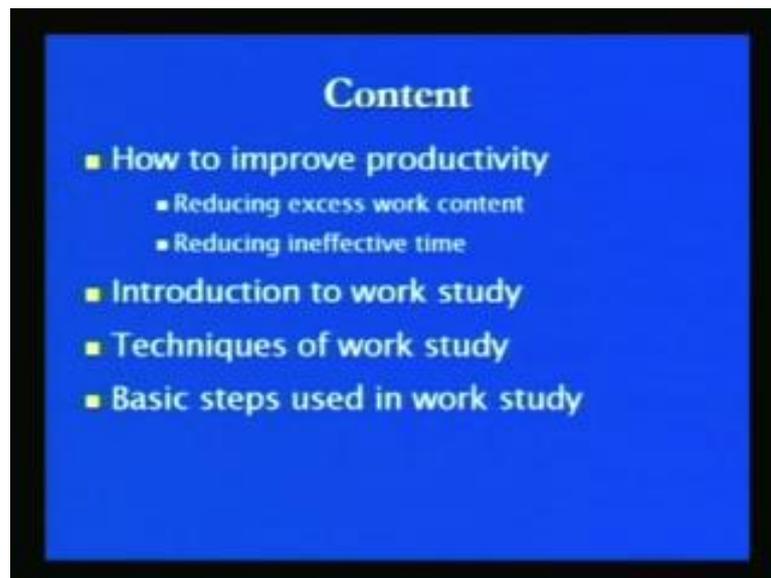


Industrial Engineering
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Module - 03
Lecture - 03
Improving the Productivity & Introduction to Work Study

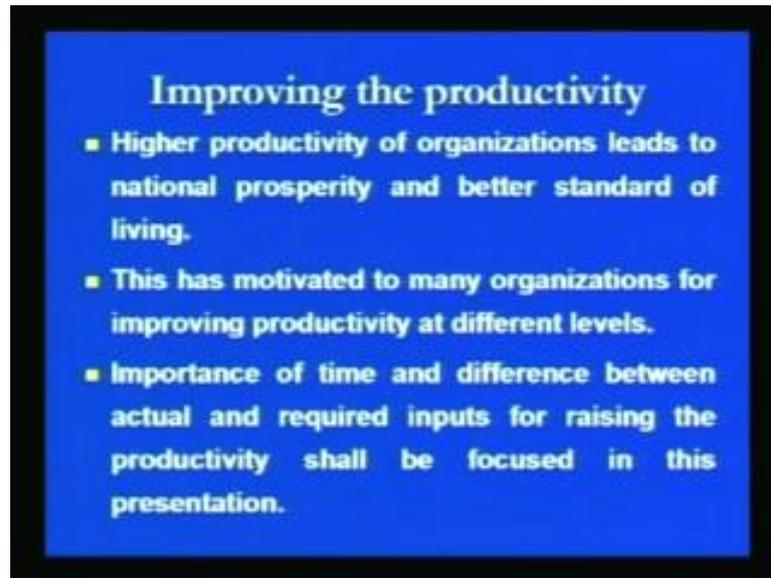
Dearest students, today I shall be giving you presentation on Improving the Productivity and Introduction to the Work Study. As you know that the productivity is very important, for a nation, for a industry, for organizations, because productivity of organization or industry as a whole helps to increase the national economy and improve the standard of living of the community in general. Therefore, efforts are being made worldwide for increasing the productivity of the industry and of the economy in general.

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In today's presentation, I shall be covering the methods to improve the productivity, which are largely based on reducing the excess work content, while actual work is carried out and reducing the ineffective time. The same time we will also be introducing the work study and techniques related with work study and the basic steps which are used in work study.

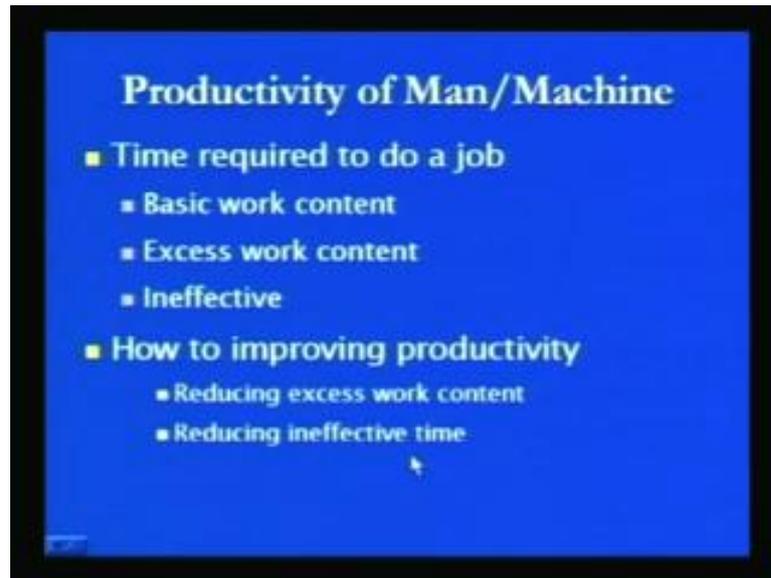
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As I have said, the higher productivity of organizations leads to the national prosperity and the better standard of leaving; this has encouraged many researchers and organizations to work on the improving productivity their productivity. And this improvement is carried out at different levels, because it helps to get the more output with the same use of the resources.

Importance of the time in increasing the productivity and on use of the resources available for a given output will be covered in keeping in mind the difference between the actual and the required inputs for raising the productivity in this presentation. The various approaches are used for increasing the productivity, one of them is the work study, while others are like development of new processes, new technologies and the establishing the infrastructure, which can produce the large volume of the goods desired in short possible time and with a minimum wastage. Productivity of an industry is quantified largely in terms of the time required for producing a job is quantified in terms of the work content.

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The work content which indicates the man hours or the machine hours required for producing, that job. And the total work content in the job, involves the basic work content and the excess work content. These are the two work contents which are carried by the product or the end results, which are being achieved or which are obtained after the processing.

So, time required to do the job, includes the basic work content which is the minimum irreducible work content with the job. And this is the work content, which is the minimum possible time required to carry out the job. When, the job is carried out in uninterrupted manner and the design of the product is perfect and the manufacturing system is perfect.

While, excess work content is the extra work, which is required to carry out the same job, when the design of the product is inefficient and improper and the manufacturing system is inefficient. With the basic work content and excess work content, in both the cases some work is carried out and that to in uninterrupted manner. But, in actual practice in the industry work is interrupted, due the various reasons, which may be within the control of the organizations or beyond the control of the organizations.

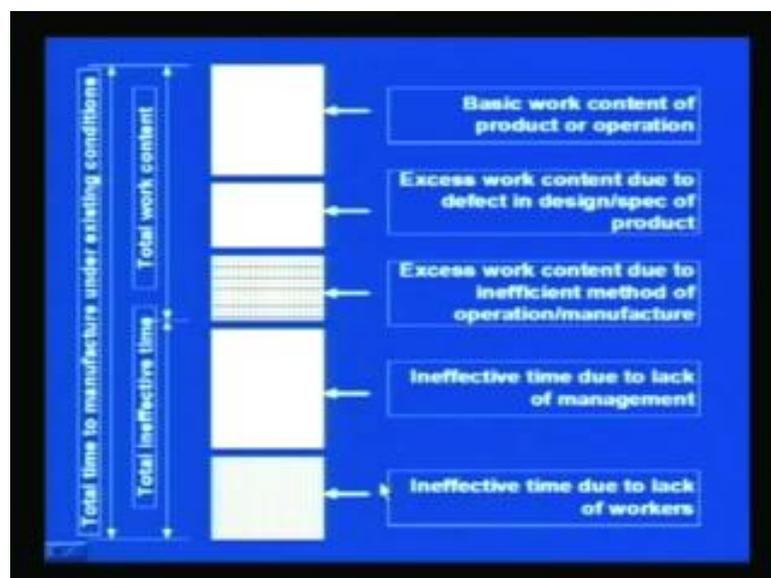
Like natural disasters or the failure of the power, mainly to the stoppage of the work forcefully and sometimes the work is stopped, due to the lack of initiatives from the management side. So, the interruptions in carrying out the job lead to a formation of the

ineffective time. So, ineffective time plus excess work content and the total work content, these lead to the time required for carrying out the job.

