

EFFECTIVE TRAINING IN WORK ORGANIZATIONS

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1. Introduction

Characterization of training

The operation of organizations, large or small, requires staffing with competent personnel – personnel who are able to contribute to the attainment of organizational goals through the performance of their jobs and activities.

The general education system is not designed to teach specific job skills for positions in particular companies or organizations. As a result, young people who enter the labour force each year, are not prepared to perform jobs in work organizations. They must be trained.

Even those who have studied a technical or professional field of work must receive some initial training.

Moreover, because the technology of our productive processes is developing at such a rapid pace there is also a need for continued retraining of people already working in organizations, to be able to perform new and changed jobs.

The importance of training in modern societies is shown clearly by the amount of money spent in training programs, either in Europe, the USA and Canada or Pacific industrial exporting countries.

In Portugal, the last decade has also witnessed the outbreak of innumerable training programs supported by the European Social Fund, Government funds and/or partially financed by work organizations.

How can we characterize training? Goldstein (1980) defines training as «*the acquisition of skill* (¹), concepts or attitudes that results in improved performance in an on-the-job environment».

Wexley (1984) considers training «*a planned effort by an organization to facilitate the learning of job related behavior on the part of its employees*».

Thus, training is the organized process through which people acquire knowledge or skills for a definite purpose.

These skills can be manipulative skills, technical knowledge, problem solving ability or attitudes. Employees are expected to apply their newly acquired knowledge and skills on the job in such a way as to aid in the achievement of organizational goals.

Training is vocationally oriented that is, it has an immediate utilitarian purpose.

Historical Background

Until 50 years ago, systematic training was relatively neglected. According to Downs (1983) this was so, due to negative attitudes that management held about workers readiness and willingness to devote themselves to work, abundance of labour and efficiency of machinery relative to labour.

This view changed with Scientific Management. Taylor advocated the selection of the best worker for each task followed by training, to break the practice of allowing employees to acquire inappropriate work habits. Traditionally new workers had been expected to pick up necessary job skills from experienced fellow employees. The acquisition of knowledge in these circumstances was usually slow, and faulty behavior was also acquired.

During the 1st and 2nd World Wars there was systematic training in large scale associated with the demand of war production.

In England, the Industrial Training Acts of 1964 and 1973 recognized the need for the continuation of systematic training to avoid the emergence of skill shortages and lack of adaptability to change.

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(¹) Systematically planned

In the USA, there has been a push-pull philosophy between selection and training. Selection stresses the identification of individuals with strong potential for hiring when necessary, whereas in the training philosophy the organization is interested in identifying and overcoming existing performance difficulties for workers already on their present jobs.

In Canada it was found, in a survey conducted by Maeliea & Duffy in 1985, that the emphasis lies mostly in the training philosophy.

In Portugal, as mentioned earlier, there is a recognition of the inadequacy of workers' preparation for jobs in several sectors of activity and the interest in training became clear in recent years.

Training research and practice

The first comprehensive and systematic treatment of training is a book published by McGehee and Thayer in 1961. In 1966 Bass and Vaughan publish «*Training in Industry: the Management of Learning*» which deals with learning issues. Campbell's 1971 article in the Annual Review of Psychology is the first comprehensive review of previous literature on training. Goldstein in 1980 with «*Training in Work Organizations*», Wexley in 1984 with «*Personnel Training*» Latham in 1988 with «*Human Resource Training and Development*» and Tannenbaum & Yukl in 1992 with «*Training and Development in Work Organizations*» produced the following four revisions of relevant training research and literature in the Annual Review of Psychology.

The articles of Campbell (1971), Goldstein (1980) and Wexley (1984) complained about the fact that most of the vast literature on training was composed by non-empirical, non-theoretical studies.

According to Campbell's expression it was «*voluminous, non empirical, non-theoretical, poorly written and dull... faddish to an extreme*». However, in his 1988 review of literature Latham considers that this situation has changed.

What he considers still elusive is the ability of training research to «*bring about relatively permanent changes in the behaviour of the practitioner*».

There are, effectively, a growing number of fine research works on different aspects of training like

needs assessment, training methods and evaluation, but there is still little communication between training researchers and practitioners.

Determinants of Training Effectiveness

A training program is considered effective when it produces acquisition of knowledge and skills or the change of attitudes or behaviour which are considered appropriate for employees to perform their jobs in the way that has been defined by the organizational plan.

