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ABSTRACT

In discussing a method for assessing training needs, this paper deals with various phases of training and points out the importance of outside specialists, the recording of information, and the use of alternative methods. Then five case studies are presented, illustrating each of the industrial groups within the Board's scope: extractives, cement and cement products, bricks and refractories, pottery, and glass. (NL)

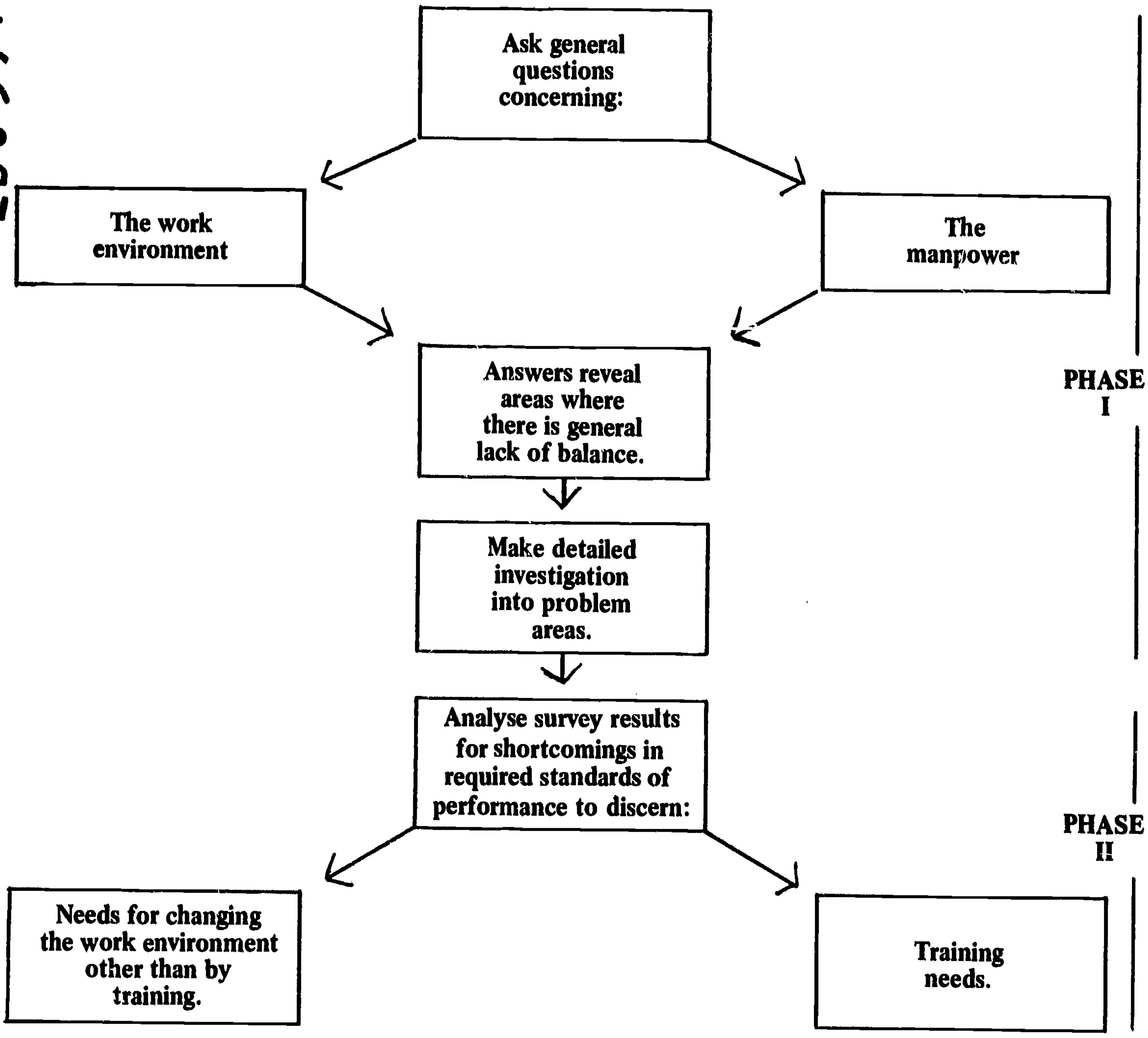
Ceramics
Glass and
Mineral Products
Industry
Training Board