So, basic work content is the minimum time required for carrying out a given job, when the design of the product and the manufacturing system is perfect. And excess work content is the added work, which is to be done on the on the product, when the design is imperfect and the manufacturing system is not good and the when work is not carried out leads to the ineffective time.

So, efforts are mainly made first to reduce the ineffective time for reducing the time required to carry out a job and as subsequently efforts are made for reducing the excess work content. In the next slide, you will that; what are the different methods which are used for reducing the ineffective time and the excess work contents. The problem of increasing the productivity in view of above, basically targets reducing the excess work content and reducing the ineffective time.

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Here, you can see the total time required for carrying out a job, involves the total work content, which includes the basic work content and the excess work content, excess work content, due to the defect in design or a specification of the product and excess work content due to the inefficient method of operation and the manufacturing. Well, ineffective time is also required with the total work content to find out the total time required to carry out the given job.

This ineffective time may be due to the lack of initiatives from the management time, management action or ineffective time can also be caused by the lack of workers contribution. When, they do not thing seriously, which are expected to be done by them, that leads to the ineffective time by the workers. So, attempts are first made to reduce the ineffective time, being caused by the management and ineffective time being by caused the workers.

Thereafter, efforts are made to improve the design of the product, so that the added work content can be reduced and manufacturing system is improved, so that the time required for manufacturing, can be reduced. And after elimination of all these four components, these two are the excess work content and these two are related with ineffective time.

When all these four are eliminated or reduced the total time required for carrying out a given job is reduced to the level of the basic work content, which is minimum reducible. Theoretical time required to carry out the job, when it is carried out in uninterrupted manner.

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Excess work content caused by the imperfect design of the product, can be reduced by a various approaches product development and value analysis one of them, which you basically involves, that the design of the product is made perfect. So, that it allows use of the most economical manufacturing process and this becomes possible, only if the production people and the design people work together.

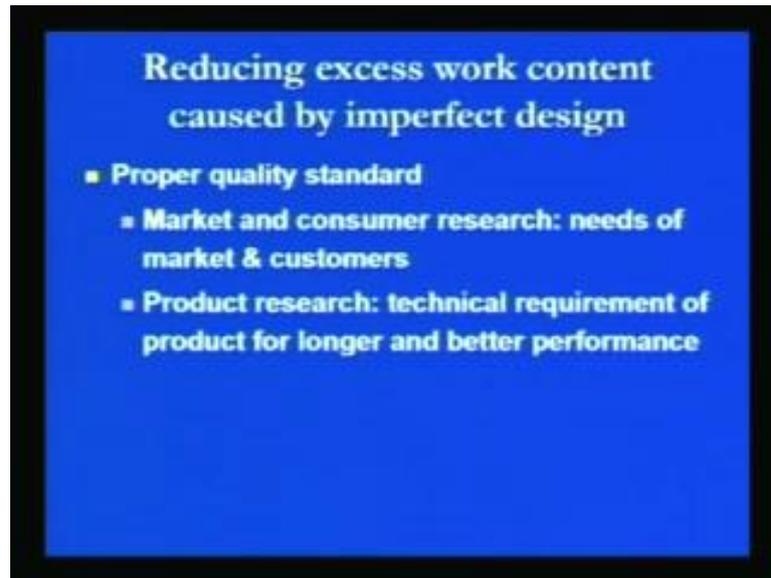
In order to develop the design of the product, in such a way, that it permits the use of most efficient and economical manufacturing process. And for this, it required that the design and production people work together, right from the right from the beginning in the development stage of the product itself. And improving the design in product development stage itself helps to cut down the excess time required, due to the use of low efficient manufacturing processes.

And as many times, what happens that, if the design has not been perfect, then after the manufacturing of some of the lots, it is found that the product is not able to meet the requirement of the customers and their specifications. That frequently leads to the rework or the repair of the already manufactured component and all that extra time required for either producing. Those components, once again the time required for repair and rework of in the already produced components leads to the ineffective time only.

So, alteration in design can be made for reduced material processing, which is not as per as specification is specially, if the products are not able to meet the required of the customers. Another way of reducing the excess work content, caused by the imperfect design is standardize and specialize the products, which are being processed by and industry or the produce a specialized. And standardize, if the products, which are being manufacture by an organizations.

Because, variety of the products, if manufactured by and organization leads to the very large ineffective time, due to the frequent change of the setting and they small batch sizes. So, to reducing the variety, it helps to increase the batch size and increase in batch size helps to use the high volume production processes, which can run for long without interruptions. So, a standardization and specialization of the products, some of the products can lead to the reduced variety increased batch size, and which intern permits the use of the high volume production for reducing the excess work content due to the imperfect design.

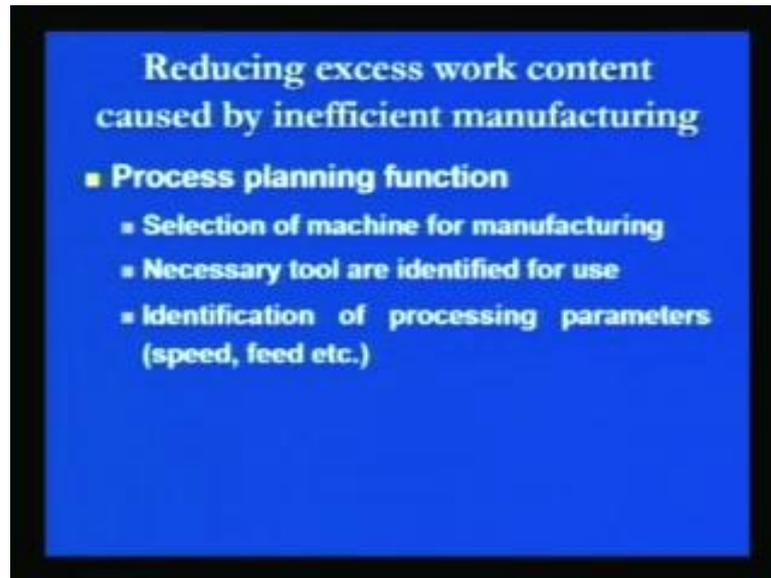
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Use of poor quality standards also lead to the excess work content, like if the quality standards which has been set are too high or on the too lower side. Then, in both the cases excess work content is required too high higher side of the quality standard leads to the extra care and extra time required for achieving the higher standards. While, on the lower side standards help to a lead to the rejections of the product by the customers and the frequent complaints from the customer sides.

So, the proper quality standards are to be set and those should be set, after market and the customer consumer research and as per needs of the product and quality standards only, the proper quality standard should be set. Product research helps to set standards in a such a way, that it can perform for long as per the needs of the customers and give the desired performance.