We can name the main determinants of training effectiveness: the correct determination of training needs (or needs assessment), trainees characteristics, the design and implementation of a training program deemed appropriate to prepare trainees for the defined tasks (including the use of the most appropriate training methods) and environment conditions.

2. Assessment of training needs

A survey of management training and education practices in U.S. companies in 1988 by Saari *et alii*, reported that only 27% of those surveyed had procedures for determining training and educational needs of their managers.

Nevertheless, the importance of conducting a thorough needs analysis is prevalent in training literature since the publication of McGehee and Thayer's book (1961). The most used framework of needs analysis is still the one they proposed: organizational analysis, task analysis and person analysis. Latham in his 1988 article proposes the addition of demographic analysis to cover the training needs of specific groups of workers.

Organizational Analysis

The purpose of organizational analysis is to provide information about where and when training is needed in an organization. It is generally recognized the need to link training and organizational strategy (i.e. training objectives must be determined according the organizational goals). (1)

The global strategy adopted by many organizations and their operation in international arenas have given origin to studies in cross cultural training (2) and (3). However, the use of this kind of training has been limited, by recent trends for multinational firms to employ locals.

(1) Hall, D. T. (1986)

(2) Von Glinow & Milliam, 1990

(3) Tung, R., 1988

Recently, Goldstein (1989) proposed the reconceptualization of organizational analysis to include an examination of «*system-wide components that determine whether the training program can produce behaviour which will transfer into the organization*». This concern is justified, since learning occurs in one environment, whereas the application of learning takes place in another (¹). This fact causes some training programs to fail, because of post training environment constraints which were not previously identified. On the other hand, there is also the possibility of finding facilitating factors in the post-training environment. The fact is that there is still little empirical research on the influence of the work environment on transfer of training.

Task Analysis

A task analysis identifies the nature of the tasks to be performed on the jobs and the knowledge, skills and abilities (KSA) needed to perform these jobs.

Presently, the rapid pace of technological change modifies continuously task requirements and causes some tasks to become quickly obsolete. For instance, in engineering jobs it is considered that 5 years after graduation half of the knowledge acquired is obsolete. Clerical workers, on the other hand, will need to be retrained 5-8 times during their working life.

It seems also clear that jobs at all levels are becoming cognitively more demanding. (²)

For planning purposes, it is equally crucial to assess how easily employees can be trained to assume new responsibilities. (³)

Person Analysis

Person Analysis addresses two basic issues: who should be trained and what kind of training does he need?

It can also be used to assess whether employees have the attitude, knowledge and motivation to benefit from training. The absence of these prerequisites will affect training success. Training needs can be self-assessed (³) or diagnosed by hierarchical superiors.

There is a distinction between the training needs of new employees (with adequate specificity and

level of difficulty) and those of older individuals. There is also a recent concern for retraining of mid career workers, including those in mid life crisis and victims of job loss. These studies are mentioned by Goldstein (1989).

Demographic Analysis

In his article «Human Resource Training and Development», Latham (1988) considers this fourth category in training needs assessment with the purpose of identifying training needs of different populations of workers. He mentions for instance, male and female managers views of the training and communication needs of women in management.

Another study, concerns the likelihood of graduation success, considering race and sex, from a police training academy.

The self-perceptions of workers training needs can also be influenced by the age group in which they are included.

3. Training Methods

When we review the literature on training methods and techniques we find an increasing number of articles in recent years. Most of them try to prove the relative effectiveness of one training method in a particular situation, sometimes comparing its results with those of a control group or with the use of a different method with another group.

Tannenbaum and Yukl (1992) support Campbell's view (1988) that the usefulness of these articles is limited, since all the well known training methods have been shown to be effective for some learning objectives.

What is necessary is research to understand why a particular method or a combination of methods facilitate learning or how to make the method more effective. The relative effectiveness of one method over another is associated with the objective of the training, characteristics of trainees and the criteria of effectiveness which have been selected.

The design of sound training programs will have to take into account these facts, as well, as current knowledge about learning processes and practical considerations such as organizational and other

(¹) Goldstein, I. L., 1991

(²) Lance, et alii, 1991

(³) Ford & Noe, 1987

constraints and costs in relation to benefits. Particularly, Thayer, quoted in Goldstein's book (1989), considers that *«it will be hard to write training texts in the future without the use of such cognitive expressions as declarative knowledge, procedural knowledge, automacity, schema, scripts and frames»*, all expressions adopted from recent research in cognitive and instructional psychology.