Information Paper no. 2

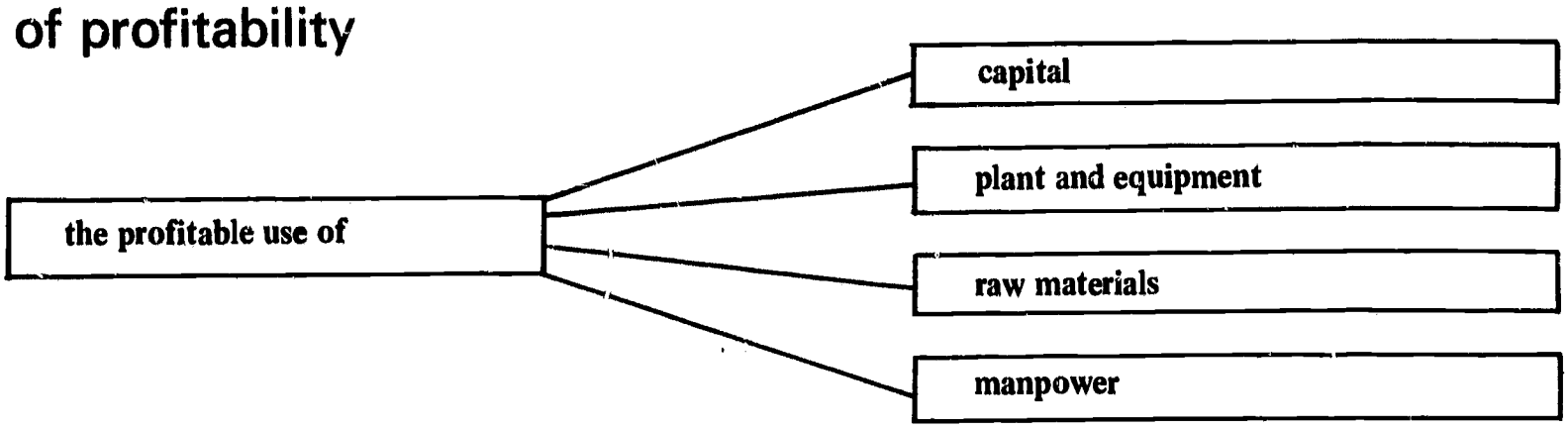
How to assess your training needs

This information paper is intended to assist firms in their approach to the problem of assessing their training needs. It is illustrated by an example from each of the five industrial groups within the Board's scope.

The assessment process may be illustrated by the following summary chart.



The success of a company is measured in terms of profitability



Planned training

Effective training of the persons employed by a company is one of the best ways of improving the profitable use of manpower.

Training, then, is a basic need for the efficient and profitable running of a company. But it must be the right training. It must be based on an assessment of training needs. It is useless to say: 'Here's a new course—who can we send on it?' This might or might not lead to an improvement in a small area—but its value would be minimal unless it formed part of a planned whole. It could involve frustration for the individual—in being given a tool or becoming practised in a skill with no scope later for its use—and a waste of money for the company.

The right approach should be a planned, objective assessment of the training needs of the company; an examination of existing manpower to see whether it is adequate or if there is a recruitment need; and then the question 'which are the best training courses and techniques for my particular needs?'

Sources of help

Some companies may feel that they would prefer to have outside help in the approach to the assessment of their training needs. There are various possible sources for this kind of assistance and the Board's training advisers will be glad to give guidance in selecting the best one for the particular purpose.

What are training needs?

There may be many situations within the company in which it is not achieving the targets it had hoped. Some of these may result from factors which are beyond management's control but many of them are associated with factors which can be identified as being a function of management. Training needs are those which arise through insufficiency of employees with adequate potential, or ineffective use of the knowledge and skill of existing employees.

The meeting of training needs produces a situation in which **the right people are employed in the right numbers at the right time:** right employees being those qualified by skill and experience; right numbers being those which are adequate for the firm's needs; and the right time being when needed to fulfil a predetermined production schedule.

How to go about it

The crux of the issue

The responsibility for training lies inescapably with top management. Top management alone have the authority and the means to promote understanding of its purpose throughout the organisation; to obtain the co-operation of line managers and supervisors; to establish close liaison between production and staff departments (where these latter exist); to select personnel of adequate calibre to carry out the exercise, with the time to do it; to recognise and make use of any appropriate outside specialist services; to ensure that there are adequate records and means of statistical analysis; and to assess the actual costs involved.

Consultation and communication

It is essential to keep everyone in the company informed about the assessment process from a very early stage. This will go a long way towards establishing the right attitude towards it; and will lay a firm foundation for the eventual acceptance of line responsibility for systematic training.

Documentation

Full documentation is essential throughout the assessment process. All information should be carefully and immediately recorded.

First phase of the assessment

Factors in the balance

The summary chart at the beginning of this paper makes it clear that, in the first phase, a series of fairly broad questions should be raised concerning the present situation and the predicted future of:

the **work environment**: the aims and objectives of the company; its policies; the effectiveness of its major work areas (finance, production, marketing and sales, personnel, administration); its location, plant, techniques and products.

the **manpower** and its ability to meet this present situation and future plans.

These factors must be balanced. Discrepancies between the existing situation and defined objectives will indicate where action is required to effect change. Changes may be required in work methods; or to ensure that the right number of people with the right skill, knowledge or attitudes are available to meet present or future circumstances. The problem may be one of management organisation or administration, e.g. departmental organisation, discipline job methods. Or it may be a problem for which systematic training is the right answer.

At this stage we might ask the following questions about the organisation of the firm.

General

What are its overall aims and objectives? Are changes anticipated?
What are its total resources and market potential?
Is the organisation good enough to achieve its objectives?
Is it really profitable?
How can it be improved?
What changes are likely to occur in its ownership, in rationalisation of its products, or its markets?

Finance

Are the firm's financial resources used as effectively as possible?
Is adequate provision made for deployment of capital in terms of investment in research, development and production?
Is budgeting effective?
Is cost forecasting and cost control effective?
Am I qualified to answer these questions?

Production

Is there any difficulty in maintaining consistency and/or quality of output?

Have adequate precautions been taken to provide alternative production capacity?

Marketing and sales

What is the record of sales activity?

Are sales and production geared together satisfactorily?

Is selling carried out most effectively and economically?

Is the coverage of markets adequate?

What are the complaints levelled against sales staff? (e.g. promptness of delivery, failure to reach specification, inability to meet competition.)

