

TRAINING FOR SKILL

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What is Skill ?

If you look at a chair and admire it, what is it about that chair which you admire? It is really the skill of the craftsman who made it. He took the wood as it came from the trees and fashioned it so that eventually it caught your fancy. The skill which the craftsman had did not come to him when he was born. Naturally he had to be trained to do certain jobs. In other words, skill, not only for the carpenter, but for any other vocation, is really the formation of certain habits so that the job is done in the most economical manner, both as regards the use of material as well as the time taken to do it. The whole concept of training for skill is, therefore, based on this principle. The aim in this training is to give to the student the knowledge which is required to do the job, the habits which have to be formed to do it in the best possible way and perhaps equally important, the attitude which is required so that the final product is economical to buy.

Importance of Skill

Throughout the history of the development of human society, skill has played a most important part. In some countries, this was recognised quite early whereas in some others, it has taken much longer. It is those countries who realised the importance of the three aspects of the training for skill who developed much more rapidly than others. Therefore, one can say that today the main difference between the so-called developed countries and those who are not so developed is basically the difference in the skills possessed by their peoples. This applies not only to the levels of the skill but equally to the number of skilled persons available in the diversity of occupations which are necessary to any modern society. In our country, the importance of the skilled worker has been realised today. In the context of the new situations which develop from time to time, the importance of the skilled worker is bound to grow. The defence of a country under modern conditions demands a very wide range of equipment and material. It is, therefore,

essential for us to train skilled workers in all the skills which are required not only for the manufacture of such equipments as are in use today but, even more important, for their development in the context of growing improvements in technology. The training of skilled workers has, therefore, to take into account the changing social and industrial conditions. Development of skills has become even more important and urgent in the field of agriculture.

Perpetuation and Development of Skill

It has always been the desire of every human society to leave something to its posterity. Although this has been assumed to be the perpetuation of wealth, in actual fact, it really means the perpetuation of skill because the development of the wealth of any society in its broadest sense is intimately linked with the perpetuation of development of the skills of that society. It must, therefore, be our endeavour not only to train our people in the existing skills but to think in terms of new skills which would be required from time to time. It is equally important that existing workers who have certain skills should also be given further training to develop and improve their existing skills. As technology advances, new skills come in. Therefore, a certain amount of retraining also is necessary to meet the new demand made by industry.

The needs of specialized skills in agriculture and industry of this fastly developing country will not be fully or even partly met, unless the system of general education provides some work experience right from the primary stage. Fortunately, Basic education propounded by the Father of the Nation came to be accepted as the national pattern of education at the elementary stage soon after independence. Its most essential feature is productive activity—hand work or craft—as well as its correlation with the curriculum. A large number of primary schools in the country has by now been oriented towards the Basic pattern, thus providing a sound basis for creating desirable habits and attitudes in the children. In this connection a few other significant programmes followed by the Union Government through the years of independence deserve special mention.

At the post-primary stage, a scheme of setting up pre-vocational training centres is being implemented since August, 1963 in collaboration with some UN agencies, namely, UNICEF, ILO, and UNESCO. The centres are being set up in semi-urban or rural areas for such children in the age-group 11—14 as discontinue their studies after primary stage for economic reasons or lack of aptitude, or as idle away their time for want of proper avenues. They provide training courses, full-time or part-time, comprising general education and vocational training; the latter includes basic skills for industrial operations as well as methods and techniques for increased agricultural production. About 60 such centres are at present functioning in the country.

At the secondary stage, multipurpose schools, introduced in the country following the recommendations of the Mudaliar Commission on Secondary Education of 1952, provide craft as one of the core subjects, and technical subjects form a significant stream among other diversified courses on humanities, science, agriculture, commerce, home science and fine arts. At present, 3,873 multipurpose schools are functioning in the country.

