

These differences in fatigue, adequately measured prior to employment, may be valuable for eliminating insufficiency and maladjustment caused by fatigue.

(d) Psychological aspect of fatigue : There is psychological importance of fatigue where protective value of worker is associated. Fatigue affects psychological aspect of the worker. The working pattern of the worker is affected by fatigue. In the word of E.D. Smith "When a man is tired he not only broods in dark, but he also does not think clearly. A tired man gets angry quickly; he does work with hesitation and never do things in a right manner." A tired businessman, fatigued by the demands of an overcharged daily program, becomes the proverbially unpleasant tyrant of the family cycle.

3.2.2 Difference between fatigue and monotony

Following are the important differences between fatigue and monotony :

1. Fatigue refers to lower capacity of the workers to work, while monotony refers to lack of or poor interest in work.
2. In fatigue there is a decrease in physical capacity of the worker, while monotony affects the state of readiness of the worker.
3. Fatigue is the result of overload of the work, while monotony is as the result of apathy towards work.
4. Fatigue is followed by rest, while monotony is followed by change of work.
5. Fatigue is result of continuous physical and mental work but monotony is the result of mental work only.
6. Fatigue is accepted characteristic of a worker but monotony depends upon abilities and desire.
7. Fatigue is objective, while monotony is subjective.
8. Both produce different types of curve.

3.2.3 Causes of Fatigue

There are a number of causes of fatigue which are discussed below :

1. Hours of work : During 19th century workers were working for a long time but after 1928 workers are supposed to work for only 10 hours in a week (Shepard), which results in increase in production. They had a break on Sunday. Some psychologists conclude that rest of 15 minutes after two hours of work, will increase 40% of production. (Supported by Hawthorne studies). In another study it has been concluded that rest can cause positive effect upon physical or psychological aspect. (Pemock)

2. Temperature and Ventilations : It has been proved by different studies that temperature and ventilation can affect production in a factory. If the temperature in a working environment rise above 32° F the discomfort increased will adversely affect the efficiency of work. The output decreases sharply if the temperature rises from 72.5°F—75°, and relative humidity 70—80%. It is because low temperature and high humidity causes fatigue and discomfort among workers.

There are also marked individual difference working behind fatigue and production. It also varies from region to region.

3. Machine Design : In recent times machine design has been taken to be is a very important moto of fatigue because a workers requires adequate physical environment and suitability of machine so that painful movement can be avoided. Investigations have shown that badly planned machines can cause unnecessary fatigue. If an industrial machine is to designed that it will cause strain to worker, it will cause fatigue and reduce production.

4. Effect of environment : Environmental conditions such as noise, light, temperature and humidity can cause increase in fatigue. Improvement or suitability in the above conditions can improve the productivity and bring decrease in fatigue.

Noise is a very important condition for determining fatigue. It is thought that workers can work to a great deal in a quite condition. (Pollack, K.G. F.C. Bartlet)

They also found that noise affected mental work more than manual work; because noise requires more energy even when the performance is not lowered. Herman F.L. (1933) found metabolism was higher during first noisy period. Morgan, J. B. found that noise can cause muscle tension; but with a few days of rest muscle tension disappears. Like noise, light, colour can also cause fatigue in industrial workers. For working in a factory right amount of light is required for a particular job. For a proper light glare, distribution and colour of light is very important. Brightness of light is measured in foot-candle, to remove visual fatigue there must be uniformity of light in the entire work area. For this indirect lightning is considered to be the best.

However, the inappropriate (poor) illuminations cause fatigue and irritation and is a source of error and industrial accidents. It may also cause lower production. The colour of light and walls are also very important. The glare of light should be avoided.

5. Lack of proper posture : The design of the machine is related to posture, either sitting or standing. It is also desirable that attoration of posture should be encouraged if possible for young people. Keeping oneself in a posture either sitting or standing for long period will cause fatigue among workers (Bedale and Vernon, 1924). Same posture can create difficulty in blood circulation, respiration and digestion. The seats of the workers should be easier and comfortable. It is found that flexible movements cause less fatigue than stiff ones. Catchcari suggested that straight postue can reduce fatigue. Wheeler found that cleaning at a height will cause much fatigue than at low hieght.

6. Individual factors : There are some factors related to individual characteristics as well as nature of work, e.g. hours of sleep is responsible to create fatigue in industrial workers. In case of lack of sleep for required hour will cause immediate fatigue.

The other factor important is motivation. If a worker is working without any motivation it will create fatigue within him e.g. payment of salary, bonus and other facilities in time will work as motivation.

7. Social factor : Worker's social environment is his industry and he must be satisfied with the environment. The worker may be victim of fatigue due to feeling of insecurity, payment and bonus which are important working condition.

3.2.4 Measures to reduce fatigue

There are some measures adopted to reduce fatigue which are as follows :

1. Reducing work hour : Fatigue in industrial worker can be minimized by reducing work hour because it can cause sickness, accidents and absenteeism. Reducing the work hour can minimise fatigue and can yield higher production. It has been supported by the study conducted by Vernon, Miles and US Health Services.

So, it is a well known fact that long and continuous work can cause fatigue among mental workers.

2. Providing adequate rest pause : According to various studies it has been proved that rest pause can increase the production by 8-20%. Such rest pause is desirable almost in each type of work (supported the study Vernon and T. Bedford).

The duration of rest pause should not be very long nor very short. The distribution of rest pause may be between 5-20 minutes, more will create boredom and reduce production.

3. Movements in a factory is to be minimised : It should be economically minimised. i.e. the method of work is to be improved so that fatigue can be minimised. To reduce fatigue fatty posture and improper tools have to be avoided. The scientific management has proved better to avoid random movements.

4. Proper training should be provided : To work in a factory proper training is must in order to improve production, Proper training can also reduce fatigue.

5. Improving physical conditions : If worker physical conditions are sound, they can work continuously for hours without getting fatigued.

a. Reducing Noise : Fatigue can also be reduced by controlling unnecessary sounds. Unpleasant sound can produce fatigue. To reduce noise factories must be constructed with sound proof device.

b. Improving atmospheric conditions : It includes temperature, ventilation and humidity in a working condition. A very high and low temperature can cause fatigue same as adequate ventilation can reduce fatigue in a factory. If the conditions are favourable it can increase the production.

c. Improving illumination : Fatigue can also be reduced in industries by providing workers a good and proper illumination. Poor illumination increases fatigue and decreases production.

3.3 Nature of Monotony

Monotony is a mental condition which arouses after doing repetitive task. It means something which is no longer no longer interesting for a worker. It is not a particular job rather it is an attitude or characteristic of worker at a particular time. As Viteles defines, " Monotony is an attitude or 'Set' which undoubtedly affects one's adjustment to certain work". Monotony is a conditioned habit-system of the individual, which to a large degree controls the direction of behaviour modification that is possible in

the individual. Another psychologist Ranschburg has defined monotony as difficulty in perception of repeated stimulus or homogenous stimuli. Monotony is associated with high intelligence with extraversion, freedom from day dreaming or lack of ambition. (Lifso and Kalman). It is different from boredom because it is lack of interest characterised by depression.

Nature of monotony has been also explained on the basis of some important theories :

1. Perceptual Theory : This theory is based upon perception and explain and illustrated by Ranschberg and Munsterberg says that similar activity causes monotony. Individuals found themselves receive same stimulus (repetitive and homogenous work.)

2. Conflicting Theory : This theory is advocated by Verblen and Parker who believes that the outcome of monotony was mental tension resulting from conflict towards adaptive responses. It is thus largely a tension due to highly specialized and repetitive task.

3. Inhibitory Theory : This theory was explained by Mayers on the basis of muscular activity. The attitude of the workers is involved in the process of production is positively affected due to inhibitory experiences.