Plant and machinery

How good is it and can it be improved?

Can it be run, controlled or maintained better?

Can this be done by improving the quality of the supervisor, operative or fitter?

Or is capital investment the only answer?

What future changes are likely i.e. developments requiring new machines?

Are new standards likely to be harder to maintain?

Are completely new systems of control likely to take over from the older manual operator?

And does this mean a much higher quality of machine minder or maintenance specialist?

The product

Are there too many sub-standard items that have to be discarded?

Are there many customer complaints?

Is the internal inspection too lax or too stringent or inconsistent?

What sort of competition will there be in the future?

Should the firm withdraw from a particular field or specialise in it?

Is it good enough; or is it above needed specifications, involving excessive cost?

Can it be improved or made at lower cost?

Is pricing competitive?

Are sizes likely to change to metric?

Are new products likely or possible?

Can the old traditional line be replaced by a more efficient and economical new one?

Is there a high degree of waste or breakage?

The manpower

How good are they as a team and individually?

How have they been trained and developed to date?

Could their efficiency and performance be improved?

Are they versatile and able to tackle more than one job?

Are more needed in any particular sector?

Are there a number approaching retirement age?

Is there a recruitment problem? Are young people being attracted?

Is there job satisfaction?

Is there a labour turnover problem?

Are the right men doing the right jobs?

Are managers, supervisors and instuctors trained to train others?

How does the area where the factory is situated affect the labour position?

Is there ready availability of labour with all the necessary skills and educational requirements?

Is there a shortage in any category?

Are there other influences in the district which could attract people away from the firm?

Is it a development area or is it an area into which new factories are already coming?

Will this cause a labour shortage or increase the rate of labour turnover?

The first assessment

Answers to these questions may give certain broad pointers to training requirements. If changes are radical, it may be that top management needs to develop knowledge of new control techniques. Newly recruited specialists may need to be trained in the company's philosophy. Individual jobs may expand or contract and their holders should be trained to meet this situation before pressures have built up. Even if no change is envisaged, an enquiry into the pattern of personnel organisation and individual job performance may reveal areas where there is room for improvement. In many small businesses there is a need for appreciation of production and methods control. Value analysis and costing techniques may sound formidable to the managing director of a small company: an elementary knowledge of exactly this subject might be the factor which will keep his business going.

Second phase of the assessment

The first phase of the assessment process, which will have helped to identify general problem areas, should be followed by a more detailed assessment of training needs. This second stage will establish clearly who needs to be trained; in what order of priority; how many need to be trained in each employee category; and to what standards of performance.

Outside specialists

It may be profitable to consider seriously whether to employ an outside specialist for this more detailed work.

Recording of information

Recording of information becomes particularly important at this stage. Most managers could express an opinion about the efficiency of a machine, of a service, or of a man; but unless these opinions are recorded, it is difficult to relate one to the other and reach a solution which does not create yet another problem. The manager's knowledge needs to be ordered and made clear enough to form the basis of a more concrete plan. Writing it down, and then discussing it with colleagues is a simple, effective way of doing this. It will lead to the formulation of training plans for the individual, and will provide evidence against which his progress can be measured subsequently.

Alternative methods

A combination of methods is often used for this phase. Those available range from the simple note to the most sophisticated current practices. An outline of the principal methods is given below. Detailed information about the more sophisticated is available on application to the Board.

(i) Performance appraisal – a systematic approach to spot the gaps between existing and required job performance. This will indicate individual and group needs, and allow for the planning of tailored training programmes.

(ii) Management query – asking managers for their opinions on training priorities (a useful supplement to more objective sources of information.)

(iii) Opinion surveys–

(a) a questionnaire about the value of different training courses

(b) a questionnaire leading to an analysis of the difference between the manager's and the job holder's conception of the job.

(iv) Observation – either of a general nature (accident hazards, communication, poor maintenance, etc.); or more specific (a particular work category or critical area of activity.)

(v) Termination interviews – for analysis of reasons for turnover.

(vi) Analysis of personnel changes – to anticipate changes in production, machines, etc.

(vii) Analysis of personnel statistics – close study of labour turnover, age distribution, absenteeism, grievances, accidents.

(viii) Analysis of supervisory problems.

(ix) Analysis of in-plant production costs.

Completing the picture

By the end of this second stage, a fairly complete picture of the distribution of the labour force should have been built up. Shown on an organisation chart in terms of job category (management, supervisory, technician, etc.), of age, and of sex, this will throw up natural lines of promotion; and will also show areas where recruitment is likely to become necessary. This should be studied, together with the following additional data:

a departmental analysis of labour turnover to plan recruitment and highlight problem areas

forward information about production plans

assessment of present operative performance to find out if existing training arrangements are resulting in the desired standard within the desired period of time

an analysis of product quality, of wastage and customer complaints.

Third phase of the assessment

The first phase of the assessment process was diagnostic: it revealed the problems. The second phase was analytical: it identified the areas of greater importance. The third phase consists of taking action on the information gained and will lead to a pattern for the company's immediate and future training policy. This, in turn, will help a company to decide whether or not it can carry out its training policy without outside help, where the immediate priorities for action lie, and what facilities should be created for meeting, controlling and assisting this action.