The introduction of the junior technical schools has added a new dimension in the training of skill at the secondary stage. These schools seek to divert boys of 14 years from academic type of education to one which is designed to train them in different occupations with technical bias. The product of these institutions does not make artisans or craftsmen of the traditional type but skilled workers with education and with a capacity to apply basic engineering principles to their work. The courses of studies are spread over 3 years and include engineering studies, workshop training etc. besides humanities and general science. The trades included are turning, machining, fitting, smithy, welding, sheet-metal work, pattern making and moulding. The emphasis given to skill in these schools is borne out by the fact that 55% of the total course is devoted to workshop training. This ensures firm foundation for the development of a student as a good skilled worker.

But the measures thus far adopted are only experimental and touch the fringe of the problem. It is most reassuring that

the Report of the Education Commission under the chairmanship of Dr. D. S. Kothari, recently submitted to the Government, makes comprehensive recommendations, among others, on the introduction of work experience as an integral part of the entire educational system. The Commission has rightly stated that the essential principles of Basic education are so important that they should guide and shape the educational system at all levels. According to the Commission, "work experience should be forward-looking in keeping with the character of a new social order. It will take the form of simple handwork in the lower primary classes and of craft in the upper primary classes. At the lower secondary stage, it will be in the form of workshop training and at the higher secondary stage, work experience will be provided in the school workshop, farm or commercial and industrial establishments." The new educational structure recommended by the Commission includes a higher secondary stage of two years of general education or one to three years of vocational education. For vocationalisation of secondary education, the Commission has also recommended that 20 per cent. of the total enrolment at lower secondary stage and 50 per cent. of that at the higher secondary stage should be covered by such courses. A variety of part-time and full-time facilities in vocational education should be provided for students who will step off from general stream of education at two points, namely at the end of class VII (or VIII) and class X. It is to be hoped that these essential steps will be introduced universally before long. Meanwhile, the need for specialised training in skill for students of secondary stage is being met to a significant extent by the courses offered at the industrial training institutes under the auspices of the Ministry of Labour and Employment.

System of Training for Skill in India—Historical Development from the Second World War Todate

In India, the Ministry of Labour and Employment has been made responsible for the training of skilled workers. The training programmes of the Ministry of Labour and Employment commenced in 1941 when there was an acute shortage of trained

persons required for war production. They were primarily intended only for that purpose. Immediately after the war, these training centres were converted and used for the training of ex-servicemen. In 1950, the scheme was thrown open for the training of adult civilian personnel. There has been a rapid development in the training facilities offered since then. At the beginning of the First Five Year Plan, there were 63 institutes with a total training facilities for 9,994 people. At the end of the First Plan, there were 59 institutes with a capacity of 10,534. By the end of the Second Plan, the number of institutes had gone up to 163 and the training facilities had been increased to 42,685. At the end of the Third Plan, the number of institutes will be 344 and the total training facilities will be for just over one lakh people. The training is imparted in what are known as the Industrial Training Institutes which are under the administrative control of the State Governments. The policy as regards the training programme *i.e.*, the pattern of staff, the syllabi and standards, list of equipments and the like are decided upon by the Central Government in consultation with the National Council for Training in Vocational Trades. This Council is composed of representatives of the Central and State Governments, representatives of industry both in the public and private sectors, representatives of labour, representatives from learned institutions as well as a few persons who have been nominated by virtue of their experience of industry and labour. It advises the Government of India on all aspects of vocational training. It also has its counterparts in the States which are known as the State Councils for Training in Vocational Trades. Training is at present given in 29 engineering trades and 22 non-engineering trades. A list of these trades is enclosed at Appendix 'A'. In the case of engineering trades, the duration of training is 18 months followed by in-plant training for a period of 6 months. In the case of all non-engineering trades, the duration of training is one year. Examinations of pupils both in engineering as well as non-engineering trades are conducted on behalf of the National Council for Training in Vocational Trades and the successful pupils are awarded National Trade Certificates on behalf of that Council. (In the case of engineering trades, such certificates are awarded after the completion of the in-plant training period.)

Methods of Training for Skill

There is a wide range in the requirements of skills in the various industries. Broadly, the workers may be classified as follows :

- (a) Unskilled,
- (b) Workers requiring a very narrow range of skill (These are often called 'operatives'),
- (c) Workers requiring a range of skills wider than that of the operatives but not as much as required of a fully skilled worker—often called “semi-skilled” or “less-skilled workers”,
- (d) Skilled workers who should have all the variety of skills of that trade, and finally
- (e) Highly skilled workers who may be required in places like the tool room etc. where the standard of accuracy and finish is of a very high order.