4. Competition Theory : This theory is given by Winkler, Wunderlicyh, and Thompson. When a worker performs a work, a state of readiness is developed in him. If he is compelled to do another work, his attention towards prior work is distracted. Such type of conflict will lead to monotony.

Thus, monotony can also be explained with the help of other theories.

3.3.1 Causes of monotony

Following are the main causes of monotony

1. Nature of work is the main cause of monotony. If a work is repeated so many times and there is lack of possibility to change the work, it will be known as monotonous work.

2. Circular nature of work characterised by too much of repetition.

3. If challenge is involved in work there will be no monotony and if no challenge is involved there will be monotony.

4. Nature of worker : On the basis of findings and observations it has been found that monotony is not only related to external (environmental) factor, rather it is related to personality trait and attitude of a person, several personality traits are found related to monotony. According to a recent research it has been found related to high intelligence and extraversion freedom from day dreamings and lack of ambition. Winkler explained that monotony is experienced by such workers who cannot concentrate or there is fluctuation of attention. On the basis of personality traits they may be divided into three types :

1. Type A : "Totality type" which means he is totally involved in work, he is in a tempo and any kind of blocking will result in disinterest in work.

2. Type B : Individual who can split his attention or "divide the direction of consciousness" This result in lowering the intensity of conscious experience, affecting both activities. There is no un-

pleasantness associated with the performance of task.

3. Type C : individual automatize the attention fully diverted to unrelated mental activities. Such individual's mind is wandering. They experience neither boredom nor monotony.

4. Extraversion : A positive correlation has been found between extraversion and monotony. An extravert person experience monotony than other individuals (Hill 1975)

5. Emotional instability : It is found more among females than males supported by Thompson. The following measures are used to reduce monotony :

1. Repetitive nature of work is to be avoided and competitive nature of work is to added.

2. Proper Selection of work that has lesser possibility to create monotony and according to the personality of the individual so that there cannot be a clash between individual and his task.

3. Automatic nature of the work. Due to mechanisation of industry jobs have becoming more and more repetitive, causing monotony. Thus, automuation is essential.

4. Rest pause is very essential to reduce monotony. Rest pause after monotonous work brings energy and freshness among workers so the effect of monotony is reduced leading to increased in productivity.

5. System of monotony : It has been found by studies that monotony can be more easily inducted under a time rate than piece rate system of payment.

6. Music : can produce increase in production and counteract monotony, improves attitude of worker.

7. Other factors : to engage in conversation to the workers can reduce monotony (Wyatt, Frazer and Stock) some results shows that conversation in a company can affect work (Output) adversely. A method is to be employed to overcome the monotony.

3.3.2 Conclusion

On the basis of above discussion we can conclude the following. Fatigue and monotony are very important aspect of the study of industrial workers which influence the production (output) of the industry. Nature of fatigue and monotony has been explained on the basis of different theories. Different environmental and personal factors are essential to reduce fatigue and monotony.

There are a number of ways through which fatigue and monotony can be eliminated because it holds the production. So, for the sake of better output fatigue and monotony must be removed. There are lot of difference between fatigue and monotony.

3.4 Summary

The whole discussion can be summarised in the following manner :

1. Fatigue and monotony are very important matter in industrial context.
2. Fatigue reduces the capacity to work more.
3. Fatigue is physiological causes work decrement and feeling of fatigue.

4. In fatigue there is decrement in mental power, physical power, decrease in production.
5. Fatigue and monotony are different from each other in many respect.
6. Fatigue is induced by hours of work, temperature ventilation, machine design, effect of environment, posture, individual factor and social factor.
7. Fatigue can be reduced by eliminating some factors or minimising it.
8. Monotony is a mental condition which arouses after repetitive work.
9. Monotony can be explained on the basis of four theories : Perceptual, Conflicting inhibitory and competition theory.
10. Monotony is caused by nature of work, nature of worker, challenging of work, extra version and emotional instability.
11. Monotony can be reduced through minimising nature of work, proper selection of work, automatic nature of work, rest pause system monotony and music.

3.5 Key words

- | | | | |
|--------------------|-------------------------|--------------------|----------------------|
| (i) Monotony | (ii) Emotional dislikes | (iii) Instinct | (iv) Physiological |
| (v) Ergograph | (vi) Nervous system | (vii) Glare | (viii) Maladjustment |
| (ix) Proverbially | (x) Ventilation | (xi) Fool candle | (xii) Energetic type |
| (xiii) Absenteeism | (xiv) Sound proof | (xv) Illumination | (xvi) Daydreaming |
| (xvii) Homogenous | (xviii) Inhibitory | (xix) Extraversion | (xx) Automation |

3.6 Questions for Exercise

(a) Objective Questions

1. Fatigue refers to
 - (i) Physiological limit
 - (ii) work decrement
 - (iii) Decrement of mental power
 - (iv) Combination of all

Answer -- (iv)

2. Monotony refers to
 - (i) Fatigue
 - (ii) Boredom
 - (iii) Attitude or set
 - (iv) Emotion

Answer — (iii)

(b) Short Answer Type Questions

1. Distinguish between fatigue and monotony

For Answer See 3.2.2

2. What are different causes of monotony

For Answer See 3.2.6

(c) Long Answer Type Questions

1. What are the important measures to reduce fatigue?
2. Explain the nature of monotony, What steps to be taken to reduce monotony in a factory?
3. Explain nature and causes of fatigue.

3.7 Suggested Readings

1. Blum & Naylor — Industrial Psychology
2. Schultz — Industrial Psychology
3. Tiffin — Industrial Psychology



SCIENTIFIC MANAGEMENT**Lesson Structure**

- 4.0 Objective**
- 4.1 Introduction**
- 4.2 Main Theme**
 - 4.2.1 Principles of Scientific Management**
 - 4.2.2 Theory of Scientific Management**
 - 4.2.3 Contributions of Frederick W. Taylor and Frank B. Gilberth**
 - 4.2.4 Conclusion**
- 4.3 Summary**
- 4.4 Key Words**
- 4.5 Questions for Exercise**
 - (a) Objective Questions**
 - (b) Short Answer Type Questions**
 - (c) Long Answer Type Questions**
- 4.6 Suggested Readings**

4.0 Objective

The objective of this lesson is to make the learners acquainted with scientific management and its related aspects like principles of scientific management, theory of scientific management and contributions of Frederick W. Taylor and Frank B. Gilbreth.

These aspects will be explained clearly one-by-one and to assimilate the whole discussion we shall present a summary of the whole lesson and the key words used in this lesson. In the end of the lesson different types of questions will be given (objective, short and long). Finally, to make this lesson more understandable some books are recommended as suggested readings.

4.1 Introduction

Scientific management is a very important topic of industrial psychology. It basically deals with the management within the organization scientifically. If the internal as well as external management

in an industry is done properly the persons working there will be satisfied and happy. So far as the outcome is concerned it will be higher if management is a scientific management. A number of psychologists have explained the term scientific management. They have their own view of things, yet, they have common agreement over certain facts.

4.2.1 Principles of Scientific Management

There are some principles of scientific management. It is evident that the theory of scientific management reflected the temper of the time in which it evolved. It represented the view of the workers who were lazy, greedy, selfish and non-co-operative people who had a natural tendency to avoid work and responsibility.

Taylor argued that the system become "scientific" because it possessed knowledge gained by a workmen and classified tabulated, and reduced it to laws, rules and formulas. According to Taylor's proposals, the following are the principles of scientific management.