Case studies

The following case studies illustrate how training needs have been assessed in one company from each of the industrial groups covered by the Board: extractives, cement and cement products, bricks and refractories, pottery and glass. It will be seen that, according to the needs and size of the company, the effective approach can range from extremely simple to highly sophisticated.

A small quarry

(14 employees)

Situation

Crises in the Carrick Quarry of McLeod's Lime Stone Co. Ltd. were certainly not unknown to John Fletcher, the Managing Director of this family company employing some 40 men in two quarries. The immediate future looked particularly ominous. In September, the new crushing and screening plant, which was to increase output to meet the growing demand for Carrick Lime Stone aggregate and motorway material, would be commissioned and there was nobody trained to operate it. Old Armstrong had decided he would finish when the old plant finished. Young Baker—one of the three dumper drivers—had left for work in the town. And Christie, the one shotfirer, had been told by his doctor that he should not work outside next winter. The departure of these three would represent a loss of 25% of the Carrick Quarry staff.

Details of Carrick

The total staff of the quarry including Josh Oldroyd, the foreman, was 14. Plant included two excavators (face shovel—rigged), three dumpers, one wheeled shovel, crushing and screening plant, two drilling rigs and one tipper.

Approach to the problem

Fletcher had in Josh Oldroyd a most competent foreman for the Carrick quarry. In his time, Oldroyd had worked in all parts of the quarry and was an excellent supervisor. He had recently attended TWI Job Methods and Job Instuction courses. On his return, Fletcher had instructed him to complete by early June a training survey of the individual skills of the quarry staff and the future staffing requirements of the quarry. Oldroyd's training survey is shown in Table A.

Manager's appreciation of the training survey

From Oldroyd's survey, Fletcher knew that he had to find 2 driller/shot-firers, 1 crusher attendant, 1 shovel driver and 1 dumper driver.

He knew that he could take Davis, a young shovel driver, from Whitecraig's, the Company's other quarry, to fill the vacancy but he would have to recruit a man to drive a dumper to replace Baker. He considered that he could train Robinson (previously the shovel driver) as a driller/shotfirer and possibly Cox (the drop ball driver) later as a standby. He should be able to make a crusher operator of Christie. He did not accept Oldroyd's proposals to train another weighbridge-man/clerk: he would cover from Whitecraig's Quarry when necessary.

Implementation of the plan

Oldroyd's plan to meet Carrick's September 'crisis' was approved by Fletcher and is shown in Table B. This plan shows how he met his immediate demand and also how he achieved his ideal capacity target to meet normal quarry running.

Fletcher decided that he would instruct Oldroyd to keep his training survey chart constantly under review. This would ensure that without any additional office work, planned staff training in the future might be implemented to avoid similar crises.

Table A

SURVEY
SHOWING SKILLS OF QUARRY STAFF
CARRICK QUARRY – J. OLDROYD FOREMAN

	Name	Age	Notes on Individual including service	Skill								
				Driller/ Shotfirer	Excavator Operator	Dropball Operator	Dumper Driver	Shovel Driver	Crusher Attendant	Fitter	Weigh bridge Clerk	NOTES
1	A. CARTER	58	Excavator Operator 31 years' service, ageing but still very reliable.		√	√						
2	B. DAVIS	31	Excavator Operator 5 years' service, efficient but requires to be encouraged.		√	√						
3	C. COX	46	Dropball Operator 20 years' service. Most reliable, intelligent, willing to learn, keen on quarry work.	T	√	√						
4	D. BAKER	22	Dumper Driver 2 years' service.				√					Left employment in June.
5	E. WEBSTER	32	Dumper Driver 8 years' service, reliable hard worker.				√	√				Can also operate shovel if required.
6	R. WHITE	33	Dumper Driver 1 year service, has to be constantly watched.				√					
7	F. ROBINSON	37	Shovel Driver 15 years' service, first class intelligent hard worker, always eager to learn, tough and reliable, has some knowledge of explosives.	T			√O	√O				O Robinson is to be trained as the No. 1 driller/shotfirer and therefore in the future his other skills cannot be practically included for manning purposes.
8	G. JONES	49	Crusher Attendant 7 years' service, drifted into quarrying. No initiative, no interest in learning.						√			
9	H. ARMSTRONG	63	Crusher Attendant 43 years' service, excellent worker, is assistant to Foreman.						√†			† Armstrong retires in OCTOBER at his own request.
10	J. CHRISTIE	35	Driller/Shotfirer 11 years' service, steady and reliable, suffers from ill-health.	√*					T			* Christie's job to be changed by October/November (ill-health)
11	M. BROWN	48	Maintenance Fitter 15 years' service, first class fitter can turn his hand to any quarry plant.							√		
12	S. WATSON	29	Weighbridgeman/Clerk 4 years' service, drifted into quarrying from cotton industry where he was a clerk.								√	
13	J. WATKINS	43	Vehicle Driver 9 years' service, responsible and reliable, maintains his vehicle well, but has no other interests.				√					Can also drive dumper if required
PRESENT CAPACITY				1*	3	3	4O	2O	2†	1	1	
IDEAL CAPACITY to cover sickness, holidays				2	3	1·	4	2	2	1	2	
DEFICIENCY				2	–	–	1	1	1	–	1	SIGNED J. OLDROYD 9th JUNE, 1967
LEGEND T = To be trained in the skills shown √ = Individual possesses skill												