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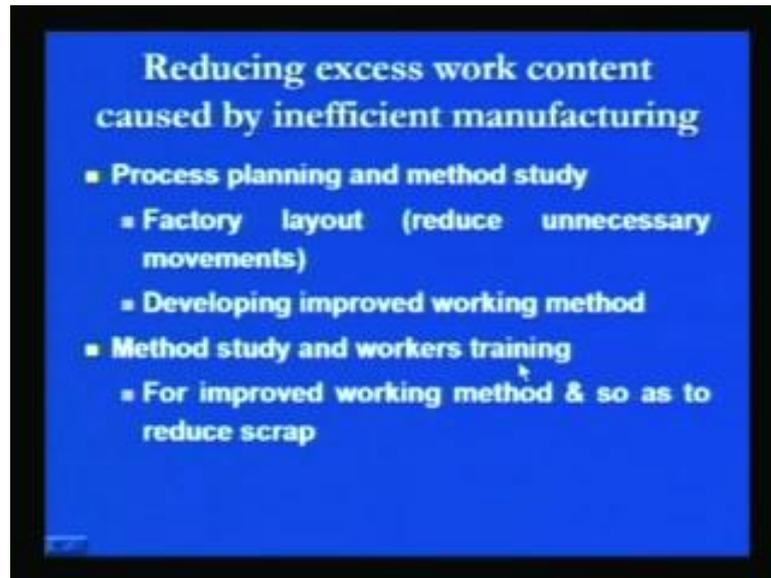


Excess work content, caused by the inefficient manufacturing processes can be reduced by the proper process planning, which recommends the use of the most suitable machine for manufacturing. The product and the most suitable parameters for which are to be used for manufacturing the product and these are identified by the process planning function.

And which helps to identify the various parameters to be used in the manufacturing stage, so that the rejections are minimum and the desired quality of the product is achieved. The proper maintenance of the machine helps to provide the services as desired, if the machine is available, when it is required helps to reduce the scrap and the rejections of the product which are being manufactured by using that particular machine.

So, if the organization having good maintenance and maintenance function is doing good job properly, then it will provide the equipments and the systems as and when they are required in good condition, so that the rejections and scrap can be reduced.

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Reducing the excess work content, due to the inefficient manufacturing, can also be achieved by proper process planning and method study, which basically involves the factory layout is designed in such a way, that unnecessary movement of the material and the worker, can be reduced. And the desired goal of the manufacturing product can be achieved with the minimum movement and the use of the resources.

So, if the layout is set properly, it will help to reduce the unnecessary movement of the man and material in course of the production and a developing the improved working method. The process planning in association with the method a study helps to find out the best possible ways of doing a given job.

It helps to find out, what are the steps which are only to be used for producing a given job, how the equipment and the systems are to be designed. So, that worker can do the given job with the minimum effort and a minimum fatigue, so that he can continue for long.

So, the process planning in association with method study helps to develop the improved working method which will help to produce the job, quickly and with minimum fatigue of the operator, method study and the workers training. Method study helps to develop the effective the job, which can which can be used to for producing a given job with a minimum effort and within minimum time. And whatever the job has been developed, after use of the method study, the proper training to the worker is required.

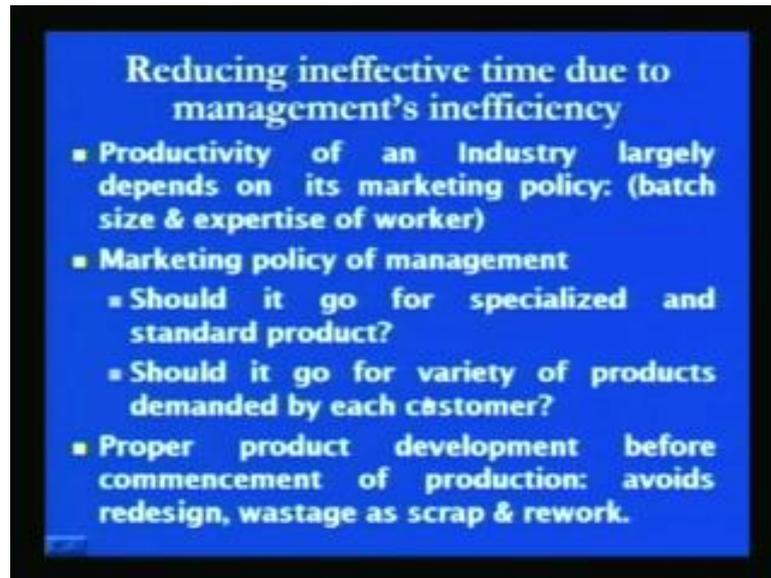
So, the proper training to the workers on the improved a new method help to reduce the scrap and so as to reduce the excess work content, caused by the carelessness of the workers. Excess work content, we have seen that is primarily caused by the inefficient manufacturing processes and the improper product design. In addition to the excess work content, ineffective time is another major factor; that significantly effects the total time for producing a given job.

We will see now, the different methods and approaches which are used for reducing the ineffective time. Ineffective time as you know is caused by the lack of initiatives from the management side or inefficiency of the management and the lack of actions from the worker side. If the ineffective time, caused by the management inefficiencies is to be reduced, then the various approaches are used.

Like productivity of an organization largely depends on it is marketing policy, because management decides, that which type of the marketing policy is to be used. Organization should focus on few specialized standardized product, so that the large batch sizes can be formed and high volume production processes can be used. So, that excess work content, due to the inefficient manufacturing can be reduced or organization will go for variety of the product and the customized products of each and every customer.

So, that satisfies the demand of they are customers, but in the case, when the organization decides to go for, all types of the customized products, then productivity becomes meaningless. Because, for each product, the systems need a different setting, worker are not able to gain the experience and speed on the specialized products; that is why they are always trying hit and trial. And which in turn results in poor productivity, if the organization goes with the marketing policy of supplying, all types of the customized products, instead of the high volume specialized products. So, the productivity often, that is why a productivity of an organization largely depends on the marketing policy of the organization.

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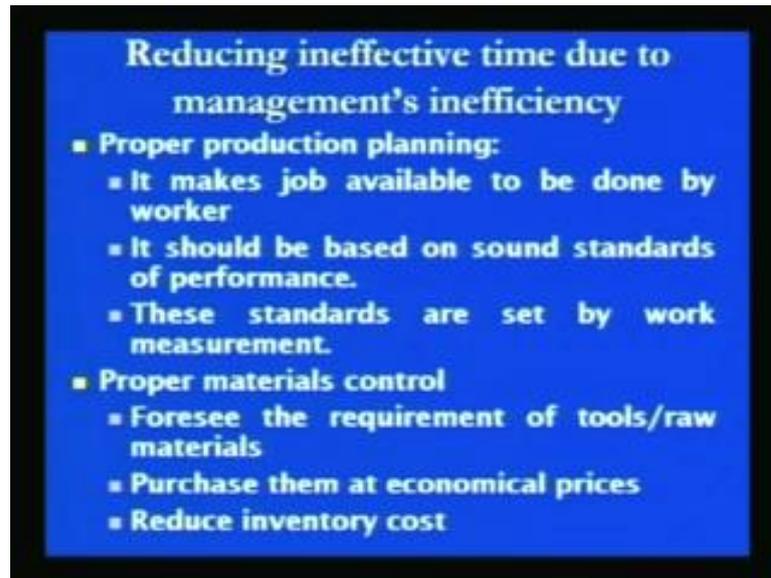


A variety of the products will lead to the small by batch sizes and less expertise of the worker. So, that most of the time the systems will be ideal, due to the change of setting or the speed of carrying out the job by the workers will also be low. Marketing policy, so this has been elaborated further, marketing policy of the management may be like should it go for a specialized or a standardized products or should it go for variety of the products demanded by the each customer.

That will decide, whether the small batch sizes will be produced or the large batch sizes will produced. For proper product development, before the commencement of the production, avoid the redesign and wastage of the product, this is another major step, which is to be taken by the management, that product is designed very properly. In such a way that, before starting the production achieves, it serves the requirement of the customers and it is able to withstand the market competition.