1. To develop a scientific approach towards each elements for men's work. Taylor spoke in favour of developing a science for work. This method replaced the rule of thumb " method which was widely practised at that time. In short the principle says "science and not rule of thumb.
2. The Principle should be scientific selection of workers and to teach, train and develop them. This principle is contrary to the rule that workers should train themselves at the best that they could. Here the principle involves that development of each one to the greatest efficiency and prosperity.
3. The work done in accordance with the principles of scientific management, is to cooperate heartily with the men.
4. It is supposed that management should take over the work for which they believed to be better qualified than the worker. That is to say that the management and worker should restructure the work because the work and the responsibility is of more importance.
5. Taylor always shown a lack of concern and appreciable sympathy for the workman was revealed in his statement. So, he suggested the principle, "Maximum output in place of restricted output.

4.2.2 Theories of Scientific Management

Several theories have been put forward by different scientists like Henry Ford' Alfred P. Solan. Henri Fayol etc. According to the pioneer scientists' management was primarily concerned with overall managerial organization for the survival and prosperity. On the other hand, the scientific management around the turn of the last century took a limited perspective. However, the two approaches were not contradictory. That is, the managers in both cases, the management pioneers and the scientific managers have applied the scientific methods to solve their problems.

The other important thing about the management is that managers in both the approaches did

not emphasize other human dimension and let it play only a managerial role whereas the management functions like planning and controlling were in practice. However, the organization taken it more or less classical bureaucratic structure. The managers in both the above mentioned approaches thought that effective management at all level was the key concept of organisational success. The pioneer and scientific approaches differed in the sense that the scientific approach worked from the bottom of the hierarchy (it means from the level of worker) upward, while the management pioneer worked from "organizational Specialists" (Luthans, 1977) work from the apex downward.

Yet both types of management had essentially the main purpose or goal, that is more productivity. This was the only goal of the organization, Scientific management emphasized production efficiency. They considered that workers involved in the production were merely adjunct to the machines they had operated. This concept led to three things :

- (i) A programmed rigor with work was designed.
- (ii) The worker's job performance and instructions being spelt out in minute details and
- (iii) The workers expected specialized planning to which they wanted to follow exactly.

The assumption of scientific management theory is that man's only motivation was "economic man" guided by this thought that such men could be led only by monetary incentive systems. Workers knew that to achieve greater financial rewards, the competition postured, he / she has to produce more than others.

The motivational system approach by scientific management is known as, " Carrot and Stick approach". It was due to concern for more productivity that psychologists of that period were also involved with problems of work method, initiated research on fatigue, accidents and the development of selection tests and measurements of industrial use. The system also arranged facilities of measurement of individual productivity and performance and performance below the established standard created on implicit threat of censure and ultimate dismissal.

In short, the total scientific management approach resulted in very rigid formal way of organising work with an exclusive emphasis upon physical needs of workers, to neglect of their human needs. Later on human relations movements took into account this serious weakness of the scientific management approach and framed its theory on the social and human needs of the workers.

4.2.3 Contributions of Federick W. Taylor and Frank B. Gilberth

The principles of scientific management illustrated by Taylor, F. W, is represented as a total system of management as well as day-to-day operating procedure. It is not only that the scientific interest in behavioural issues started with Taylor and his movement. Taylor, F.W. was a mechanical engineer who finished his management studies in 1890. He was famous for starting the movement for the first time so, he is well known as father of scientific management. He had a shop, engineering experience and, therefore, was intimately involved with tools, products and various machines and manufacturing operations.

According to Taylor (1947), scientific management is based upon the firm conviction that the interest of the employer and the employee are the same, and that this system makes it possible to give the worker what he wants most, viz. high wages and the employer what he wants most that is a low cost labour.

Taylor's well known metal cutting experiments demonstrated the scientific management approach and in the twenty six years time span he tested every conceivable variation in speed feed depth of cut and cutting tool of different kinds. His experiment contributed significantly to the development of large scale production. There are two famous applications of Taylor's principle :

1. Pig - iron handling and
2. Shoveling operations

Both the operations takes place in Bethlehem Steel Company. In the first case that is, Pig-iron, a group of 75 workers' loaded' pig iron, each weighting 92 pounds, into box case. By applying the scientific management, the company achieved three fold increase in the productivity.

In another case, a similar rise in productivity was gained when the principles were applied to the men who shovelled iron or and rice coal. The rise in popularity of the scientific management result in a big way after testimony by a consultant on efficiency engineering Harrington Emerso, was made public. The testimony said that the raid roads, could save a million dollar in a day through the use of scientific management. Newspapers gave headlines to this testimony and scientific management soon become renowned through out American industry and also became popular in Japan.

Contributions of Frank Gilberth

Frank Gilberth was a scientific manager, whose contributions are also very important. There is lot of difference existing between Taylor's view and the present time industrial psychologists and industrial engineers. Some of these differences can be attributed to the work which has been done by F. Gilberth who was an engineer and his wife Lillian Gilberth was a trained psychologist (Blum and Naylor 1984).

The first important work was done in this area, was by brick laying (1911). He studied the motions involved in brick laying, F. Gilberth was able to reduce these motions 18 - 5, thereby increasing the production from 120 to 350 bricks per hour to a person. Gilberth and his wife (Psychologist) had a professional team, so, it was possible to check each other. Therefore, human element did not cause neglect to the mechanical aspect and vice-versa. Gilberth has devised a system efficiency which has nine principles. These principles are :

1. Individualization
2. Functionalisation
3. Measurement
4. Analysis and Synthesis
5. Standardization

6. Records and programmes
7. Teaching
8. Incentives
9. Welfare

Gilberth presented an all inclusive system and believed that the details of work situation should be adjusted to the personal rather than the individual being forced into the pattern of the job. The writings of Gilberth 1916, 1917 show much insight and understanding of the individual worker than the Taylor's work and there is little evidence of the content for the worker which Taylor at times seems to make quite evident.

Taylor and Gilberth thus made popularisation of time and motion studies and incentive compensation system in organisations. One of the most interesting contributions of Gilberth and Lillian was analysis and breakdown of a task into its basic elements of motion which they called "therblings". According to them every job involves a number of "therblings". After the therblings are identified it is important to ask the following six questions :

1. Is each "therbling" necessary?
2. Can this task be made simpler by having few motions.
3. Can there be less motion in performance and degree?
4. Can the steps be combined?
5. Can the sequence be changed?
6. Can more than one be done at the same time?

Analysing the "therblings" could it help a scientist to arrive at the most economical strategy (time and body movement wise) or performing a task. This type of idea were represented and tested in the "time and motion studies".

The time and motion studies aimed at elimination of waste and inefficiency. It was argued that there could be reduction of costs, improvement of work methods and minimizing fatigue (Blum and Naylor, 1984). Effective training on the basis of establishment and determining the wage rates are attributed to the result of time and motion studies.

In some studies, however, emphasis have been paid to determining the standard time required to complete a task. In motion studies method, motion and movement of the workers are analysed. Time and motion studies need to be fair and must be promoting the aims of both the management and worker. They are to be carried out correctly and not to be misapplied.

The major criticism of the scientific management theory was reluctance to acknowledge the human aspect of the work which is necessary part of the production process. The scientific managers believed in sophisticated differential, piece rate, incentive plans and wanted to get most out of workers in terms of outcome as they realized that differential price-rate incentive has an impact upon individual worker. They were yet, maintaining the tradition which did not do much for humanising the work place."

4.2.4 Conclusion

On the basis of above discussion it can be concluded that scientific management is a very important aspect of industrial organization. Scientific management is explained from the point of view of Taylor, and Gilberth. Apart from their theories of scientific management, principles of scientific management have been discussed.

The basic aim of this discussion is to improve output (production) in an industry and maintaining a harmonious relationship between worker and manager.

