer them some kind of financial incentive.

So, if I am making 10 units in a day, so, I will get my basic salary if I make one piece additional. So, I may get some additional incentive if I make 2 piece additional I will get more additional incentive. So, that is the idea of additional incentives. So that if we are giving additional incentives to our workers, they will do more efficiently they work more efficiently and exceed the performance standard scientifically set by the industrial engineer.

So, Taylor thought that financial incentives are directly related with the output of an employee and if you provide more financial incentives, the more output will be there and this output will be even larger, it will be more than the target given by industrial engineers to them. So, these were the basic idea of scientific management of FW Taylor that they are like machines. So, as you program your machine, you program your robot, so, your robot will continuously work for 8 hours in the same manner that if you need to take out some job from the rack.

So, your hand should move only this much movement. So, you are trading all your employees that every time you take your job out from this rack. So only this much movement is required. So, if you have only this much movement, you can work continuously for 8 hours at you can remove 100's of jobs in a shift of a divorce, but you need to understand that human being is not machine and all these 5 principles we just had elaboration that are considering the human being as machines.

So therefore, we say that it was more like a bureaucratic organization where employees were having no concern for the outside world, what is happening in the outside world, they were totally cut off with that outside world they had the total focus towards efficiency, the inward looking organizations were there and there are many things you can read about this kind of mass manufacturing environment which was driven by efficiency, productivity, etc. And therefore, if you classify organizations, so, primarily organizations look of two types.

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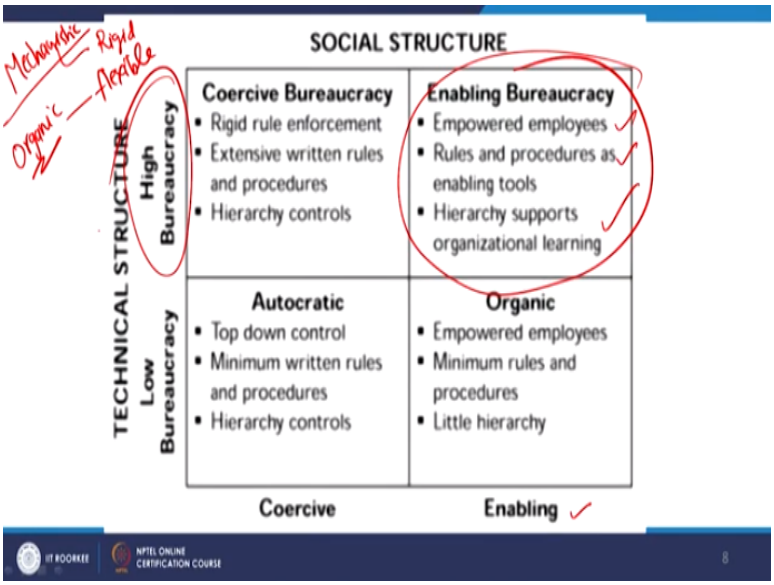

One type of organizations which are mechanistic another type of organizations which are organic, so, mechanistic organizations are those organizations, which are having a very rigid bureaucratic hierarchical systems. So, with the rigidness, you can identify these kind of organizations, organic organizations on the other side are the flexible organizations. So, these are rigid these are flexible.

So, these are the two extremes, but if we see this particular slide, we will realize that we can have more types of organizations So, on the basis of bureaucracy involvement, because mechanistic organizations are more like bureaucratic organizations, realities are there top to bottom kind of communication system is there a strict following of orders is there. So, all these are the characteristics of bureaucratic organizations.

So, you have high bureaucracy and low bureaucracy and on the basis of social structure you have coercive organizations and enabling organization. So, what we require is this kind of organization where you have bureaucracy. Bureaucracy means, in this particular context, the standardization where some systems are defined and at the same time that standardization should enable the empowerment of the employees This is standardization should not take their power should not keep them just following like a machine.

So, you say that, we are empowering employees rules procedures are like for the enabling tools and in this type of organization hierarchy supports the organizational learning. So, these type of

environmental issues are created in a environment where you have the standardization as well as you are trying to use that standardization with the enabling conditions. So, the social structure is enabling and this is high standardization.

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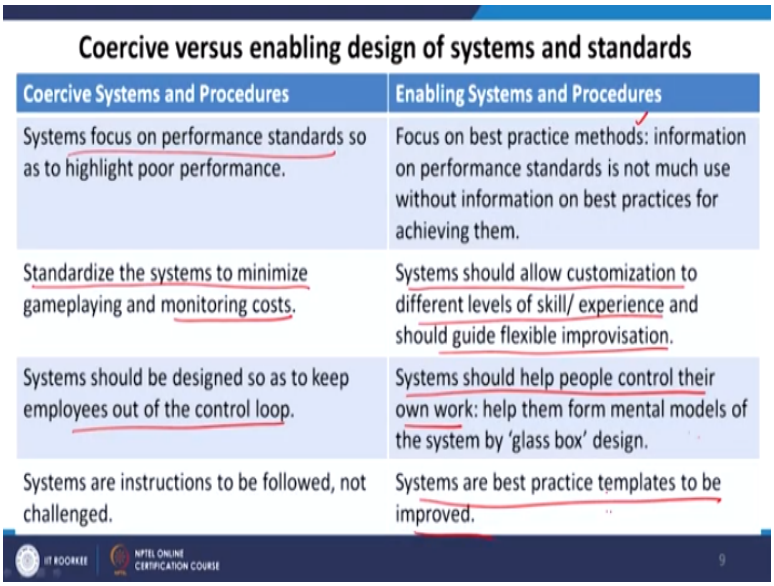