There are various methods for the training of such workers. These will now be considered. As unskilled workers do not need any skill, they will not be considered any further,

Operatives.—As mentioned previously, such workers are mostly employed on jobs of a purely repetitive nature. The operations of this type are manifold but the skills required for carrying out such operations can be taught in a short period, whilst the worker is actually doing the job. Such workers are, therefore, mostly given training on the job.

Training of Less-skilled and Skilled Workers.—There are mainly 3 methods of training such workers:

- (a) Institutional
- (b) Apprenticeship
- (c) A combination of institutional as well as apprenticeship training.

We shall now consider the relative advantages and disadvantages of each of these methods.

Institutional.—The main advantage of the institutional method of training is that the training programmes can be fully controlled and it is, therefore, possible to develop the skills progressively. However, this method has certain disadvantages. It is much more expensive to run and besides the full range of conditions required to carry out the jobs under industrial environments cannot be fully stimulated in an institution. The pupil does not, therefore, get used to the rhythm as well as the moods of industrial production.

Apprenticeship.—This is perhaps the best method of training skilled workers, provided the persons concerned are fully conversant and alive to the control and regulation of such training programme. As compared to the institutional method, this is not so expensive. The main advantage of this system is that from the beginning, the apprentice gets used to working under industrial conditions. Under this system, however, it is essential that the apprentice is put on production work right from the beginning. Unfortunately, however, as he is not conversant with the operations and processes required of this trade, it is not always possible to put him on production work. Apart from this, the method requires that there must be a sufficiently wide base for industry before the training programme can be developed to a sizeable extent. In our country, our main bias for the training of skilled workers has had to be towards the institutional type of training because we did not possess the necessary industrial base. With the growing industrialisation of the country, such a base is now available and it was with a view to taking advantage of it that the Parliament passed the Apprentices Act in 1961. Under this Act, every industrial establishment irrespective of its size and also irrespective of whether it was in the public or the private sector, has to take a certain number of apprentices for training in the trades designated under the Act from time to time. The number of apprentices depends on the facilities available in that establishment but mainly they also depend on the number of workers other than unskilled in the

designated trades working in that establishment. The implementation of this Act started in January, 1963 and there has been a steady increase in the number of apprentices undergoing training under the Act. A list of trades designated under the Act is at Appendix 'B'.

Combination of Apprenticeship and Institutional Training

It has been mentioned previously that an apprentice should be put on a production work right from the beginning. As however an employer would be reluctant to put him on such work if the apprentice is not able to carry out that work, it is essential to give to that apprentice a certain amount of basic training so that he can contribute the productive effort when he enters industry. Such basic training can be given in an institution. The present pattern of the training programmes under the Ministry of Labour and Employment is, therefore, based on a combination of the institutional and the apprenticeship training programme. At present, the period of basic training for the majority of trades is 6 months. As, however, this was not considered to be sufficient, it is proposed to increase the period to one year. After doing the basic training, the apprentice would serve the residuary period of training in industry and thus qualify himself to appear for the National Apprenticeship Certificate Examination held by the NCTVT.

Educational Qualifications

The new industrial techniques of today and more particularly the ones which will be required in future demand that not only should the worker know how to carry out certain operations but also why such operations are necessary. In other words, in addition to the actual manual skill which he would require during his training, he also has to have a certain amount of theoretical background, as applicable to his trade. In order that he should be able to acquire such a theoretical background, it is necessary that he should also have the requisite educational background. The extent of such an educational background would vary with different trades. During the course of his training either in an

institution or during his apprenticeship, he is given further training in such aspects as mathematics, science, trade theory as well as social studies. This last subject is important as the worker is also a citizen and he should, therefore, know the duties and the responsibilities of a citizen. The minimum educational qualifications required for training is shown against each trade at Appendix 'A'.