4.3 Summary

We can present a summary of the above discussion as follows :

1. Scientific management is essential aspect of industrial psychology.
2. Management is concerned with the worker-managerial relationship.
3. It is concerned with policy of the industrial organization.
4. It is concerned with the productivity of the industry.
5. Management also deals with the better machinery approach and skilled handling of it.
6. There are certain principles of scientific management.
7. Two theories of scientific management has been discussed (Taylor & Gilberth)
8. Gilberth presented nine principles of scientific management.

4.4 Key words

- | | | | |
|---------------------------------|------------------------------------|-------------------|---------------------------|
| (i) Scientific management | (ii) Hierarchy | (iii) Harmonious | (iv) Economic man |
| (v) Carrot and Stick approach | (vi) Employer | (vii) Employee | (viii) Pig- Iron handling |
| (ix) Shoveling operations | (x) Testimony | (xi) Brick laying | (xii) Standardization |
| (xiii) Analysing & Synthesizing | (xiv) Therblings | (xv) Incentives | (xvi) Misapplied |
| (xvii) Sophisticated | (xviii) Organizational Specialists | | |

4.5 Questions for Exercise

(a) Objective Questions

1. Who is generally named as father of scientific management.
 - (a) Gilberth
 - (b) Lillian
 - (c) Taylor
 - (d) Blum & NaylorAnswer — (c)
2. Scientific management is concerned with
 - (a) Hospitals
 - (b) Library

(c) Industry

(d) Schools

Answer — (c)

(b) Short Answer Type Questions

1. Discuss the principles of scientific management.

For Answer See 4.2.1

2. Discuss Taylor's theory of scientific management.

For Answer See 4.2.3

(c) Long Answer Type Questions

1. What do you understand by scientific management? Discuss its background.

2. Discussion the contributions of Taylor Gilbreth in the field of scientific management.

3. Discuss the theories of scientific management.

4.6 Suggested Readings

1. Kocher, D.C — .Audyogic Evam Sangathan Manovigyan.

2. Maysmith — An Introduction to Industrial Psychology

3: Ojha, A.K. — .Audyogic Manovigyan



Group - A

ACCIDENTS**Lesson Structures**

- 5.0 Objective**
- 5.1 Introduction**
- 5.2 Main Theme**
 - 5.2.1 Accident Proneness**
 - 5.2.2 (a) Causes of Accidents**
 - 5.2.2 (b) Accident Proneness, Efforts to reduce accident.**
 - 5.2.2 (c) Prevention of Accidents**
 - 5.2.3 Conclusion**
- 5.3 Summary**
- 5.4 Key Words**
- 5.5 Questions for Exercise**
 - (a) Objective Questions**
 - (b) Short Answer Type Questions**
 - (c) Long Answer Type Questions**
- 5.6 Suggested Readings**

5.0 Objective

The objective of this lesson is to understand the nature of accidents in industry. So, we have to consider all aspects related to accidents. First, we will see the concept (Process) of accident, causes of accident, prevention of accident and lastly, about accident proneness.

Accidents in this modern era is not a single phenomenon rather dependent upon a number of factors like, machinery factor and non- machinery factors— (a) environmental and (b) personal. The whole aspect will be discussed in detail followed by a summary, key words used in this lesson and finally, the understanding of the whole lesson has to be tested through different types of questions—objective, short and long ones. And for further knowledge some books have been suggested for readings.

5.1 Introduction

In Industrial Psychology accident is one of the most assuming among different problems related to industry. Accidents are generally important area of inquiry for the industrial psychologists. The study of accidents has been described as an attempt to give scientific backing to the common sense notion which most people accept without thinking. Accidents affect economy or financial problems, anguish, pain, injury and sometimes death are involved. Accident is thus, a problem of careful consideration as it also lowers the morale of workers and decrease the rate of production in an industry. Keeping the view of loss on account of accident, if reduced even by a fraction of one percent would be considered of a great value. It is very difficult to define accident in a satisfactory manner. However, Gilisselli and Brown, Dexi have graphically put that accident is an event that take place without foresight or expectation and results in some types of personal injury and/or damage to equipment or property.

The definition is broad. If it is wilful damage, this type of damage will not be considered to be the result of an accident. A bomb thrown by a child will be considered as an accident. Similarly, natural events that cause damage will be considered as an accident such as heavy rains, landslides or earthquakes etc.

Somewhat a narrow definition will be conceived as industrial accidents which come out as a result of work situation, either by faulty machinery or fault of the individual operating machines. When accidents are due to natural catastrophes the agent that produce the destructive events, has no connection with the job operation.

To define accident a number of definitions have been put forward. Some emphasize upon machinery while others emphasize upon non- machinery factors. The outcome of accident is either personal or damage to property. For an accident different criteria as well as causes have to be determined to establish whether it is an accident or not, e.g. if a worker falls down off a ladder which does not injure the worker or cause any damage to machinery it will not be considered as an accident.

There are several instances of behaviour involving similar features, which we call accident but there are some other incident in which causes are different but the results are similar. So, a complete understanding of the nature of accident help a person to distinguish accident from other different act.

Accidents are thus, unexpected, incorrect, damaging, interrupting which, have three bases :

1. According to nature of the event (Bus, Car etc.)
 - a. Traffic accidents (Collision)
 - b. Passenger accidents (Struck, Push)
2. According to machinery event (Tools machine accidents, Catching fingers)
3. According to non- machinery event.
(Falling objects, objects on floor)

5.2 Main Theme

5.2.1 Accident proneness

The concept of accident proneness is accepted on the basis of observation that some people do accident just because they think of it, they do more worse accidents than others. Though accidents are unfortunate occurrence which can happen to any one at any time, researchers try to know why such people are met this type of accidents.

Several researches have worked in this field of accident about safe unsafe behaviour, keeping several factors constant and found that there are some persons more prone of accidents than others. It has been found that except few, most accidents to due to personal characteristics, though, this fact vary from person to person. It has been defined by some scientists as follows.

Harrel (1964) defined accident proneness as, " the continuing tendency of a person to have accidents as a result of his stable and persisting characteristics".

Blum & Naylor (1968) says, "Accidents do not distribute themselves by chance, but happen frequently to some men and infrequently to others as a logical result of combinations of circumstances".

The above definitions explain individual variation in accident proneness, though it is not similar for other person. Some researchers think accidents just happen to any body, while some believe that there are large number of people who use inherent bad risk that they should not be driving. It proves that some scientists are generalists while others are individualistic.

Behaviourists however, believe that there is experimental approach denying both consistency and individuality. McFarland (1962), believes that " It has not been consistently demonstrated that an applicable number of people tend to have more accidents than other under conditions of equal exposure".

According to a publication by Haddon's Accident Research Robert Darinton quotes the opinion of leading accident workers, "The favourite concept of psychologists in the field during the nineteen twenties was accidents proneness. An attempt to explain why some individuals have more accidents than others was their main study. Psychologists have almost abandoned the concept now, because they have been unable to find enduring psychological traits that differentiate these unfortunate persons from others. They tend to believe that most accident prone individuals are victims of the law of probability".

This viewpoint is also denying accident proneness.

5.2.2 (a) Approaches to Accident Proneness

To explain and illustrate accident proneness, several other causes and approaches have been discussed. These approaches are :

1. Psychoanalytic approach
2. Sensory motor co-ordination approach

According to Psychoanalytic approach accident process is a group of syndrome within

the personality of the person itself. It is isolated and non-specific general factor. In one words, the clinical or psychoanalytic approach emphasizes the generality of accident proneness.

Another psychologist Dunbar tried to find out some ill-defined aspects of personality by applying research test on two groups of patients. It was viewed that accidents happen due to absent mindedness and faulty attitude of a person or failure to co- ordinate because of personality characteristics. Such group committed more accident. There is greater frequency of neurotic traits as lying , stealing, sleep, walking etc. They were also found emotionally impulsive and there is a tendency to escape from authority.