Table B

TRAINING PLAN TO ACHIEVE IDEAL CAPACITY
CARRICK QUARRY

JOB	Number to be trained	Individuals to be trained	Priority of training	In-company training			External training Type of course	NOTES/INSTRUCTIONS
				Method	Trainer	Supervisor		
Driller/Shotfirer	2	(7) Robinson (3) Cox	Immediate Long term	On the job with supervised practice 3 months "	Christie "	Oldroyd "	Day release course over 3 months at tech. coll. if available	Day release will be in addition to in-company training. In-company training will be with the aid of job breakdown sheets prepared by Oldroyd (TWI trained) Note: Oldroyd to supervise all blasting operations for 6 months.
Crusher Attendant	1	(10) Christie	Short term complete by October	On the job with supervised practice 4 weeks	Armstrong	Oldroyd	—	In-company training will be with the aid of job breakdown sheets prepared by Oldroyd.
Shovel Driver	1	(—) Davies moved from Whitecraig's Quarry	Immediate	On the job induction 2 days	Robinson	Oldroyd		Had Davies not been a trained shovel driver, he would have been sent on a 2 weeks course at the CITB'S Centre at Bircham Newton.
Dumper Driver	1	(—) New employee	Immediate	On the job induction 2 days On the job practical training 1 week	Webster	Oldroyd		New employee from Employment Exchange to be taken on as an experienced driver.

A small concrete company

(22 employees)

A small company in the Cement and Cement Products Group was aware that it had problems that could be partly solved by some retraining. It was not sure, however, how to go about this, and asked for the assistance of a training adviser from the Board.

This company presented a typical situation with only 22 employees in total, a very low labour turnover rate, due to its isolated and rural situation, and a limited but successful product range. Its problems were largely organisational.

The company was concerned with the production of certain repetitive precast concrete elements, mostly of a small size. The factory had grown outwards from its original starting point and was now rather cramped, although there was room for development on company-owned land immediately behind the present building. A new batching plant was in the final stages of installation. This would provide all the concrete for the works and a certain excess which the company intended to sell as ready-mixed concrete. With the completion of this plant, the company intended to re-plan the layout of the casting shop around the centralised mixing unit.

The Managing Director was responsible for sales and overall control, but also very involved in new product development. It was through his involvement in this latter field that the company was making very definite strides. Reporting to him was a Works Manager, who was responsible for all normal production, accounting, routine sales work and ordering of materials. This man had been developed from ordinary beginnings by the company itself and was coping adequately with a remarkable work load. Beneath him was a foreman in the works, a yard man, a mixer man and casting shop operatives, with one general maintenance man. The reinforcement mesh was spot welded by two women and one carpenter/mould maker was also doing a certain amount of experimental work with fibre glass.

A tour of the works showed some immediate deficiencies. A certain amount of spill around the casting places created problems. The storage and despatch yard showed very little sign of method and was encumbered by the number of broken units left lying about. The reason given for both of these faults was that each department was on a production bonus and therefore only interested in producing units.

Approach to the problem

Applying first the questions "What are the present products and production methods? Can these be improved? What training do the staff need to meet the situation as it stands?", the following conclusions were reached:

1. **The most obvious need was for some appreciation of production methods and control.** It was recommended that the Works Manager be given a short course on this subject, to enable him to plan his normal work load and the regular day-to-day operation of the factory on a more rational basis. It was also felt that this would be very useful in the planning of the new works layout, as he would be able to produce a systematised master plan for the layout of the stock and despatch yards.

2. The criterion of what changes were envisaged in production and what new products were to be made, gave rise to the second need—due to the installation of the new batching plant. This was considerably more sophisticated than previous mixing methods and it was felt that the **batcher man would profit from attendance at the two day course at the Cement and Concrete Association's training establishment.** The new lay-out of the casting shop would require a certain amount of retraining for the present men and it was felt that this would be a good time for them to get rid of bad practices, such as "short cuts" which were contributing to the spill on the floor. The best approach to this problem was thought to be **formalisation of the operative on-the-job training** and this would be in the hands of the normal Supervisor.

3. Turning therefore to the Supervisor, it was decided that he required no more product knowledge than he had already acquired (the technical background to the operation being provided by the Works Manager, who had already acquired the City & Guilds Certificate in Concrete Technology, and the Managing Director, who had a thorough grasp of concrete practice). The training need for the Supervisor therefore was for an **appreciation of instruction techniques and improvement of general supervisory capabilities.** In order to formalise the operative training element, it was thought that he should attend the ten hour TWI course of the Department of Employment and Productivity on Job Instruction. However, during his attendance at this, it was decided that his general supervisory capabilities would be considerably enhanced if he covered all four of the basic ten hour TWI courses, including job relations, job instruction, job methods and job safety.

In producing this assessment, therefore, the company had looked at the two basic areas. **(1) The immediate need due to existing deficiencies of method and abilities of individuals; and (2) What new situations would be created by the change of plant.** Naturally the two were closely related and in devising a solution for the first, the second problem was always borne very much in mind. Because this was a small company, the Managing Director felt that the problems were so great, and the issue so urgent, that drastic action had to be taken; that this more than justified sending away key personnel for any necessary external training; and that more effective on-the-job training was essential for the efficient running of the new casting shop.

A large brick company

(more than 5,000 employees)

A large brick company with eight subsidiaries employed a firm of training consultants to conduct a survey of training needs and to make recommendations. This was carried out over a period of 23 days.