And that is possible, only if the product has been developed properly by taking all the inputs from the various levels from the customers from sales and from the research departments. So, to avoid this will help if the product is designed properly by taking the inputs from the various levels, it will help to avoid the redesign and the related wastages caused by this scrap and the rework.

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The proper production planning helps to reduce the ineffective time, due to the management inefficiency, because production planning function helps to find out that the job is available to be done by the worker. And they are not ideal, means man and machine systems are not kept ideal, so the process planning function, if working properly by using the proper inputs, regarding the performance standards of the given job. Then, it can be effectively used to provide the jobs available to be done by the workers.

And these standards of performance can be set by using the work measurement technique of the work study, so that it can be identified, how much time it will take to produce a unit item. And these standards are found very helpful in proper production planning and not only planning, the once the plan has been made, it is also used for controlling the production.

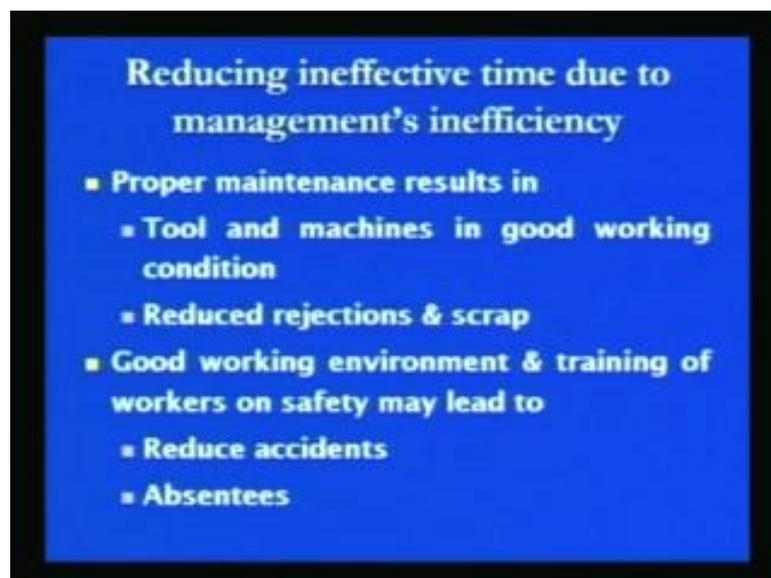
The proper materials controls, like in manufacturing, the various types of the materials and the consumable items are used by the workers. So, it is the management due to it to provide, those items available at the time when they are required. So, the raw materials and the tools and other items, which are required in course of the production, should be arranged by the materials department. And these should be purchased in such a way, that the prices are reasonable and well in time these are purchased.

And at the same time, efforts are made to reduce the inventories, at the minimum possible level, so that unnecessary inventory cost can be reduced. So, the proper material

control helps to make the raw materials required available, when they are needed and thereby, reducing the ineffective time and due to the management inefficiency or due to the lack of the raw material.

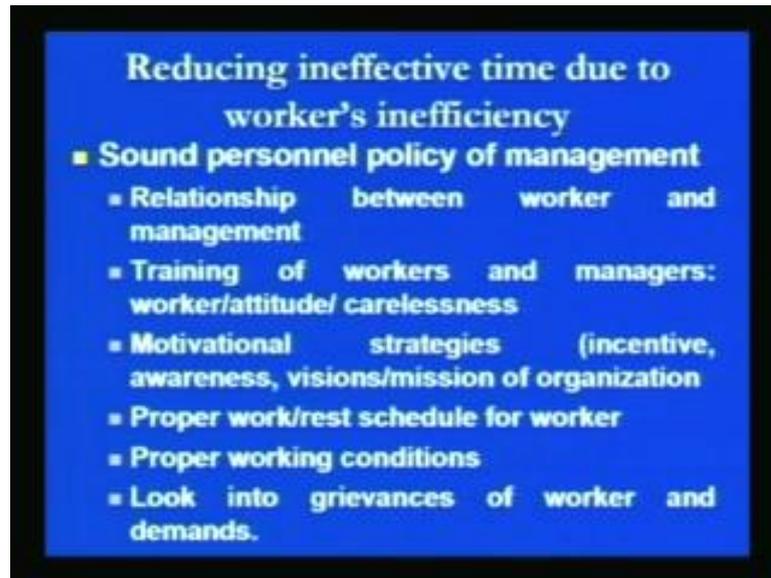
The proper maintenance function also helps to reduce the ineffective time, caused by the management, in the way that, if the management is effective, it is various components will be working effectively. Like maintenance people will be working effectively to provide the systems available, when they are required in good condition. And the system in good condition will help to produce the jobs of the desired quality standards, which can serve the requirements of the customers and the working on the good system, also reduces the rejections and the scrap related with.

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The good working environment and training to the worker on safety, also leads to reduce the ineffective time, because poor working conditions force the workers to take frequent brakes and which will lead to the ideal time of the workers. And proper training of the workers on the safety will reduce the accidents, and their absence from the job and the other related losses. So, the good working environment and proper training of the workers, also help to reduce the ineffective time.

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The ineffective time is also caused by the workers inefficiency, normally it is assumed that, a worker having long experience can work at a given fees only. If he makes the attempt to increase or decrease the working fess intentionally, then he is more prompt to commit the mistakes. And that is why, it is assume that a worker having long experience can work at a particular speed only, unless he is given a special training to carry out the job.

So, the kind of output, which will be produced by the worker, will largely depend upon how long he devotes to the actual work on which he is supposed to be. If he is engaged with the work, he will deliver the output, but if he is not engaging himself and he is ideal, due to the various reasons, such as talking to the fellow people or waiting for the time to be off or wasting the time unnecessarily. Then it will simply lead to the ineffective time being caused by the workers.

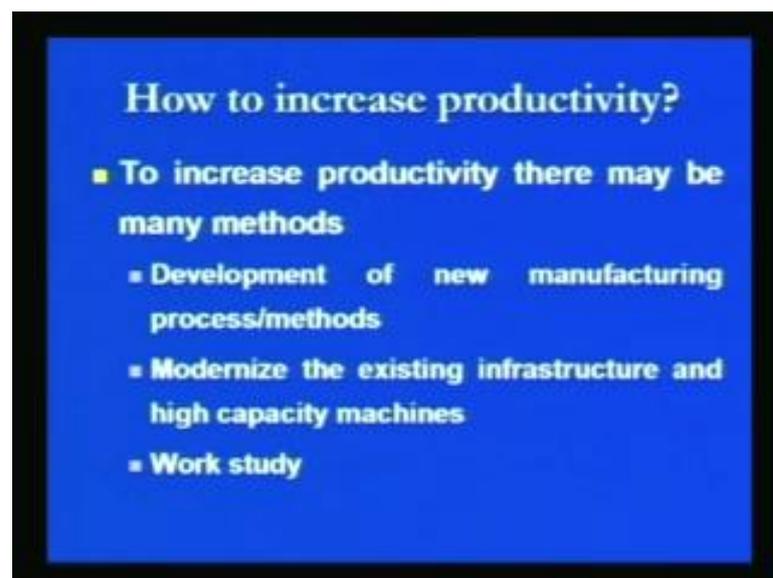
So, one way to reduce the ineffective time caused by the workers, such as the sound personal policy, being offered by the management. This sound personal policy of the management helps to have the good relationship between the workers and the management. This relationship improved relationship between the workers and the management leads to the whole hearted effort of the worker towards the job being assigned to him.

And the training of the workers and the managers in such a way, they also consider the workers as human being, their grievances are listened and they are addressed properly. And that training to the workers and the managers, so that they can carry out the job carefully, so as to reduce the rejections and the scrap related with. Motivational strategies can also be used to motivate the workers. So, that they most of the time engage themselves in carrying out the job, that to be done by them.