2. The other approach to explain accident proneness is on the basis of sensory motor co-ordination. This approach was advanced by Farmer and Chambers (1929). They explained that, people commit accident due to sensory motor dysfunction. They analysed 681 subjects of different trade for three groups of tests :
 1. Sensory motor co ordination tests : In this type dotting, reaction time, pursuit meter tests are used. In most of these tests, only one symbol is used either auditory or visual.
 2. Emotional stability test : In this type of test muscular balance, test of emotional stability, test of tremar, psychogalvanic reflex test are important.
 3. It was found that those who were doing better on these tests had an average of 48% less accidents than the workers of the inferior group. Scores on these tests are correlated to a considerable extent with the accident score.

Temperamental test also showed indications of such relationship. Accident proneness thus, cannot be well predicted with sensory motor co ordination. There may be some other factor operating e.g. lack of quick ability to react and clumsiness.

Another study by De Silva and Fletchen ('942), found that reaction time in co ordination in driving testing apparatus, test of special visual characteristics, test of judgement of speed and distance varied test of sensitivity and glare destructibility, intelligence tests. On all the test the poor drivers had a long reaction time than good driver, they had high sensitivity of glare. Perceptual activity of accident prone drivers were inferior.

All the research findings show that there is no clear-cut evidence of any consistent characteristics of accident prone. It is also clear that there is lack of validity of such research (Bhalla, 1977).

5.2.2(b) Causes of Accidents

Accidents are not just accidental rather they have some definite causes. Several researchers have stressed that there are multiple factors associated with accidents, some are personality factor, some due to environmental causes (physical factor). It is obvious that the accidents are caused, not just happen. Both the factors, personality and physical, will interact with each other e.g. unsafe act and unsafe conditions may react to each other resulting in accident (Gilmer, 1971). The Metropolitan

Life Insurance Company (1931) has listed primary cause of accident in order of preference. Factors are mainly related to human e.g. faulty attitude, faulty judgement of speech and distance, failure to recognise potential hazard, impulsiveness, failure to keep attention, constant irresponsibility, nervousness and fear, defective vision, diseases, slow reaction high blood pressure, serility, worry, depression, fatiguability, improper distribution of attention and inexperience.

The physical causes are handling material or equipment, being struck by falling material or equipment stumbling or falling, fall from heights, fall from stairs, handling tools, burn acids, electricity, gas operation machinery, foreign body in eyes and others.

Vitles (1932) has discussed two types of causes :

1. Machinery
2. Non - machinery
 - (i) Environmental and
 - (ii) Personal

1. Machinery factor : Among the causes relating to machinery Crawford (1960) has emphasized faulty design of machinery and their physical condition e.g. slippery grounds, machines with revolving benefits and use of chemicals. This type of accidents are quite unsafe.

To prevent such accident machines to be devised nicely, training and proper utilization is essential. They use goggles, particular cloth, gloves, rubber sleepers etc. They feel comfortable due to the use of safely devices.

2. Non - machinery factors : There are two category of non- machinery factors :

(i) Environmental or physical : Here are some important factors.

(a) Temperature : Accidents are often due to atmospheric conditions, that is, excessive cold and heat will cause classiness and uncomfortable to the person. A very high or low temperature will cause accident more in men and less in women. There are other factors like humidity, movement in air etc. have shown great impact upon accidents.

(b) Illumination : Accidents are influence by light. A very inferior light as well as a sudden increase in light, artificial lighting will cause accidents. Lack of illuminization will cause three types of accidents :

- (i) Contact with machinery 27%
- (ii) Object dropping on a person 15%
- (iii) Person falling 12%

(c) Speed : High speed leads to fatigue and that may lead to accident. More speed is permissible at day time but not during night.

(d) Long hours of work lead to fatigue and fatigue may cause accident.

(e) Fatigue associated with other factors as speed and hours of work lead to accident then it is sufficient for inducing accident. Several studies in United States and Europe has shown that there is an increase in accident due to fatigue. Fatigue is supposed to be greater during evening and night

hours it is lesser in morning and afternoon. The conditions of fatigue, however, varies from person to person, and situation to situation. (Vernon, 1924)

- (iv) Time of work is also very important during second half of the work, so the frequency of accident is higher during that time.
- (v) Exposure also leads to increased accident with greater exposure in difficult and hazardous driving. However, this also depends on individual characteristics.

Personal Factor : There are some personal factors that lead to accident :

1. Age : There are different studies which reflect a significant relationship between age of the worker and the accidents. Vernon (1945) believing that greater number of accidents happens at young age. Best performance in driving has been found at 25-44 yrs. of age. (Skelly- 1968).

2. Experience : Experience is a very important factor that lead to accidents. About 50% of the accidents take place during first six months of their job. An experienced driver do less accident than a new driver (Vernon, 1945, Vanzelst, 1954)

3. Health : Accidents are associated with the poor health of a person. It has been found that persons doing more accidents are frequent visitor of hospitals. This is because of poor health condition.

4. Sex : It has been found by studies that man meet serious and frequent accidents than women. Women records lesser traffic offences than men. This is so because women are more concerned with health and life of others. They are more balanced than men,

5. Physiological factors : There are some medical factors operating for accidents.

6. Vision : Defective vision is also a factor that lead to more accidents. It increases 20% of all accidents. (Kephart & Tiffin 1950). Night blindness is caused due to vitamin A deficiency. Such persons have difficult driving during night time.

7. Absenteeism : It leads to more accidents than a regular employee because gradually they lose their confidence (Hill, 1955).

8. Emotional factor : Emotional maturity is related to some situational factors. Such factors are impulsiveness, anger, fear, wrong nervousness and depression. It makes an increase of 32% in accidents.

9. Intelligence : An intelligent person can handle any situation effectively and avoid accident situation. It will lead to reduction of accident, while a dull minded person cannot handle the situation effectively and may cause more accidents than an intelligent person.

10. Neuroticism : has been found positively related to accidents because of anxiety, depression and instability in their personality.

11. Frustration : It makes a person accident prone when the person shows fixative reaction to frustration. They are unbalanced against safety behaviour.

12. Driving ability and psychomotor function : The driving is a complex work which includes a number of psychomotor functions and psychophysical functions. It means that imbalance in such

type of function will lead to more accidents.

13. Alcohol and drugs : It can also increase in number of accidents when driving is done with toxicating drugs and alcohol. It brings marked changes in behaviour.

14. Personality characteristics : Crawford in 1960 explained that higher incidence of accident was associated with lower social desirability and dispositions like optimism trust.

15. Risk acceptance : It has been recognized recently (Gilmar, 1970) and found that a person with high risk groups has committed more accidents than the low risk group.

16. Discipline : It also plays an important role in causing accident.

5.2.2 (c) Prevention of Accident

It has been found by studies that accidents depend upon a number of active factors and there are some personality factors which can prevent a person from accidents. They are :

1. Mechanical and 2. Non mechanical measures.

1. **Mechanical faults :** They are responsible for accidents to a great deal. This can be checked by many ways :

- (i) Defects must be rectified and overcome. It should not be neglected.
- (ii) Maintenance of work place such as slippery ground unarranged equipments etc.
- (iii) Outdated equipment must be checked.
- (iv) Machinery is to be checked regularly by experts.
- (v) Workplace must be provided with safety devices e.g. gloves, gas extinguisher, goggles, rubber slippers. etc.

2. **Non - Mechanical factors :** Such factors are organismic or personal.