Part-time Training Programmes

One of the most important aspects of the training of skilled workers is the development of skills of the existing workers. This can best be done by means of part-time training programmes. The Ministry of Labour and Employment has had a scheme for such training but upto now the training given has been concentrated mainly on the theoretical aspect. It is proposed to change the pattern of the part-time training programmes in the future so that the existing worker would be given a certain amount of practical training also in order to develop his skill as well as his knowledge.

Gradation of Skills

The different types of workers, who are normally found in industries, have already been referred to in a previous paragraph. It is essential that every worker irrespective of the rung of the ladder of skills from which he starts, should be given an opportunity to progress upwards. However, this can only be done if an indication is made available, not only to himself but also to his employer, of the range and extent of skills which can be expected of workers at levels in the different trades. It would then be possible to design training programmes suitable for all types of existing workers. Action is, therefore, already in hand to lay down the standards of skills and knowledge required on the part of the workers in each grade for the more important and numerous trades. The entire training programme can then be geared to the attainment of these standards in successive stages. In order to enable a worker to acquire only that knowledge or skill of his trade which he does not possess already, and in order to enable him to progress from one existing

grade to the next one, it is proposed to organise the programme into units of 3 or 6 months. This will not entail the time of a worker being wasted over a long period of training, if he already possesses at least a portion of the skill and knowledge required of the next grade.

Quantitative Aspect

(a) Number to be Trained

It has already been stated that the training programmes should be "need-based" and indeed, so they should be. However, in a developing country like ours, it is not always possible to foresee the exact requirements in any one trade over a period of 5 years. The utmost, one can do, is to estimate the total number of skilled workers which would be required, depending on many factors, such as the anticipated rate and quantum of investment, the expected consequential growth in industrial production and the like. It is not proposed to go here into various calculations for estimating such requirements. However, suffice it to say that the Planning Commission estimated the requirements of the additional workers, during Fourth Five Year Plan, to be of the order of 1.5 million. It was recognised that all these workers would not be of the fully skilled category. However, even making allowances for this factor, the expected expansion in the training programme of the employment and training to meet even a minimum of 1 million workers would have been of the order of 2,00,000, in addition to the capacity of 1,00,000 which has been reached at the end of Third Five Year Plan. Such a 200% increased capacity would have been extremely difficult to attain, due to manifold problems such as obtaining and training the required number of instructors, obtaining the necessary equipment, constructing the required accommodation and also making available the necessary amount of land for this purpose. Taking all these factors into consideration, it was eventually decided by the Planning Commission that the expansion in the training programme would be limited to an additional capacity of 1,00,000 *i.e.*, total capacity of 2,00,000 training places by the end of Fourth Five Year Plan. It is not proposed to achieve the whole of this expansion by building new industrial

training institutes. Instead it is proposed that the expansion would be carried out in four phases:

- (i) 30,000 in the first year by the expansion of a certain proportion of the existing industrial training institutes.
- (ii) Further addition of 30,000 training places by the expansion of the remaining industrial training institutes.
- (iii) An addition of 28,000 by constructing new industrial training institutes.
- (iv) Residual expansion for the remaining 12,000 will be carried out by adding these training places as supernumeraries over the total of 1,88,000 which would be existing by the end of third year of the Fourth Five Year Plan.

(b) *Relation with Employment Potential*

As all the training programmes of the Ministry of Labour and Employment are employment-oriented, one has to ensure that any expansion which takes place, would be such that the end-products would soon be absorbed into employment. This has been done by checking the proposed increase in the training programmes of the various States against the information collected through such sources as *Employment Market Information*. We have found so far that there has been hardly any question of unemployment for a very great majority of the pupils who have passed out of any of our training programmes. If, however, we do come across any cases, where there has been unemployment over a fairly long period for the end-products of the Institutes in a particular trade, either in one State, or generally throughout the country, then corrective measures are taken to reduce such training programmes correspondingly. It may be said, however, that by and large, we have had no occasion to curtail our activities to any significant extent for more than 15 years.