And these motivational strategies may be informed of incentives or awareness or missions and vision and sharing the vision and missions of the organization. Proper and work and rest schedules to the worker, should also be assigned as per the needs of the work. Like, if the heavy work is being done by the workers, so they should be allowed for a rest as per then and this rest can be calculated by the various methods, which are there in literature.

The development of the proper conditions will also help to reduce the unnecessary stress on the workers and they will be able to work with in focused manner. So, as to reduce the careless working of the workers and the accidents related with. Then, looking into the grievances of the workers and demands also motivate the workers for carrying out the desired job.

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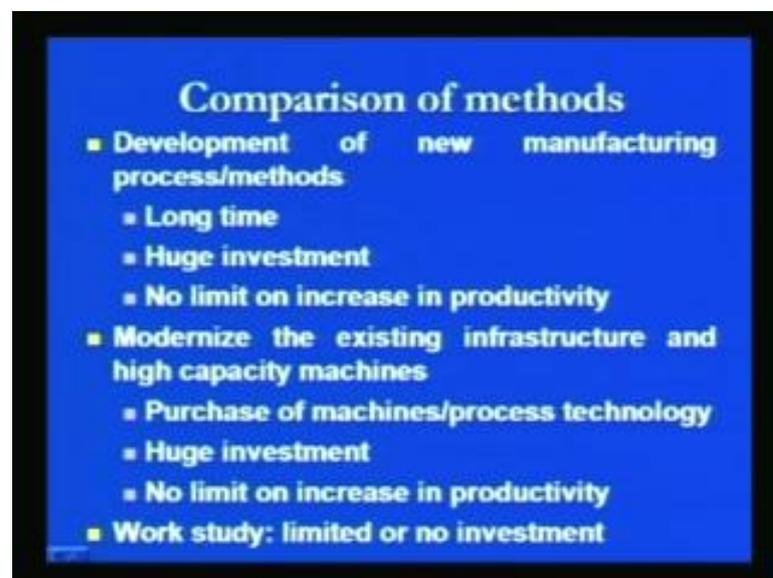
How to increase the productivity, this aspect has been addressed in number of ways and for increasing the productivity, many methods have been developed and there are three

main methods about which will be talking here first. These methods are like development of the new manufacturing processes and the technologies. So, that operation can be done, very effectively with minimum rejections of the material and taking the minimum time.

And the second method is modernizing the existing infrastructure or developing the high capacity, installing the high capacity machines. This will help to have the high quality, high speed machinery, which will help to produce the large quantity of the products of the high quality standards with a minimum number of rejections.

And the third method is the work study; work study is based on the improving the existing method and setting the performance standard. So, that common resource of the man material and machine can be used effectively. However, these three methods are significantly different from each other and about these various aspects related with the different three methods, we will see in the next slide, which is inform of comparison.

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Like development of the new manufacturing process and technologies leads to takes very longtime to develop such technologies, which can increase the productivity and the reduce the rejections. And for developing such methods and technologies, large amount of the investment is required. And once, if these have been developed, there is no limit on which up to increase in productivity can be achieved.

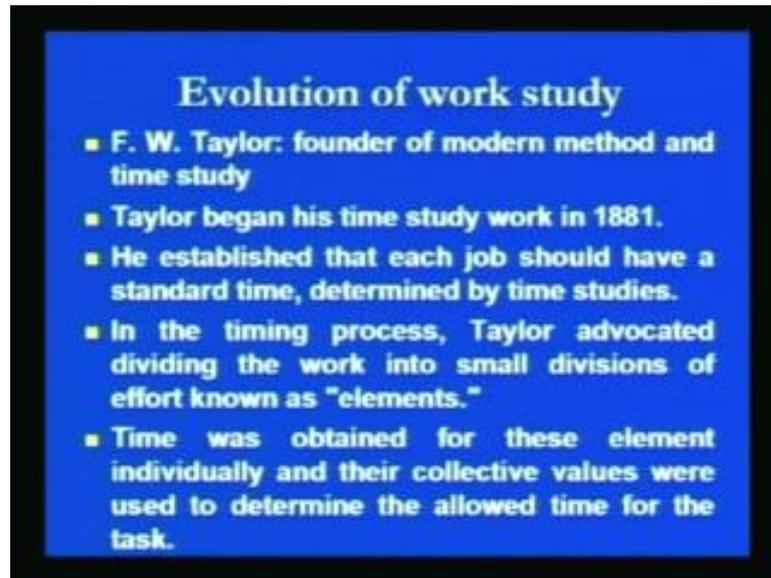
So, the time wise it may be 1 to 5 years investment, wise it maybe in lakhs and crores and the increase in productivity is also significant, but this method needs large investment in terms of the capital and the time. The second method of modernizing the existing infrastructure and installing the high capacity machines, is basically based on the acquiring the technology and the equipments. And which involves the purchase of the machines and the technology and this will be requiring large investment.

But, if the high capacity systems have been purchased and installed and the new technologies have been purchased, then it will lead to the significant increase in productivity. And on though other hand, the work study is based on the better management was the things, which are being done for doing a given job are investigated systematically.

So, that the existing method can be analyzed properly and attempts are made for a better method and eliminating the deficiencies in existing method. At the same time, work is also carried out on developing the new layouts and the new designs for the equipments. So, that the time required for carrying out, the job can be reduced and the operators fatigue can also be reduced, but many times, it does not require much investment is either very limited or no investment.

But, increase in productivity is also not many folds, it needs the continuous work to improve the ineffective time and reduce excess work content for increasing the productivity. So, the productivity in the forthcoming sections, we will be talking largely about the work study, which is a nowadays very extensively used for increasing the productivity. And it is very systematic in analyzing the existing way of doing the work and developing the new efficient and the effective methods for carrying out the job. So, that it needs the minimum resources in terms of the time, capital materials machines and the manpower.

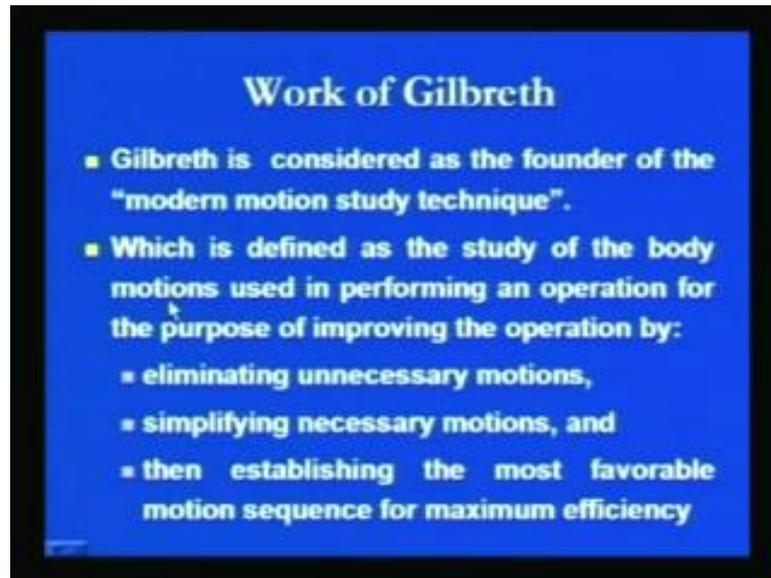
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We will talk first about the evaluation of the work study; the first work on the work study was started by the F. W. Taylor, he is considered as the founder of the modern method and the time study. He began his work on the time study in 1881 and he established that each job should have a standard time and the time for each job should be determined by the proper time studies.

And in the timing process, he advocated that the job should be broken into very small components or small elements and then time is to be established for each element to find out the time for the job to be carried out. And this time was obtained for each element individually and their collective values were used to find out the total time to be allowed for a given task.