So, when we see that what is going to happen with respect to coercive add enabling design systems and standards. So, this table will help us in understanding that in a black and white manner that on one side you have coercive systems and procedures and on the other side you have enabling systems and procedures. So, the enabling systems and procedures focus on best practice methods without knowing what is the best practice you will not be able to improve yourself.

So that is a very important thing. The second important thing is this system allow customization and customization at different levels of skill experience and it also helps you in flexible improvisation, then, system should help people control their own work, like we discussed in case of Jidoka, that you are empowering your people that they can take control of their work and systems are best practice templates to be improved.

So, this is the enabling environment kind of system which we want to develop by following the concept of standardization. On the other side, if I talk of coercive systems, where you only have bureaucracy, you only have the standardization like this system of FW Taylor, but that is not used

for developing your employees for developing your organizational processes. That is the system focuses on performances standards.

So, it only highlights who are performers that you are not doing good. So, that is the aspect number one, it is standardized the system to minimize the game playing and monitoring the cost that no one can create its own unique interventions and we just want that this is standardization should lead to lower cost, how to have better productivity, better efficiency. And in this case, we are keeping our employees out of the loop you see on the other side, if you see enabling systems, we are creating system where employees are becoming more powerful.

And here we are keeping employees out of control loop. So, that is one big difference in two approaches of standardization. And in the case of coercive systems are instructions to be followed and not challenged. Here, we continuously challenge the system because we want to have improvement in the system. So, that is a difference between the Taylor based the idea of standardization which was given by scientific management and this enabling system and procedure which is the system of a standardization given by Toyota production system.

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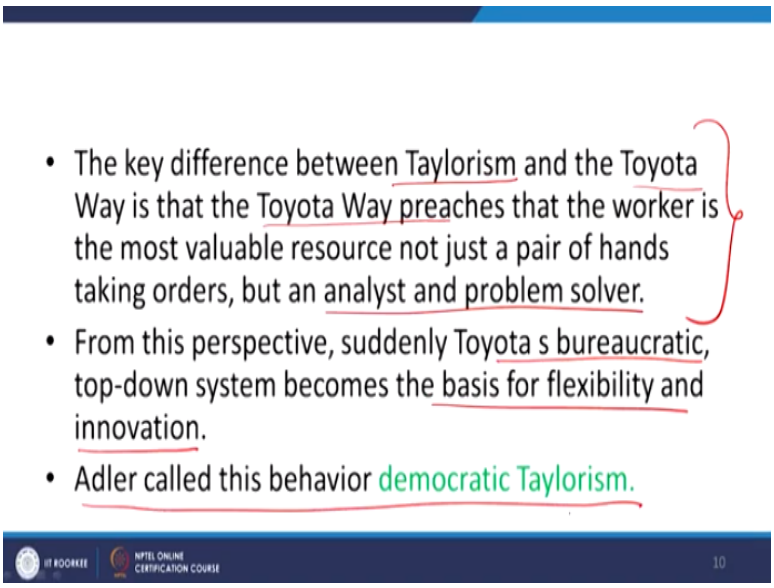

So, the key difference between this idea of Taylor's standardization and the Toyota way is that worker is the most important resource and it is not simply the machine rather they are enlist they are rational person, they are thinkers and they are our problem solvers also. So, when you are

understanding the difference between Taylor's way of doing the business or Taylor's way of managing the process and Toyota way of managing the process.

So, you need to understand that workers are not machines. And from this perspective, you see that Twitter's bureaucratic approach is very much important for getting flexibility and innovation in your organization. The Taylor's idea of standardization is actually going to kill flexibility and innovation in your organization. While Toyota's idea of this bureaucracy is going to enable innovation, innovation and flexibility in the organization.

So, people like Adler, they have called this idea of Toyota production system as a democratic Taylorism that you have involved everybody, all your employees in this process and therefore, you have improved this system of scientific management by involving everybody and then you can see that this is standardization of work is possible not only in the routine process, but it is also possible in new product launch also.