The survey was conducted by:

(1) A series of interviews throughout the company chosen on a sampling basis. These included management, engineers, supervisors, chargehands, technicians and technologists, craftsmen, apprentices at all stages, operatives from all representative occupations, personnel, safety, clerical and commercial, – all of whom were interviewed at their places of work.

(2) An examination of documents and statistics as supplied to the training board, minutes of apprenticeship committee meetings, accident records, etc.

(3) An examination of existing training as operated within the company.

(4) An examination of the grant requirements of the training board.

(5) Direct observation of some of the work that had been done within the company.

A comprehensive report was produced, for consideration by management, analysing the problems and making recommendations on craft apprenticeship, training of established craftsmen, training of operatives, management and supervisory training, training of instructors, commercial and clerical training, training of technologists and technicians, and sales training. The summary of recommendations was backed by a statistical analysis of numbers of personnel employed, by work classification and occupation and the attention of the company was drawn to the fact that its future depended to a large extent on building up skilled, competent and adaptive manpower to cater for existing and changing needs of the company.

These requirements, if left as anyone's responsibility, would become nobody's responsibility. The responsibility for training was clearly that of management (management in this context being interpreted as those having control of foremen, chargehands, etc., and so including some engineers, technologists and office management). It was a responsibility which could not be delegated. Much training and development could only be given on the job, though this did not mean that management should do the training personally. Each and every manager might arrange for training to be carried out. This, however, was unlikely to be training which was comprehensive, economic and effective – but rather haphazard help or guidance given to people working with him.

The following questions needed to be answered in detail by someone in the organisation:

1. What training should be given?

2. What was relevant?

3. When should training be given?

In order to answer these questions and to achieve the full economic and safety benefits of training, someone must:

1. Make a systematic job analysis.

2. Determine how each part of the job should be trained for.

3. Have a knowledge of the educational system, professional bodies, etc., and the part they could play in training programmes.

Company management could possibly be trained in these functions, but the amount of time involved would make this both unsound and uneconomical and would involve the manager in time spent away from his main job of managing his own department or works. It would also leave him no time to carry out his actual training responsibility which was the supervision, appraisal and coaching of his subordinates. For these reasons it was recommended that the company should appoint a training officer whose duties were closely defined.

A plan for training

The conclusions for a plan of action based on this initial survey incorporated the steps required to place training on a systematic basis, not only to meet the requirements of the industry training board, but because it would be economically sound for the company to do so. A plan of action was outlined to advance on two fronts, i.e. adjusting existing training arrangements, and instituting new training arrangements as shown below.

Training priorities

Existing training arrangements	**New training arrangements**
First-craft apprenticeship training Second-kiln burners training Third-sales training	First-instructor training Second-appointment of Training Officer Third-training of supervisors. Later on, in no order of priority: training of tradesmen's mates; training of internal vehicle operators; commercial and clerical training; management training; technological and technician training.

A pottery company

(250 employees, of whom 150 are women)

This company employed a firm of training consultants to look at their overall training needs, particularly those of production operatives. The report on the survey may be summarised as follows:

Operative training

Before the survey, the training of production operatives had been rather a haphazard affair. It was the responsibility of the departmental manager who often had to delegate this function to skilled operatives because of lack of time. The only qualification to instruct possessed by either manager or operatives was experience. The trainees soon became bored or dissatisfied with their progress, and this resulted in a high labour turnover of short-service employees.

Recruitment and selection

Recruitment and selection also were left in the hands of the departmental managers who had no knowledge of correct interviewing techniques and, because of the high labour turnover, were not so selective as they would have liked to be.

Output and quality were both affected by the labour turnover situation.

Long training

Accepted learning periods proved to be much too long. A detailed analysis of labour turnover showed a particularly high rate in four occupations: casters' spongers; slide-off lithographers; cup handlers; crankers.

Recommendations

On the basis of this information, the consultants suggested:

1. That job analysis should be introduced.

2. That a planned programme of training should be based on this analysis.

3. That the progress of trainees should be recorded.

4. That a more systematic recruitment procedure be introduced.

5. That a senior member of management should have overall responsibility for training activities.

6. That the size of the company did not warrant a full time training specialist.

7. That training should be organised on the shop floor.

8. That departmental managers would still be responsible for training in their own departments, but must be trained in the techniques of instruction.

9. That they should also be trained in selection procedures and there should be a central system for screening of applicants.

10. That an induction course for new employees be introduced.

11. That priority be given to training in the occupations where turnover was particularly high.

The survey went on to outline training schemes for some of the production operations.

Craft training

The survey showed a fairly high labour turnover in the mould-making section. A re-assessment of the selection procedures and training arrangements was therefore suggested. The company did not employ apprentices on maintenance work, so that this department had no training problems. The company did not employ sufficient craftsmen to run an apprentice training scheme. The survey suggested that a full-scale apprenticeship for packers did not appear justified, and that the approach to training in this area should be similar to that for production operatives.

Management training

Management training was required
(a) to improve performance of existing managers and develop them for greater responsibility
(b) for new managers.

It was suggested that training for existing managers would not be necessary on the technical side, as most managers were ex-production workers of skilled craft status. Training should concentrate, therefore, on the associated social and administrative skills required by a manager.

New trainee managers would be young grammar school leavers of 'A' level standard, who should spend a period in each production department doing operative tasks. They would then specialise in one department.