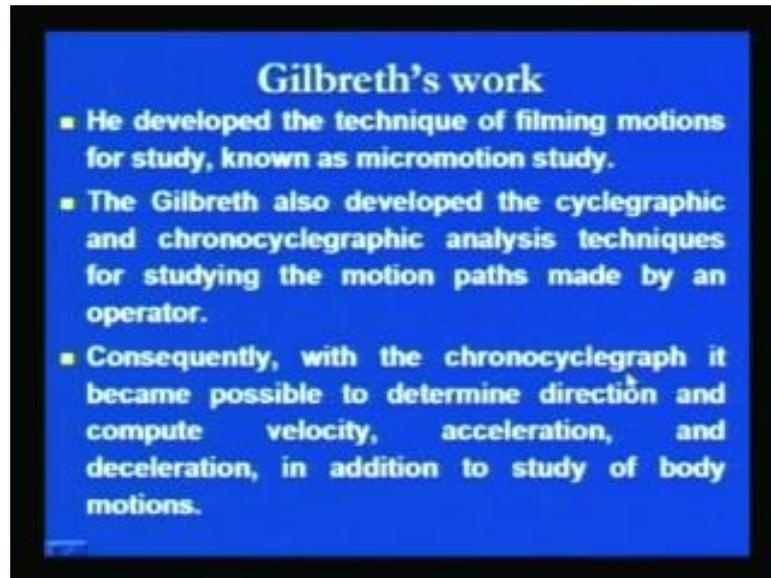
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Another person, who has worked significantly, is the Mr. Gilbreth, he is considered as a founder of the modern motion study technique. And this is defined as a study of the body motions, used in performing an operation for the purpose of improving and the operation. And it considers the movement of the different body parts, while carrying out the job, so that the job can be improved either by eliminating unnecessary motions, simplifying the necessary motions required for carrying out the job.

So, as to establish the most favorable sequence of motions for achieving the maximum efficiency, so it basically focuses on the motions of the body parts. In such a way, that it needs the minimum number of motions and the motion sequence is such that the time required for carrying out the job is minimum and the efficiency is maximum.

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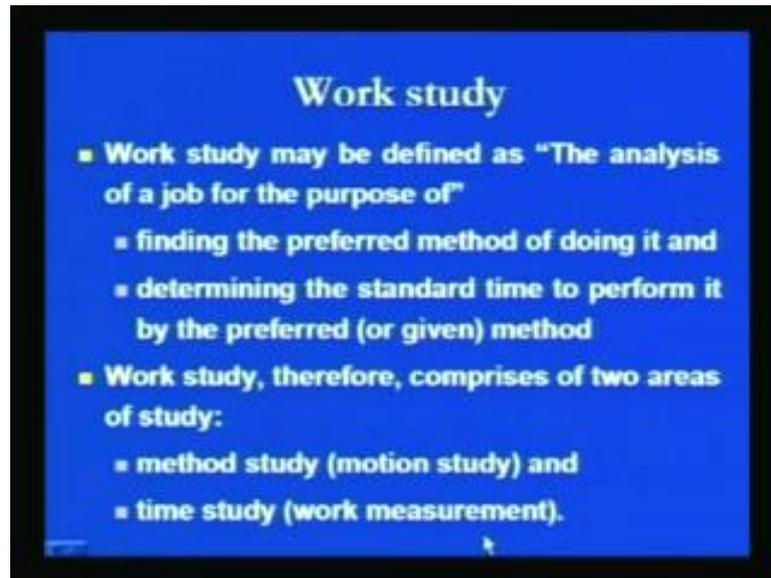


Another work of the Gilbreth is based on the micromotion a study, which is micromotion a study is based on the filming of the job to be studied and then breaking of that job into the large number of the elements. And he suggested 18 therbligs, which are the minor divisions of the work or the divisions of the movements or the group of the movements called therbligs.

The Gilbreth also developed the cyclegraph and chronocyclegraphs for analyzing the motion of the paths made by the operator during the work. In chronocyclegraphs for studying the motion of the body parts, such as hand or the head the light source is fitted. And using the stereoscopic cameras, the movement is recorded to see the path of the motion of the worker or the body parts during the operation.

And in the chronocyclegraphs, the light source is interrupted at a particular frequency, so that the speed of the motion or acceleration and decelerations related, retardations related with the motion of the body parts can be studied. The chronocyclegraphs also helps to find out the direction of the movement of the path made by the different body parts. Consequently with the chronocyclegraphs, it became possible to determine the direction compute velocity acceleration, deceleration in addition to studying of the path of the body parts motions.

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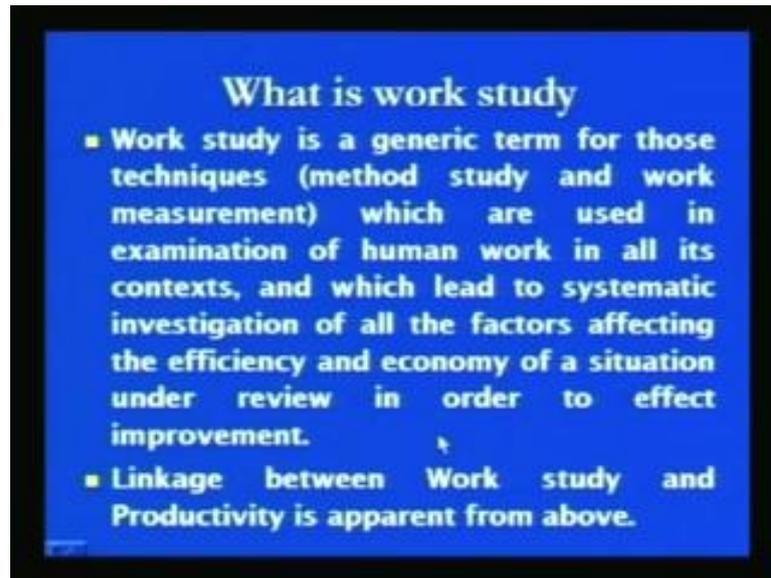


Work study is defined as the analysis of the job for purpose of finding out the preferred method of doing it and determining the standard time to perform the job by a given method. The work study, it basically involves the two aspects, one is analysis of the existing method of doing the job. So, that best method for carrying out the job can be developed, after analyzing the existing method.

And it uses the method study for study of the existing the method a developing the new method, which is more effective and takes the less use of the resources. And the determining the standard time, for carrying out the job by a given method is a part of work measurement. Where, the time required for carrying out the job is determined by the various techniques of the work measurement.

So, the work study basically is a group of the techniques in which the method study and work study are the main techniques and it involves the analysis of the job for the purpose of finding the preferred method of doing the job and setting the standard of performance. So, this is what I have said, work study comprises two areas, which are main method study, which is also called motion study and the time study also called as work measurement.

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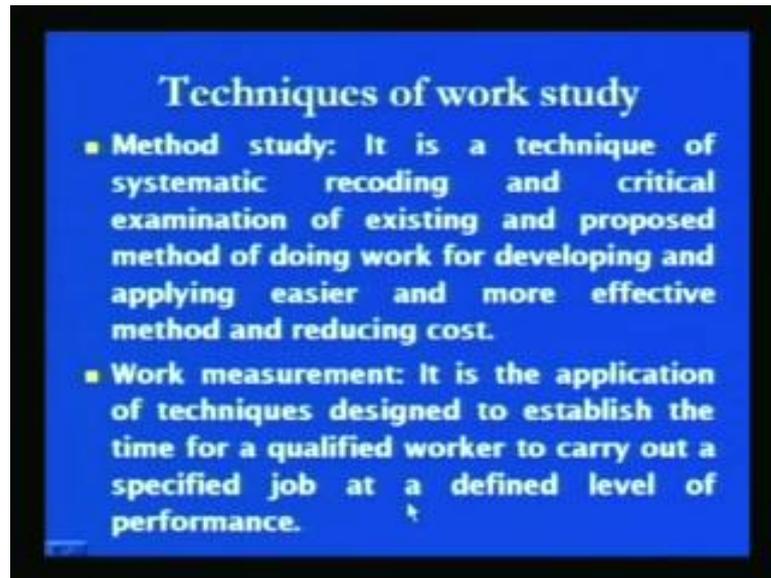


The work study as defined ILO, that work study is a generic term for those techniques which are used in examination of the human work. In all, it is contexts and which lead to a systematic investigation of all the factors affecting the efficiency and economy of a given situation, in order to effect the improvement. So, a work study involves the group of techniques in which the method study and work measurement are main.