- (i) Environmental factors e.g. light, temperature, humidity and movement of air must be congenial.
- (ii) Safety campaigns be made for social consciousness.
- (iii) Safety habits to be inculcated to reduce accidents such as checking, machinery, air, oilbrake etc.
- (iv) Careful training programme should be introduced to use safety measures by the drivers.
- (v) Educational measures to be promoted through extra classes, T.V. Motion pictures and Radio message used to avoid accidents.
- (vi) Selection of better people is to be done.
- (vii) Psychological test must be conducted before selecting people for their intelligence and some personality characteristics.
- (viii) Researches must be conducted on prevention of accidents from time-to-time to know the particular cause of accident.

5.2.3 Conclusion

We can conclude the above lesson on the basis of following points. The lesson deals in detail about the nature, meaning and process of accidents. It also deals with accident proneness, its approaches, its causes and what preventive acts to be taken against accidents.

Some definitions, principles and theories have been discussed and elaborated to explain the nature of accidents. It should be checked by using some methods of preventions. Accidents have two dimensional effect— environmental and personal factors.

5.3 Summary

The lesson can be summarised as follows :

1. Accidents are related to industry and business.
2. It is harmful for both a person and for the industry.
3. Two types of definitions has been presented :
 - (i) broad
 - (ii) narrow
4. The concept of accident proness explained in detail.
5. Different approaches i.e. psychoanalytic and sensory motor co-ordination approach were explained.
6. Further causes of accidents have been explained, both machinery as well as non-machinery causes.
7. How to prevent accidents has been discussed briefly.
8. Thus, accident as overall dangerous and harmful for both person and industry.

5.4 Key Words

- | | | | |
|---------------------------|--------------------------|--------------------|-------------------|
| (i) Accidents | (ii) Machinery | (iii) Catastrophes | (iv) Collision |
| (v) Accident proneness | (vi) Traits | (vii) Drugs | (viii) Impulsive |
| (ix) Equipment | (x) Acid | (xi) Glare | (xii) Neuroticism |
| (xiii) Alcohol | (xiv) Pshychoanalytic | (xv) Compaigns | (xvi) Humidity |
| (xvii) Emotional maturity | (xviii) Gas extinguisher | | |

5.5 Questions for Exercise

(a) Objective Questions

1. Accidents can be defined on two grounds.
 - (a) Broad / Narrow
 - (b) Machinery / Non- Machinery

(c) Right / Wrong

(d) Long / Short

Answer — (a)

(b) Short Answer Type Questions

1. What are the personal causes of accident?

For Answer See 5.2.3

2. Discuss psychoanalytic approaches to accident.

For Answer See 5.2.2

(c) Long Answer Type Question

1. What is accident proneness ? What are its causes ?

2. Discuss the nature and process of accident.

3. What are preventive measures to be taken to avoid accidents.

5.6 Suggested Readings

As given in earlier chapters.



VOCATIONAL SELECTION**Lesson Structure**

- 6.0 Objective**
- 6.1 Introduction**
- 6.2 Main Theme**
 - 6.2.1 Nature of Vocational Selection**
 - 6.2.2 Differences Between Vocational Guidance and Selection**
 - 6.2.3 Job analysis : Meaning, Method, Uses**
 - 6.2.4 Methods of Workers Analysis**
 - 6.2.5 Interview and Tests (their uses and limitations.**
 - 6.2.6 Conclusion**
- 6.3 Summary**
- 6.4 Key Words**
- 6.5 Questions for Exercise**
 - (a) Objective Questions**
 - (b) Short Answer Type Question**
 - (c) Long Answer Type Question**
- 6.6. Suggested Readings**

6.0 Objective

The objective of the lesson is to make the learners understand the nature of vocational guidance and selection, the differences between vocational guidance and selection, job analysis, meaning and methods of vocational selection apart from this our objective is to understand method of workers analysis, interview and tests and their uses and limitations.

At last to assimilate the whole discussion, we shall present a summary, key words used in this lesson and to check the understanding of the whole lesson is to be tested through different types of questions (objective, short and long). Lastly, to make the lesson more understandable some books have been referred in suggested readings.

6.1 Introduction

In this unit we shall study vocational selection and its related facts as, vocational selection is a very important in an industry and business. It is primarily related with selecting a right person for a right job. It is also concerned with the appropriate placement of a worker to increase human efficiency and industrial productivity.

Vocational guidance is a process of helping persons for choosing a right job for himself. This guidance can also help a person in making satisfactory occupational adjustment.

Whereas selection is concerned with the method of choosing persons in a factory, selection of workers in a factory should be scientific selection involving picking a set of workers from the total set of population available. Selection can be better if it is random and non bias.

6.2 Main Theme

6.2.1 Nature of Vocational Selection

Vocational Selection is very important and old concept of industrial psychologists. It is a process of selecting right person for a right job and appropriate placement of employees to increase their efficiency and industrial productivity. It is a decision making process from the part of management for the suitability of selection. Vocational selection is done on the basis of particular norms. The purpose of such selection is to avoid improper selection of candidate which may lead to wastage of human power and wealth.

If the selection is not properly done, can result in consistent irritation, lack of responsibility toward work, lack of desire to specialize and loss. All such conditions' can result in low production, high accident rate and fatigue. For a person it will cause inefficiency, inferiority complex, frustration and loss of time. As Blum and Naylor (1968) defines "Selection involves picking for hire a subset of workers from the total set (Population) of workers available. Efficient selection is therefore a non-random process, in so far as those selected have been chosen on the assumption that they are more apt to make better employees than those who have been rejected. The task of industrial psychologist is to make certain that the assumption is indeed a valid one as a result of using objective and scientific procedures and instruments rather than subjective and biased judgements".

Thus, the suitability of selecting persons for suitable job is selection, irrespective of training and occupation.

6.2.2 Difference between vocational guidance and selection

An industrial psychologists in an industry is concerned basically with vocational selection. The term should not be confused with vocational guidance. Both terms are in many ways similar, but the difference between the two terms are remarkable.

Vocational selection refers to selecting right person for right job whereas vocational guidance is concerned with directing or guiding a person for opting a particular job. It is concerned basically with

the choice of job" while selection is concerned with suitability of person in a particular condition to work. Selection concerns with the appropriateness of a particular worker in a factory to increase both human efficiency and industrial productivity.

Viteles (1932) explains: " Fitting the worker to the job to represent the first and most important step in promoting individual's efficiency and adjustment in industry. Selecting a person is directly concerned with appropriate placement of employees by vocational selection. It is the process by which required number of candidates from available candidates (candidates who applied for a given job) are selected.

Selecting a person is a decision making process, where whole management committee take a decision of selecting a particular person on the basis of certain principle and norm. A sound selection procedure insures selection of a suitable candidate.

Improper selection of candidates is the most important demerit of any industrial organization that will cause wastage of human power and wealth. Unsuitability of job will create irritation, lack of desire to specialise, carelessness and boredom leading to further loss. All these factors will lead to low production, accident and fatigue. It also gives rise to insufficiency, frustration loss of time complaints and ultimate discharge from the job.

Selection is a scientific process based upon interview and tests. As Blum and Naylor (1968) explains, " Selection involves picking or hire a subset of workers from the total set (population) of workers available. Efficient selection is, therefore, a non-random process, in so far as those selected have been chosen on the assumption that they are more apt to make better employees than those who have been rejected. The task of industrial psychologist is to make certain that the assumption is indeed valid one as a result of using objective and scientific procedures and instruments rather than subjective and biased judgement."

Every worker, irrespective of training and occupation, will differ considerably in terms of their relative work efficiency and performance. There are several scientific and unscientific methods :

1. Unscientific Method : There are unscientific methods used in earlier time has no suitability for present time :

- (i) **Physiognomy :** Selecting a person on the basis of physical features.
- (ii) **Graphology :** A very old technique which make use of handwriting. It was supposed that it displays confidence, nature and character of a person.