(c) *Risks to be Taken for "Over-training" in terms of Numbers*

In spite of all that has been said above, the industrial and technological development of a country, particularly a developing

one, can never follow a smooth and predicated curve. At the same time it is necessary to ensure, as far as possible, that the right number of persons are available when and where they are wanted. It may even be necessary to take certain amount of risk, in the way of over-training, slightly more than our requirements, over a period, to cater for future requirements. It should be done only in those trades for which there is a near certainty that the new and growing industrial set-up will be able to absorb the excess over a period of not more than one year.

Craft Instructor Training Programme

The most important requirement for the successful implementation of any kind of craftsmen training programme is that of well-trained instructors. These instructors should not only have that adequate degree of skill which is required to train craftsmen but they must also know the correct techniques of instruction in the various skills. This fact was recognised quite early and an Institute called the Central Training Institute for Instructors was established in 1948. There has been a steady development in the craft instructors training programme since then. There are at present 7 such Institutes of which one is for women only. These Institutes are located at Calcutta, Bombay, Madras, Hyderabad, Kanpur, Ludhiana and New Delhi (for women only). Training is imparted in 21 trades, a list of which is given at Appendix 'C'. Initially, the duration of the training programme was 5½ months. This was subsequently increased to 9 months and will be further increased to one year during the Fourth Plan. A majority of the instructor-trainees in these Institutes are those who have been deputed by the State Governments. Some trainees are also deputed by industries in the public and private sectors. Some trainees are also admitted as private candidates. Apart from these, some instructor-trainees from foreign countries are also accepted under the various plans, such as, Colombo Plan, Special Commonwealth African Assistance Plan, and the like. Apart from instructor-training, the Central Training Institutes also conduct short-term courses to cater for specific requirements of industries. The durations of such short-term courses vary according to the particular requirement. The present capacity of the Central Training

Institutes for instructors is 2,380. It is proposed to increase this to 3,104 during the first year of the Fourth Five Year Plan.

Proposals for Future Development

During the Fourth Plan, it is proposed to diversify our training activities into other fields. There are already certain institutes catering to the requirements of the rural areas. It is proposed to reorganise these institutes and bring them within the purview of the NCTVT. These institutes which will be called RTIs, will give training in the following trades :

- (a) General Mechanic
- (b) Electric Fitter
- (c) Building Constructor
- (d) Blacksmithy
- (e) Carpentry

Apart from these trades, the institutes will also give training in other skills to cater to the requirements of that particular area. One other important activity which is proposed to be extended is that of part-time courses for existing industrial workers. The present part-time training scheme only gives theoretical instruction. It is the intention to introduce a certain amount of practical content into this training scheme as well so that existing industrial workers can make up the deficiencies in their existing skills as well as the requisite theoretical knowledge for the various national certificates. It is expected that this activity will gather momentum during the years to come.

Inter-dependence of Government Training Organisation and Industry for Development

It will be seen from the foregoing that there has been a considerable expansion in the training activities of this Ministry during the last few years. Such expansion could not have been possible without the assistance and generous cooperation extended by industry to the governmental organisation. Industry at all levels has given the fullest assistance in the way of preparation

of syllabi and standards, conducting trade tests and advising the Government generally on the organisation and implementation of the training programmes. On its part, the Government too has extended the maximum possible assistance to industry in the expansion of the training programmes to cater to their needs. Industry have also taken a commendable initiative in organising a number of seminars throughout the country where ideas are mutually exchanged and difficulties on both sides are sorted out.

Development of Correct Attitudes

In a programme for training for skills, it is not sufficient to give only the practical skill or theoretical knowledge which is required for a particular trade. Another equally important factor is the development of correct attitudes. In the industrial training institutes, every effort is made to stimulate industrial conditions to maximum extent possible so that when the pupil goes into industry, he does not feel completely lost but is able to adapt himself to his new industrial environments in the shortest possible time. The whole training programme is, therefore, biased to inculcate in him industrial discipline.