And it involves the study of the human work, in all it is contexts and the factors, which effect the efficiency and economy of a given operation. And it is always kept in mind, that how to improve the existing way of doing the carrying, doing the work. And when, the existing method of doing the job is analyzed properly by the method study and by the work study.

Work measurement the time required for carrying out the different jobs are identified both these helps to increase the productivity, because method study helps to developed and improved and effective method. While the work measurement helps to identify the ineffective time and the set, the standard of performance and setting of the standard of performance helps is used in the proper process planning and production planning. While identification of the ineffective time, provides the basis for carrying out the method study and so as to improve the existing method of doing the given job.

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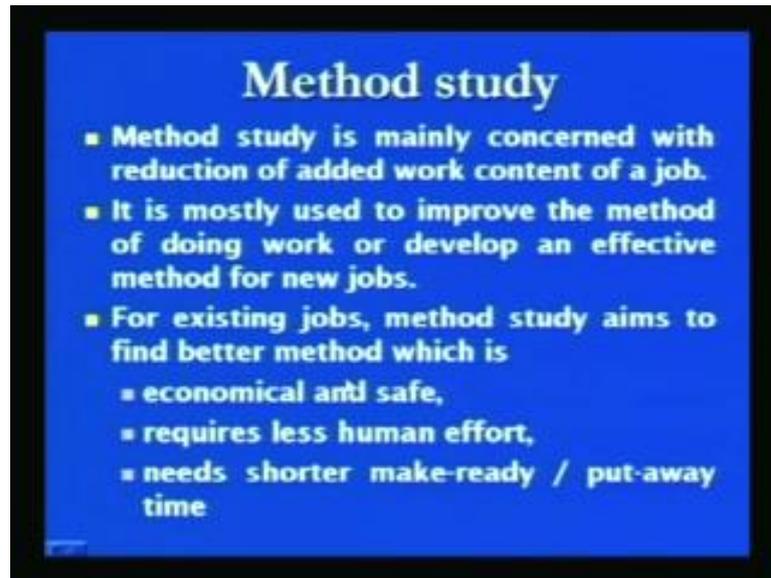


They are two techniques of the method work study, one is method study and another is work measurement, one by one we will go through the definitions of each of these two techniques of the work study. Method study is technique of the systematic recording and critical examination of the existing and proposed method of doing the work for developing and applying easier and effective method and reducing the cost.

So, basically method study targets the recording of different events, which are being carried out, in existing method analyzing them, in such a way, analyzing them and examining them, critically. So, that venue for improvement can be identified, so as to develop, the most efficient effective method, in such a way that it can be applied easily and it helps to reduce the cost and the operators fatigue also.

On the other hand, work measurement is defined as a group of the techniques, which are designed basically to establish the time for a qualified worker to carry out a specified job at a different level of performance. In fact, the work measurement helps to find out the time required for carrying out the job, by a qualified worker at a step a specified level of performance. At the same time, when work measurement is carried out, it reveals the ineffective time, if it is there. So, a presence of ineffective time helps to identify the areas, where method study can be carried out.

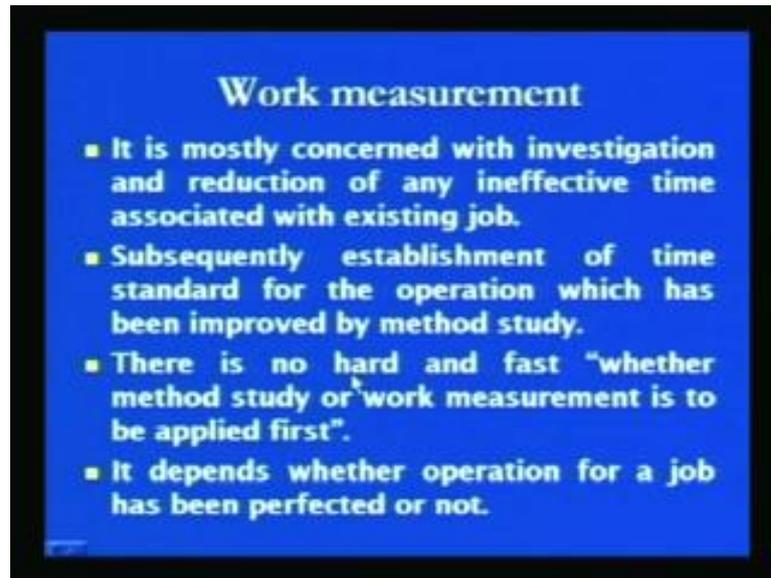
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Method study is mainly concerned with the reduction of the added work, content as I have said earlier, that the added work content and the ineffective time. Both contribute to reduction in the productivity of carrying out the job or if the added work content is reduced ineffective time is reduced, productivity of the manufacturing system can be improved.

So, method study, if applied, it mainly targets the added work content of the job and helps to the reduce it, it is mostly used to improve the method of the doing the work or developing the new method. And which will help to reduce the unnecessary time and movements required for carrying out the job. For existing jobs, method study aims to find out the better method, which is more economical and safe. After method study, it will help to develop the better methods, which are economical and safe requires less human effort and needs shorter and put away and make ready activities.

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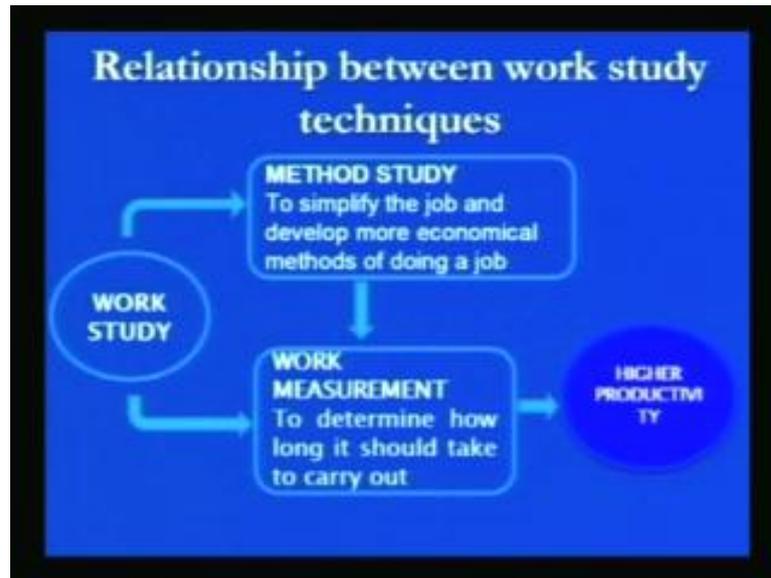


On the other hand, work measurement is mostly concerned with investigation and reduction of ineffective time associated with the existing job and subsequently establishment of the time standard. For the operation which has been improved by the method study, there is no hard and fast rule, whether method study or the work measurement is to be carried out first. It depends, whether operation for a job has been perfected or not.

There can be both types of the situation, where either the method study is carried out first or the work measurement is carried out first. Normally, for setting the standard of performance for a given job, method study is carried out first. So, that improved method is there and subsequently work measurement is carried out, while in other case, if the method study is to be carried in a given situation and it is not very clear.