Office training

Office training would be of two types:
(a) procedure training for junior staff
(b) training a potential replacement for senior staff.

It was not considered worth while to formulate an elaborate training scheme for junior staff. Personnel with the required basic skills should be recruited and then trained in company procedures by the Office Manager.

Potential replacements for senior staff should be found by recruiting grammar or good secondary modern school leavers, planning a training programme covering practical work in all office departments, arranging day-release classes at a Technical College for the Certificate in Office Studies.

A group of glass manufacturers

A group of glass manufacturers had already retained a firm of training consultants to produce a basic training manual for a range of glass blowing and making operations and to run a one week course on systematic instructional techniques for newly appointed instructors. They then asked for a survey of training needs for each company. The first part of this survey was carried out by means of a statistical questionnaire, which was completed by the company for the consultants. Analysis of information obtained from this showed:

Age distribution

The distribution of employees by age was generally satisfactory, with the exception of 3 blowers in the 56 to 60 years range and the instructor past normal retirement age. No immediate problem was posed by the 3 blowers, but consideration needed to be given to the instructor.

There was a problem of continuity at the young end of the blowers' scale. There were no blowers under the age of 30 years; and three extra blowers were needed to complete the current complement. It was suggested therefore that rather than recruit possibly older trained blowers, these vacancies should be filled by promoting and training ball blowers in the age group 21 to 30 years.

Labour turnover

The general labour turnover figure of 125% was very high and, treated in isolation, somewhat misleading. The figures analysed on an occupational basis showed that the turnover of takers in (well over 200%) accounted, in the main, for this high overall figure. The figures obtained for pressers and turners out were fairly high but owing to the small numbers employed in each category, and the tendency towards a seasonal fluctuation of the kind of labour in the glass industry, these were not considered serious.

Length of service of leavers

Analysis of length of service of leavers can often be a significant indication of the effect of existing training (or lack of it) on employees. Leavers in the 'up to three months' category can usually be attributed to a lack of progress, difficulties in acquiring skill, inability to earn a good wage and general job frustration, where no systematic training is given. Leavers in the second period 'four to nine months' are commonly associated with the 'plateau of learning' which occurs when an operator knows how to do a job but has not developed the skills or knack to attain the rate of working of an experienced worker. This situation commonly arises as a result of exposure training, or 'sitting by Nelly'.

The analysis showed that 50% of leavers left in the first three months of employment and 15% in the four to nine months period, indicating a problem of retention rather than recruitment.

Recruitment and selection

There was no laid down recruitment policy. New employees were obtained from the Employment Exchange, the Youth Employment Office, advertisement in the local press, and casual callers. Selection consisted of an interview with the works manager, who had no training in modern interviewing techniques. Neither job specifications nor selection tests were used, though application forms were.

There appeared to be no problem in recruiting young workers. Almost 90% of the recruits were under the age of 21. However, more than half of these left within 3 months, indicating that there was a problem of retention rather than recruitment.

Training

The method of training carried out resulted in lengthy training periods and highly variable performances both in output and quality. It also produced non-versatility. As soon as a person was capable of production on a few items, he was required to work on the production line.

Recommendations

In formulating their recommendations the consultants considered other factors in addition to the foregoing information. These are best shown in the following table:

Inherent ability Training Motivation Working conditions	Operators' performance	Job performance
Working methods Machine reliability Operations systems Procedures	Job mechanics	

Recruitment and selection

That a more systematic policy should be worked out, and comprehensive job specifications be drawn up, to help the interviewing process. Selection tests should be introduced and records of results be kept for future planning.

Induction training

Induction talks should be given to all new starters during the first week of employment, even if there was no organised training programme.

Preliminary skills exercises

Exercises in preliminary skills for the training of ball blowers and blowers should be drawn up.

Production exercises

Production exercises should be carried out by requiring the trainee to produce a set number of balls over an increasing period of time.

Expansion training for ball blowers and blowers should be considered if trainees were to become versatile. This is particularly important in the case of blowers, where a tremendous range of articles are produced. The method of instruction required improvement and, in line with this, a modified training manual better suited to the company should be drawn up. Consideration should also be given to the retraining of experienced workers in an effort to eliminate variations in output, lack of versatility, and variations in quality.

Departmental training survey

Departmental supervisors may be assisted in spotting training needs by means of the Department of Employment & Productivity TWI Job Instruction course. Part of the purpose of this course is to discuss a simple working plan, an example of which follows.

In making the initial training plan consideration is given to the following factors:

(a) production commitments

(b) performance standards

(c) making the best use of each person's ability

(d) personnel changes

(e) selecting people to be trained

(f) fixing dates for completion of training

(g) covering key jobs for emergencies

(h) keeping the plan up to date.

As an example let us consider the case of Roman Bricks Limited. The chargehand in the Making Section has been forced to retire due to ill health. It has, therefore, been decided to promote Mr. B. Baker to replace him. This will involve a reshuffle of operatives and the works manager has carried out a survey of the personnel employed, their individual skills and the work done. The section was staffed by the following:

A. Archer – Chargehand. Now retired.

B. Baker – Aged 41, 10 years' service. Very reliable, able to carry out minor mechanical repairs and maintenance. Is liked and respected by his fellow workmen. Keen on instructing. At present pan controller and can do all other jobs. Make chargehand.