Cognitive approaches to learning supplement behavioral approaches to explain how trainees acquire knowledge and learn skills (1).

There are a variety of training methods and techniques described in training literature and different authors present a different list and systematization of these methods. For instance, Camp, Blanchard and Huszco (1986) distinguish on-the-job training for non managerial jobs (utilizing coaching by a supervisor, job instruction technique or apprenticeships) and off-the-job training techniques. They divide the off-the-job training techniques in non-experiential (lectures with or without audiovisual support, programmed instruction and computer aided instruction) and experiential (simulation, in-basket technique, case study, incident method, role playing, behaviour modeling and sensitivity training). They provide a practice oriented, detailed explanation of all of these training techniques.

Goldstein (1988) enumerates different methods such as behaviour role modeling, computer assisted instruction, simulations, case studies and other methods, paying particular attention to leadership training and rater training.

In this paper, we follow Tannenbaum and Yukl's (1992) analysis of simulations and games, high technology methods and behaviour modeling.

Simulations and Games

They vary widely in complexity and number of participants. There are some simple games for one individual (like in-basket technique) and group simulations of different complexity (role play, leaderless group discussion, computerized business games and even large scale simulations of organization). They are now widely used as training methods and there has been a dramatic increase in the research focusing these methods, in recent years (2).

However, many important questions like the types of learning for which these simulations are most appropriate need further research.

The evaluation of the effectiveness of these training methods is also complicated because often they have multiple learning objectives and are used in conjunction with other techniques (reading materials, lectures and demonstrations).

High Technology Methods.

We can include here computer-aided instruction, interactive video disc instruction and equipment simulators. Advances in communication technology have also led to the use of teleconferencing and satellite television networks to provide training to geographically separated sites in a cost effective manner.

Computer aided instruction, apart from the fact that it is expensive and its development is time-consuming, has considerable advantages.

It allows self-pacing by trainees, immediate feedback, continuous monitoring and assessment of learning and diagnosis of learning problems.

Interactive videodisc instruction is a promising innovation of the last decade, allowing for diagnosis, feedback and remedial coaching for the trainee. The use of touch screens, voice recognition and optical readers are interesting alternatives to the keyboard as a medium of interaction with the computer-tutor.

Equipment simulators have long been used to train aircraft pilots, air controllers, and military personnel. Even though the cost of these simulators is high, it compares favorably to the cost of misusing real equipment, not to mention safety issues.

Behaviour Modeling

This technique has been popular since the publication of *«Changing Supervisor Behavior»* by Goldstein and Sorcher (1974). They build their techniques on social learning theory and research by Bandura (1977). Modeling as defined by Bandura is *«The tendency for a person to match the behaviour or attitudes as exhibited by actual or symbolized models»*. These models are usually video-taped in training programs.

(1) Howell and Cooke

(2) For instance Keys and Wolfe (1990).

A recent study by Mayer & Russel (1987) expresses some concerns over exaggerated enthusiasm around this method: it may not be more cost effective than other methods and most studies refer only to immediate learning and not application of learned behaviours back on the job. On the other hand, it seems more useful to teach concrete behaviours that are optimal for a particular task rather than flexible adaptative behaviours or cognitive knowledge. However, Gist (1989) found that a variation of this method called cognitive modelling may be useful to train people to improve idea generation. And Parry and Reich propose a variation of the usual procedure emphasizing general principles and encouraging trainees to devise alternative ways to apply them in various situations.

Clearly more research is needed on the learning process and on the motivation process associated with behaviour modeling.

4. Other determinants of training effectiveness

Trainee characteristics

Recent research has considered trainees as active participants in the training process, whose attributes may contribute to or jeopardize training effectiveness.

It makes sense to try to determine if people have the right abilities and skills to benefit from a training program. Robertson & Downs (1989) conducted studies on work-sample trainability tests and found they were good predictors for at least short-term training success (they didn't predict so well long-term training success or subsequent job performance).

Another important issue is whether certain abilities are more important for different types of skill acquisition and, if so, which ones and in what circumstances ⁽¹⁾.