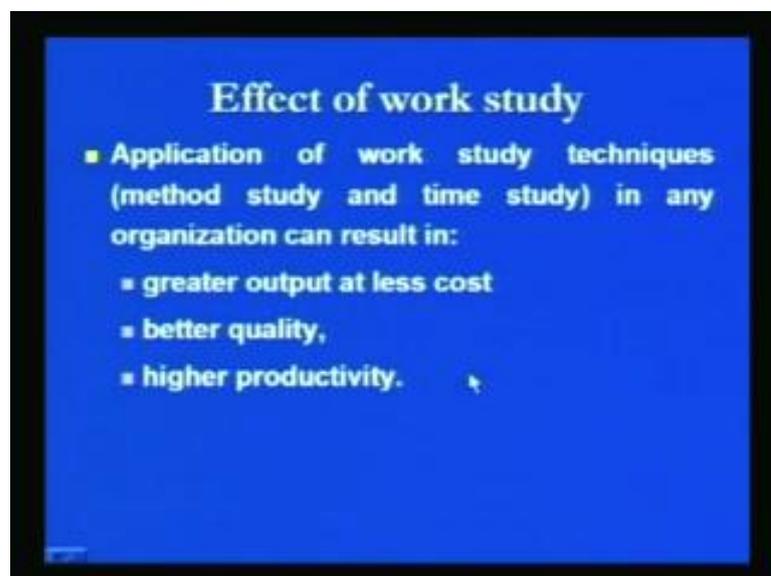
Where, it is to be applied, then work measurement is carried out first which will reveal the presence of ineffective time and those areas are targeted in the method study for the improvement. So, if the setting of the standard of performance is there, then work study is carried out first followed by the work measurement.

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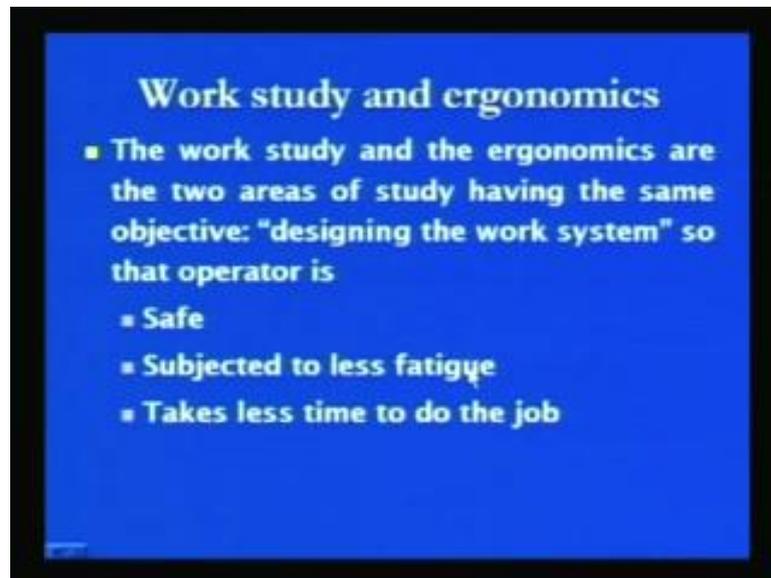
As far as relationship between the work study techniques on the productivity is concerned product as you can see the work study has two main techniques. One is method study which helps to simplify the job and develop more economical method of doing the given job. On the other hand, work measurement helps to find out, how long it will take to manufacture other product. So, method study, if carried out properly to develop the effective method and followed by the setting this standard of performance by the work measurement, this will help in proper production planning, so as to achieve the higher productivity.

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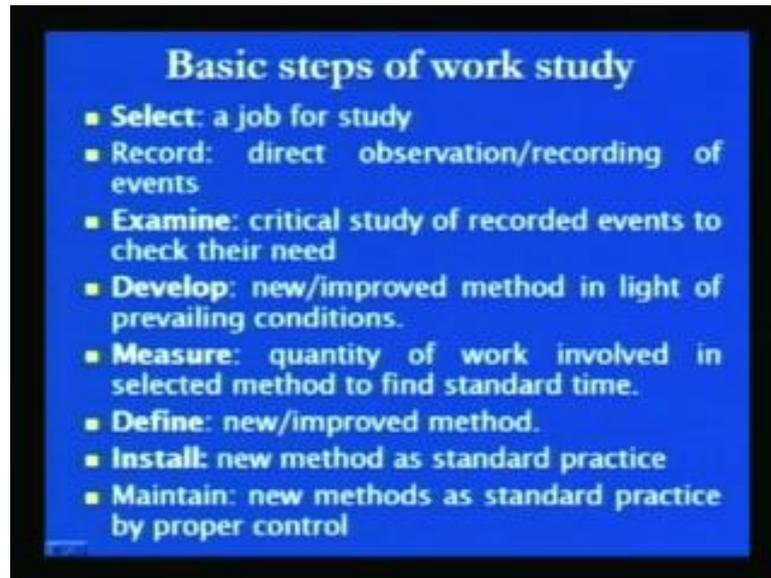
When work study is applied, it results in many benefits, like the output is increased and the without a significant increase in cost. The quality of the product is improved at the same time higher productivity is also achieved.

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The work study and ergonomics, when both are used together, it helps to develop such kind of systems equipments and the working conditions, which lead to the minimum effort and fatigue of the operator in carrying out the given job. It is a basically objective is to designing the work system, in such a way that it can be used safely and it causes less fatigue to the operator and takes less time to complete the job.

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There are many steps, which are used in work study and these are the eight main steps, the one is the select the job in a plant or an organization, there may be number of the jobs which needs attention. But, which job is to be selected first for the work study and that selection is to be done very carefully and keeping in mind. That time and efforts being spent on the work study of a given job should deliver the results in term of the economics or in terms of the productivity of the organization.

So, the job should be selected in view of the economic importance of the job and record is the second step important step in the work study, which involves the direct observation and the recording of the events, which are being used to carry out the job. It should be done very systematically, so that all the events can be recorded properly, in such a way that they can be analyzed easily, while developing the new method.

And examination, examine the events which have been recorded by the direct observation, critical examination of the recorded method helps to find out. What is needed, what is to be illuminated, simplified combined or what is to be illuminated for improving the existing method and developing the new method. So, the critical of the events, which have been recorded, is very important step in the work study.

And after examining the existing method, critically it will give the venues, where improvement, where the possibilities of the improvement and using those possibilities new methods are developed in light of the prevailing conditions. Once the new method

has been developed, it is quantified in terms of the work and the time involved for carrying out the job by the new method.

And this is called fifth step; that is measure which involves basically the quantification of the work involved in selected method and to set the standard of performance in terms of the time standard. Define is the next step, which is basically identifying and describing each and every detail of the new method, regarding the material machines parameters. And the standard time, which is allowed for carrying out the job by the new method.

And if these details are there, then it will help to identify the improved method easily and once the things have been these are installed in practice. So, new method is installing as a standard practice by allowing all the resources needed for carrying out the job by the new method. And maintenance is required, because people will have the tendency to go back to the original method.

That is why, the newly installed method should checked frequently to see that, whether the new practice is being followed properly or not and that is done by the maintenance component or the step of the work study. So, here you have seen in this presentation, that there are various factors, which adversely affect the productivity of the organization. Like the added work content and the ineffective time and the proper step should be taken to reduce the added work content and the ineffective time.

At the same time, I have introduced the work study technique and you have seen that, they are two techniques method study and the work measurement in work study. Method study is basically used for improving the existing method, so that the job can be done quickly. On the other hand, work measurement is mainly used to set the standard of performance and identify the ineffective time, if it is there.

Thank you for your kind attention.