C. Charles – Aged 54, 30 years' service. Good, steady man. Pan-feeding is too heavy for him and wishes to transfer to less arduous task. Would like to work on cutter.

D. Dring – Aged 64, 6 years' service. Not too happy with present job (on cutter) because it is too mundane. Keen to transfer to pan and to learn mixer control. This will placate him because of the higher earnings potential.

E. Ellis – Aged 23, 6 years' service. Not too happy with present job (on cutter) because it is too mundane. Keen to transfer to pan and to learn mixer control. This will placate him because of the higher earnings potential.

F. French – Aged 16, 9 months' service. Has been reliable up to now. Big strong youth well able to cope with the heavy work of dryer-car attendant. Bright.

G. Green – Aged 15, 4 months' service. Poor attendance and time-keeping record. Not very bright. Will need to improve before consideration for other work.

H. Howard – Aged 15, 6 weeks' service. Good time-keeping so far and reliable worker. Too soon to judge potential.

I. Ikin – Aged 17, 9 months' service. Is 18 in three weeks' time and has proved reliable enough to warrant pan controller's job: he is strong enough for it. Shows considerable promise. At present is taker-off.

J. Jones – Aged 26, 4 years' service. Present job is dryer-car attendant, and can operate cutter. Is reliable enough to transfer to mixer control.

The jobs carried out in the Making Section are:

1. **Chargehand.** Responsible for all work carried out.

2. **Pan Controller.** Ensures correct quality of clay through the pan at the correct plasticity.

3. **Mixer Controller.** Ensures correct quantity of clay through the mixer to the auger adding water to the clay as required.

4. **Cutter.** Cuts off clay column from auger to predetermined length, using bow wire cutter. Feeds cut length of clay into brick cutter and trips lever to operate cutter. Also controls auger clutch. Cleans waste ends from work area.

5. **Taker-off.** Handles wet bricks from conveyor belt on to pallets on the dryer-cars.

6. **Dryer-Car Attendant.** Ensures takers-off have supply of empty dryer-cars. Removes full cars and puts them in dryer tunnels. Notes number of dryer-cars loaded and number of dryers into which cars are placed.

Ideally it is thought that the following manpower capacity is needed.

Job	Workers
Pan control	3
Mixer control	2
Attending cutter	2

Job	Workers
Taking-off	6
Attending dryer-cars	2

A training plan was drawn up for the making section, designed to improve existing capacity. A sheet of paper was ruled up as shown in the example headed 'Training Plan' on page 20: across the top of the paper were listed the various jobs to be done in the department; down the left hand column were listed the names of employees. Consideration was then given to the capability of each person in the department and this was shown by means of a tick to indicate the jobs which each man could do. Thus in a very simple way a chart was established to show clearly the capabilities of existing staff. The strength and weaknesses of each job and each person's capabilities could be seen at a glance.

The chart then had to be converted into a training plan by considering the factors (a) to (h) previously given and by making appropriate notes in the columns provided.

In reviewing the chart, immediate training needs were easily recognised and marked with a 'T' (evaluated by the nominated instructor). As a next step it was necessary to decide how to meet the training needs in the light of immediate pressures. This was done by carefully considering the capabilities of existing workers and using the expertise of certain

individuals to coach others. In the example training plan, only one set of possibilities is shown—there could be other patterns devised to meet the situation.

Having decided upon the training needs for each person it was then necessary to make a job breakdown, based on a job analysis, of each individual task so that training could be given systematically on a step-by-step method in the shortest possible time.

The works manager, having decided upon the training plan, discussed with Mr B. Baker the desirability of his attending a Department of Employment & Productivity TWI 'Job Instruction' course. After attending such a course Mr Baker would be able to meet future personnel changes and production commitments, by appropriate planning and amendment of the chart. In addition the course would enable him to set up a 'ripple effect' in the example situation given: because he would return from the course with the ability to assist other staff in making efficient job breakdowns and giving effective instruction for jobs to be learnt in the shortest possible time. Thus the works manager would in future be able to delegate job training responsibilities directly to the chargehand.

(Training plan – see page 20)

Department: Making Section

Date: March, 1967

Reviewed:

Training plan

KEY

√ = competent

T = training needed

	AGE	PAN CONTROL	MIXER CONTROL	ATTENDING CUTTER	TAKING-OFF	ATTENDING DRYER-CARS	NOTES	LENGTH OF SERVICE
B. BAKER	41	√	√	√	√	√	First-class man. Make Charge-hand. Train on J.I.	10 years
C. CHARLES	54	√		√	√		Pan work too heavy. Transfer to cutter.	30 years
D. DRING	64		√		√		Retires in 4 months. Able to instruct.	14 years
E. ELLIS	23	T (BAKER)	T (DRING)	√	√		Would welcome transfer to pan.	6 years
F. FRENCH	16				√	T (BAKER)	Reliable. Strong physically. Bright.	9 months
G. GREEN	15				√		Poor record. Unreliable.	4 months
H. HOWARD	15				√		Good record so far. Too soon to judge potential.	1½ months
I. IKIN	17	T (CHARLES)			√		Nearly 18. Record warrants transfer to Pan. Shows considerable promise.	9 months
J. JONES	26	T (CHARLES)	T (DRING)	√		√	Good and reliable. Transfer to Pan and train on mixer.	4 years
IDEAL CAPACITY TO COVER SICKNESS		3	2	2	6	2		

NOTES: Recruit 2 youths for basic training

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