2. Scientific Methods : Scientific methods which are in current use are as follows :

- (i) **Photograph :** indicates facial defects along with other method.
- (ii) **Application :** Containing sufficient information about the candidate (age, sex, and, specialization).
- (iii) **Application Blank :** It is somewhat more specific than application form.

3. Reference and Recommendation : It can throw light upon a person who is being selected sometimes it is misleading.

4. Interview : It is a very popular technique of selection.

5. Psychological tests : Different types of tests like intelligence, personality, aptitude and attitude tests are used for the selection of workers in an industry.

Vocational Guidance

The concept of vocational guidance is somewhat different form of selection. It is a process where candidates are not guided for selection of a proper job for himself. This type of guidance can help them to improve themselves in a particular selection. The aim of vocational guidance is to help the person to select his future which is necessary for his satisfactory occupational adjustment. Jones explained "Vocational guidance is an attempt to give the individual personal help through which one can select for himself a proper job, prepare himself for that job and improve".

As Crow & Crow defines, " Vocational guidance usually is interpreted as the assistance given to learners to choose, prepare for and progress in an occupation." The main aims of guidance are :

1. Helps individual to select an occupation according to his ability.
2. To give detailed information about different occupations.
3. To help a person to utilize maximum resources, for the economic and social development of the country.
4. To help a person to avoid frustration.

For vocational guidance a full knowledge and information about a person e.g. intelligence, abilities, attitudes, interests, educational qualification, health, age, sex, economic status and personality is essential.

They also have full idea about industries type of work qualification needed, salary etc. Vocational guidance helps us to select suitable job and get satisfied.

In spite of similarities, there are yet some points on which vocational guidance and selection depends.

1. Order : It means that vocational guidance comes first and selection afterward, because it is necessary to guide a person properly for selection.

2. Field : Vocational guidance is related to educational field, while selection is the industrial field.

3. Adequacy : Vocational selection is a field of vocational guidance. Vocational guidance is necessary to study in detail about persons their qualities and personality trait. Vocational selection takes on only those quality and characteristics concerned with particular occupation not with the capacity and quality of a person is general.

4. Present and Future ability : Vocational guidance takes into account present and future both abilities, while in selection only present ability is generally assessed.

5. Difference in work and employee : In vocational selection job is available and task is to select a suitable person, while in vocational guidance person is available and the job is to select some occupation for him.

6. Analysis : In guidance a person is analysed as employee (large scale) while in selection a

person is analysed whether a person is suitable for the job or not. Thus, vocational guidance and selection both are contemporary process.

6.2.3 Job analysis : Meaning, Method & Uses

Meaning : Job analysis in occupational and industrial field means analysis of job according to the nature of work and person specified. This is done because of great success of both person and the industrial organisation. As it is quite clear that every person is not suitable for every work, a suitable person in a position will increase production and job satisfaction both that is why job analysis is essential.

Uses :

For the betterment of industrial organization job analysis is essential for person's benefit (health, security etc.)

So, job analysis has a practical importance in an industry to avoid wastage of man power. Zerga (1943) has specified 20 uses of job analysis e.g. :

- Job guarding and classification.
- Wage setting and standardization.
- Provision of hiring specification.
- Classification of job duties and responsibilities.
- Transfer and promotions.
- Adjustment of grievances.
- Establishment of common understanding between various levels of workers and managements.
- Defining and outlining promotional steps.
- Investigating accidents.
- Indicating faulty work procedures or duplication of effort.
- Maintaining.
- Operating and adjusting machinery.
- Time and motion studies.
- Defining limits of authorities.
- Indicating cases of individual merit.
- Indicating causes of personal failure.
- Education and training.
- Facilitating job placement.
- Studies of health and fatigue.
- Scientific guidance.
- Determining job suitable for occupational theory.

Blum & Naylor explains, " In many respect, a job analysis is a vital part of working efficiency besides promoting smooth working relationship among employees, it can be regarded as the four-

ation upon which a system of efficiency is built,".

It is thus clear that job analysis is a technique for rating the job not the man. Here are some important uses of job analysis :

1. Evolving rational wages and salary structure.
2. Eliminating inequality among the workers and management for betterment.
3. Eliminating personal prejudices.
4. Maintaining harmonious relationship among all.
5. Job analysis provides an objective base.
6. Proper emphasis is paid on job factors.
7. Facilities of comparison and survey.
8. Lower cost of recruitment and selection.
9. Development of worker.

Methods :

For a job analysis different methods have been suggested by different psychologists. MC Cormick (1971) & Tiffin have suggested two aspects for job analysis procedure and that are used to obtain data

1. Method of obtaining job information.
2. Nature of job information.

There are some methods used in obtaining job information :

(i) Observation : The workers are observed by the job analyst while they are on duty. This method may be biased and time taking.

(ii) Interview : It may be related to one person to a job by asking job situation and get necessary informations.

(iii) Questionnaire : First questionnaire in this field was prepared by Lipman (1916). It is well prepared filling questionnaire about their job. That questionnaire was given to workers, supervisors, executives of different organizations who are familiar with the job detail. e.g.:

1. Any particular type of ability is necessary, optional or not necessary for your job.
2. What abilities from time-to-time are not necessary at all?
3. A particular trait can be developed by training fully, less or can not be developed.

Another questionnaire by Ulrichs were divided under four headings.

1. Physical aptitude.
2. Psychophysical aptitudes.
3. Mental aptitudes.
4. Adaptability.

(iv) Work diaries : Well known self recording method workers record their daily activities for months and years can give a comprehensive picture of the job. It gives us systematic and detailed

date about worker. It was used by Horne & Lupton (1965).

(v) Moving Picture films : Taylor and Gilbreth used the method of job analysis. In this method record of the work progress is shown to the worker. Here is less chance of bias and subjectivism.

(vi) Use of source material : Sometimes maintenance records of the industry may be used as a source of information. It gives us idea about machines.

There are some methods under nature of job information:

(i) Easy description technique : This technique provides information about job by describing personal characteristics, which are considered necessary in the selection. This method was used by Tiffin and McCormick (1971).

(ii) Job checklist and questionnaires : By this method listed job activity of a working condition categorizes employees. They have to mention whether these activities are associated with a job or not. (Kay & Mayer, 1962).

(iii) Activity analysis : This technique has two benefits :

(a) It presents a systematic list of job activities as present in a job condition and

(b) It induces job activity in detail either by interview, observation and activity analysis.

(iv) Motion and time study : The study was developed by Gilbreth. In this method motions of a particular job is identified and developed in a scientific and economic manner to perform a job. (Photographic method is used). The job also requires a fixed time to finish the job.

(v) Critical incidents technique : It collects all problems of job definition, selection, classification and development of criteria measures. It provides checking or listing job behaviours that may be positive or negative depending upon their desirability and undesirability (Fainagan, 1954).

(vi) Group interview method : A number of employees working in particular job are interviewed simultaneously and information is gathered about job description. It requires training, ability and experience.

(vii) Technical conference method : In this method persons are appointed to collect information about work and worker. They do discussion with the job analyst and list all the characteristics of the job.

(viii) Work participation method : The analyst participate and estimates judgement engaging himself activity in the job gets direct information about the particular characteristics. This technique uses two other methods :

1. Forced choice techniques.
2. Rating system

6.2.4 Methods of worker's Analysis

There are three methods in use for vocational guidance and vocational selection and worker's analysis. These techniques are :

1. Application Bank

2. Interview and
3. Tests

1. Application Bank : By this method of data collection information is collected with the help of applicants filled application form, which consisted detailed information about education, training and experience of work of the candidate.