Contribution to Productivity made by Sound Training Programmes

There is no doubt that productivity in industry depends almost entirely on the efficiency of the training programmes. Efforts are, therefore, to be continually made to improve our training programmes by reviewing them periodically. It may be said without incurring a charge of immodesty that these training programmes have contributed considerably towards the rapid industrial expansion which is at present taking place in India.

APPENDIX 'A'

LIST OF TRADES IN WHICH TRAINING IS GIVEN IN THE INDUSTRIAL TRAINING INSTITUTES

Engineering

Name of Trade	Minimum educational standard required
1. Draughtsman (Civil)	} Matriculation or equivalent
2. Draughtsman (Mech.)	
3. Electrician	
4. Mechanic (Radio)	
5. Mechanic (Instrument)	
6. Surveyor	
7. Tool Maker	
8. Wireless Operator	
9. Blacksmith	} Preferably two standards below Matriculation
10. Carpenter	
11. Clock and Watch Repairer	
12. Electroplator	
13. Grinder	
14. Machinist	
15. Mechanic (Dom. Ref.)	
16. Mechanic (I. C. Engine)	
17. Mechanic (Motor)	
18. Mechanic (Tractor)	
19. Moulder	
20. Painter and Decorator	
21. Pattern Maker	
22. Plumber	
23. Fitter	
24. Sheetmetal Worker	
25. Turner	
26. Welder (Gas and Elect.)	
27. Die Fitter	
28. Wireman	
29. Upholstry	

Non-engineering

1. Bleaching, Dyeing and Calico Printing
 2. Book Binding
 3. Cutting and Tailoring
 4. Embroidery and Needle Work in Salma
 5. Hand-weaving of fancy furnishing fabric with cotton, wool and silk
 6. Hand Composition and Proof Reading
 7. Hand-weaving of woollen fabric (silk)
 8. Knitting with hand and machine
 9. Manufacture of footwear
 10. Manufacture of household utensils
 11. Manufacture of Sports-goods (Leather)
 12. Manufacture of Sports-goods (Wood)
 13. Manufacture of Sports-goods (Miscellaneous)
 14. Manufacture of suitcases and leather goods
 15. Preservation of fruits and vegetables including confectionary
 16. Printing Machine Operation
 17. Hand-weaving of Newar, Tape durries and carpets
 18. Stenography
 19. Cane, willow and bamboo work
 20. Weaving of silk and woollen fabrics
 21. Spinning (Garbo)
 22. Block Making
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APPENDIX 'B'

LIST OF THE TRADES DESIGNATED UNDER THE APPRENTICES ACT, 1961

1. Fitter
 2. Turner
 3. Machinist (Miller)
 4. Machinist (Grinder)
 5. Machinist (Shaper, Slotter and/or Planer)
 6. Pattern Maker
 7. Moulder
 8. Blacksmith
 9. Sheet Metal Worker
 10. Welder (Gas and Electric)
 11. Electrician
 12. Lineman
 13. Wireman
 14. Carpenter
 15. Plumber
 16. Millwright/Mechanic (Maintenance)
 17. Tool and Die Maker
 18. Instrument Mechanic
 19. Refrigeration and Air-conditioning Mechanic
 20. Mechanic (Motor Vehicle)
 21. Mechanic (Diesel)
 22. Mechanic (Tractor)
 23. Mechanic (Earth Moving Machinery)
 24. Draughtsman (Civil)
 25. Draughtsman (Mech.)
 26. Surveyor
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APPENDIX 'C'

LIST OF TRADES IN WHICH TRAINING IS GIVEN IN THE CENTRAL TRAINING INSTITUTES FOR INSTRUCTORS

Engineering

1. Blacksmithy
2. Draughtsman (Civil)
3. Draughtsman (Mech.)
4. Electrician
5. Fitter
6. Grinder
7. Mechanic (Instrument)
8. Machinist
9. Mechanic (Motor)
10. Moulder
11. Sheet Metal Worker
12. Turner
13. Welder
14. Carpenter
15. Pattern Maker
16. Wireman
17. Millwright

Non-engineering

18. Hand-weaving of Fancy Fabrics
19. Cutting and Tailoring
20. Manufacture of Leather Goods
21. Embroidery and Needle Work

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