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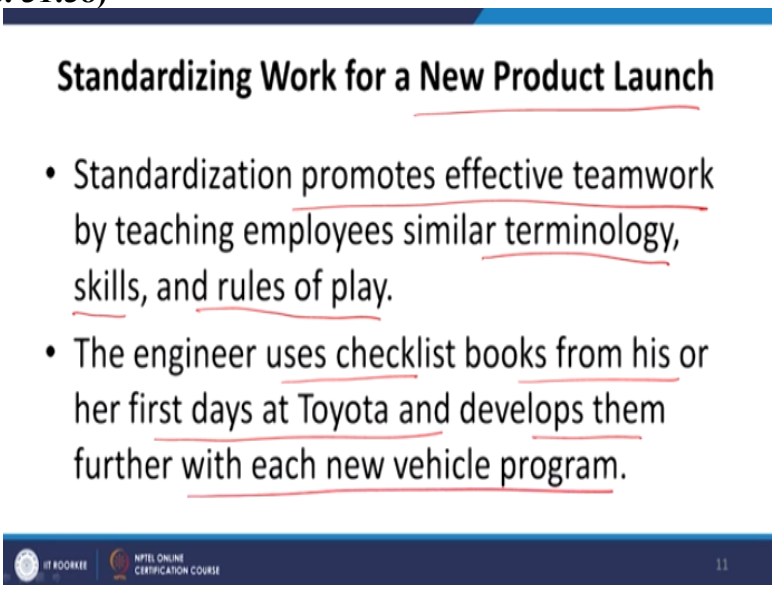

When we are doing a new product development, at that time also the concept of standardization may help us because this standardization promotes effective teamwork, because everybody in the team will use similar terminologies they will have similar skills or they know what are the rules of game therefore, better teamwork is possible.

If it is too much open, if it is too much flexible, if it is completely organic, we will use different type of skill sets we will use different rules for our game, we will have different terminologies

and then it will be difficult to achieve that kind of cohesiveness which is required for developing a new productive. So, the idea of concurrent engineering can only happen when this kind of standardization is there in the organization.

And then engineers use checklist books from his or her first days at Toyota and develop them further with each new vehicle program whenever a new engineer joins Toyota organization, so, he or she is given orientation of the new product development and whenever a new development takes place, a checklist is given to that engineer and those engineers are always free to improve that checklist that if you are following the checklist and still your new product development activity is not giving the good results or the intended results.

It means something is to be added into that checklist and that is how you keep improving the checklist also, you keep improving the process of new product development. So, standardization developing that basic checklist initially is the process of standardization, than each time you follow the checklist that is the process of stabilization and because each time something may be missing. So, to add those things into the checklist is the process of improvement.

So, that is how the engineers new design engineers managers are continuously trained into the philosophy of developing new products at Toyota. So, this idea of standardization is not limited to a particular aspect of your routine process, but it is very much applicable to new product development.

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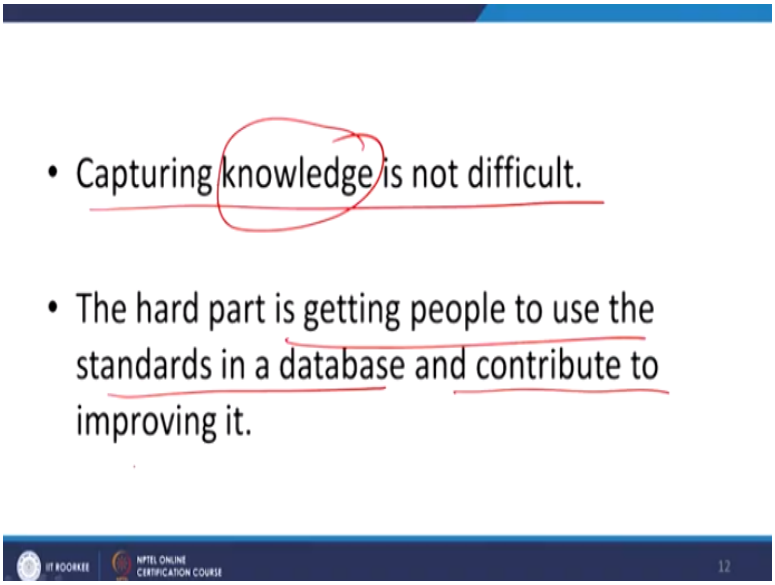

Why we say that, because capturing knowledge is not difficult knowledge is available in plenty all around us, we are living in information era, this is also known as knowledge economy. So, knowledge is though a very precious resource, but knowledge capture is also not very difficult, but the hard part of this particular process, which is going to be the important takeaway of this session, that is getting people to use this standard which are available, the knowledge is available, we have large amount of scriptures available in India.

But the most difficult part is that so getting that knowledge is not difficult, what is there in Vedas? What is there in Ramayana? What is there in Mahabharata? But whether we follow those standards or not, that is the real essence of the story. So, how you make that system that people start using those standards.

That is the challenge and by infusing something like following the system of checklist, following the standards that will make you follow that will make you refer those scriptures again and again and then only you can actually internalize the various philosophical aspects related to a standardization of the task. So, with this, we come to the end of this session and we discussed that by standardization the task, then only you can improve it without a standardization, the concept of Kaizen, the concept of continuous improvement, will not be possible thank you very much.