The use of information bank is necessary but with some precautions. There is a photograph to assess a person as a whole, as well as the writing, spelling and accuracy is also checked. Moore has given a format which is necessary for information bank :

- (i) All questions that contain information about a person should be included in a bank.
- (ii) All the characteristics and abilities must be included.
- (iii) All the questions are included in a sub-headings.
- (iv) All the questions must be in clear language and unambiguous.
- (v) It must include necessary questions, irrelevant and unimportant questions must be avoided. The information bank has some merits and limitations given below :

Merits :

1. Personal information about different aspects concerned is gathered.
2. Applicants future ability can also be assessed.
3. It is first step of interview.
4. It also gives hereditary characteristics, are also gathered.
5. Language and writing are also assessed.
6. It gives idea about a person that whether he is suitable for this job or not.

Limitations :

1. People exaggerate these abilities and achievements.
2. Application bank will induce some bias and prejudice.
3. Sometimes photograph also influence the employer.
4. Some scientists believe that it is only a formality.

6.2.5 Interviews and Tests (Their uses and limitations)

Interviews :

Interview is a very old and popular technique of gathering information about a person during the time of selection. Apart from other information interviewers get an idea about whole personality of interviewee. Blum & Naylor (1968) suggest following objectives of an interview :

1. To evaluate candidate for hiring, promotion or transfer. It refers to, "selection and placement of interview".
2. To obtain information from the concerning attitude are called "attitude interview". It will determine his interest in the job.
3. To help the employees problems in a job are known as "Counselling interview".

4. Evaluation type interview is known as "assessment or stress interviews". Here the interviewer purposefully creates a strainful situation, "Interview is an organised method in which a person enters into the life of another person through imagination" (P.S.Young).

The above illustration reveals that interview is a method of data collection through which a person gets face to face communication with interviewer. It is a very popular method of getting information about personal and social situation.

Merits :

1. Interview is the most widely used method of knowing the aptitudes of the worker.
2. Many favourable points of the candidates are known.
3. It also helps to assess the person from gestures and postures.
4. Past experience of a person is revealed.
5. Application of bank information is validated through interview.

Limitations :

1. The reliability and validity of interview is questioned.
2. The facts collected depends upon characteristics and training of the interviewer.
3. If the interviewer wants to know about the qualification, it should be unstructured.
4. Some interviewer feels hesitated in the interview condition.
5. Bias, prejudice and impressions are drawback of this method.
6. If it can be supplemented with some method it would be more beneficial.

Tests :

For vocational selection different types of tests are used. It has got increasing interest of psychologists. There are a number of definitions of test that has been given by different psychologists.

A test is a systematic procedure which is generally used to compare the psychological characteristics of two or more persons. In industry or business the most frequently used test is intelligence test, personality test, interest test, vision test, mechanical test and verbal test etc.

Some tests are verbal and some are non-verbal according to the nature of items. Some are individual and some are group tests according to administration. In an Industry we generally use :

1. Trade test.
2. Psychological test

A Trade test is applicable when technical jobs are required e.g. a stenographer can be checked with speed and dedication of typing. It tests the capability by trade test which is offered to them.

The Psychological test is used to differentiate each other on a certain characteristics. Some important tests are used :

(i) **Aptitude test and achievement test** : Aptitude test measures the hidden potentialities of a person, while achievement test measures pre-learned behaviour.

(ii) Intelligence test : It measures general ability to grasp and understand subjects.

(iii) Interest : inventories are used to determine preference of the subject. It is concerned with liking and disliking.

(iv) Specific ability test : In general ability test, mechanical ability test, motor coordination test, visual discrimination test, paper form board test, Finger dextering test, the nut and bolt test the strength test, auditory test, reaction time test and personality tests are used to select workers for particular job.

(v) Temperament and character test : It is used to know, punctuality, honesty, truthfulness, social adaptability and emotional stability etc.

(vi) Creating tests : are used for knowing creativity of high officials.

(vii) Judgement test : used when there is judiciary problem is available.

(viii) Dexterity test : used to discover the ability to use different parts of body in co-ordinated manner.

(ix) Projective test : are used to know some of the personality traits with the help of unambiguous stimulus.

Thus, there are a variety of psychological tests used to assess various fields of life.

Merits :

1. It has high reliability because test is standardized.
2. Validity of psychological tests are also higher because of proportion of a test for a particular field.
3. Psychological tests are adequate because they are standardised.
4. Tests have high predictability because of similarity in scoring and administration.
5. Comparability : It is easy to compare two or more persons on the basis of tests.
6. Easy interpretation because of norms.
7. Tests are economical.
8. Test are highly usable in any condition.

Limitations :

There is chance of bias if not used properly. The social desirability factor, response bias facts and extreme response tendency operates behind the validity of personality in question tests. The data obtained by administering personality tests would be supplemented by these techniques also like interview.

6.2.6 Conclusion

We conclude the discussion on the basis of the following points. That vocational selection is one of the essential part of an industry. Vocational guidance and selection both are synonyms but there are certain differences. The area of selection is smaller than guidance. Guidance is given prior to selection. It is given to a person but selection is for a job. There are some old as well as

new method of selection.

Further job analysis classified with proper method and uses various methods and uses has been illustrated of job analysis.

Finally, method of worker's analysis has been explained on the basis of Application, Bank, Interview and psychological tests. These facts were evaluated for their merits and limitations.

6.3 Summary

The above discussion can be summarised on the basis of points given below :

1. The nature of vocational selection, why is selection necessary, how is selection done with the help of various method.
2. Proper selection will lead to increase job satisfaction and productivity.
3. Vocational guidance can help a person for a particular type of selection. Guidance is always done prior to selection.
4. Job analysis concept was discussed with its nature, uses and method. There are a number of uses which has been explained.
5. Methods used for workers analysis discussed in detail, are Application bank, interview and test.
6. Finally, interview, tests, their merits and limitations are discussed.

6.4 Key words

- (i) Graphology (ii) Vocational guidance (iii) Physiognomy (iv) Vocational selection
(v) Adequacy (vi) Application bank (vii) Questionnaire (viii) Work diaries
(ix) Activity analysis (x) Technical conference (xi) Job analysis (xii) Interviews
(xiii) Psychological tests.

6.5 Questions for Exercise

(a) Objective Questions

1. State which is not a method of workers analysis.
(a) Interview
(b) Tests
(c) Observation
(d) Application blank
Answer — (c)
2. Interview is a source of
(a) Observing
(b) Data collection

(c) Viewing

(d) Test

Answer — (b)

(b) Short Answer Type Questions

1. What is vocational selection? Discuss.
For Answer See 6.2.1
2. Distinguish between vocational guidance and vocational selection.
For Answer See 6.2.1 & 6.2.2

(c) Long Answer Type Questions

1. What is job analysis? What are its methods ?
2. Explain the nature of interview as a workers analysis.
3. What is a psychological test? What are its merits and limitations?

6.6 Suggested Readings

1. Blum and Naylor— Industrial Psychological
2. Schultz — Industrial Psychology
3. Tiffin — Industrial Psychology



Nature of Clinical Psychology**Lesson Structure**

- 7.0 Objective**
- 7.1 Introduction**
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 - 7.2.1 Definition of Clinical Psychology**
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7.0 Objective

The objective of this lesson is to make the learners fully acquaint the students with the nature of Clinical Psychology. To understand the nature fully, we have to consider all the aspects related to the nature of clinical background, distinction between clinical and abnormal psychology and present status of clinical Psychology.

To assimilate the whole discussion, we shall provide a summary of the lesson, key words used in this lesson and finally understanding of the whole lesson can be tested by different types of questions (objective, short and long). To make the lesson more understandable some books have been suggested for further readings.