Trainee Motivation

The performance of trainees in training depends also on trainee's motivation. This was already recognized by Noe in 1986. There is also a recent study connecting performance with both cognitive ability and motivation ⁽²⁾. Wexley and Latham (1991) consider the importance of the "will do" (motivation) in conjunction with the "can do" (ability) for the acquisition of learning.

There are other studies following Noe's (1986) using an expectancy framework for studying training motivation. One interesting study assesses the effect of expectancy type of motivation on performance of clerical employees after proof-reading training and concluded that there is a positive effect between training motivation and training outcomes.

This motivation to learn may be associated with expected career enhancement or increased rewards associated with better performance on the job. This is clearly an area where more research is necessary and promising.

Another important aspect that can influence trainees performance in training is self-efficacy (the belief held by a trainee that he has the ability to perform well in the training situation). This concept of self-efficacy is part of Bandura's (1986) social learning theory.

There is a study by Gist et alii (1989) which shows that trainees with higher self-efficacy prior to the training and during the training performed better than their lower self-efficacy peers at the end of training.

Self-efficacy may even be one reason for the positive effect of behaviour modeling on trainee's behaviour as was mentioned in the section on training methods.

The Influence of Environment Conditions on Training Effectiveness

Pre-Training Environment

Events in the training environment prior to the training can have some influence on training effectiveness: for instance, the importance that the organization gives to the training program as perceived by the trainee, the way the organization selects trainees for the course, or the participation of the trainee in the needs assessment phase. (Feldman 1989), Cohen (1990), for instance, found that trainees with more supportive supervisors entered training with stronger beliefs that training was going to be useful (and, as it was mentioned before, self-efficacy seems to influence training outcomes).

On the other hand, trainees' performance on the course seems also to be affected by evaluation concerns - for instance, Baldwin & Magjuka (1991) found that trainees who expected some assessment

⁽¹⁾ Ackerman (1988)

⁽²⁾ Kanfer & Ackermann (1989)

or follow-up activity at the end of the program stated greater intentions to transfer what they learned back to the job.

Pretraining environment can also have negative effects on training as Mathieu *et alii* (1990) found (lack of time, equipment or resources).

Two other issues before the training actually starts can affect its results (the participation of the trainees in the needs assessment phase – or at least their belief that it is accurate – and whether the attendance of the training course is voluntary or mandatory). As far as the first issue is concerned there are not yet clear conclusions since there are some contradictory research results (the studies of Noe & Schmitt in 1986 and Williams *et alii* 1991).

As far as the capacity of decision to attend the course is concerned it seems that trainees consider mandatory courses to be more important (for instance Baldwin & Majuka and Hicks & Klimoski's studies).

Post-Training Environment

The transfer of what was learned in the training course back to the job can be affected by a set of factors associated with the post-training environment. Job-aids and rewards can affect positively the transfer of new skills or knowledge to the job, whereas lack of necessary equipment or negative attitudes from peers can discourage it. Particularly, the attitude of the supervisor (supportive or not) seems crucial. Curiously, Baldwin & Ford (1988) found a few studies examining the influence of the work environment on transfer of training but none that attempted to change the work environment to favour transfer of training.

There is a very interesting study by Rouillier & Goldstein (1991) examining the organizational climate for transfer of training purpose. They classified transfer climate components as situational cues (for instance, reminders to use the training knowledge, influences of supervisors, peers and subordinates and job design) and consequences (rewards and punishment). They showed post-training behaviour to be affected by transfer climate.

It seems also clear that the opportunity to apply acquired knowledge and skills early upon returning to their jobs affects the transfer of training (for instance a study of IRS managers by Pentland in 1989).

Studies conducted with college students have shown that post-training follow-up can also positively affect the transfer of learning (Marx & Karren, 1990). It may

be interesting for organizations to engage the trainee's supervisor in follow-up activities...

5. Training Evaluation

Goldstein (1988) defines evaluation as the "systematic collection of descriptive and judgmental information necessary to make effective training decisions related to the selection, adoption, value and modification of various instructional activities".

In these terms, it is clear the importance of this activity to assess the validity and effectiveness of training programs. This effectiveness should be judged on the appropriateness of the program to actually lead to the change of behaviour on the job that was deemed necessary and defined in the needs assessment phase.

Still, most organizations rely only on questionnaires applied to trainees at the end of the project to obtain their reactions – the so called "smile sheets" – probably complemented by a simple report prepared by the trainer describing briefly any difficulties encountered. This information is obviously very limited and insufficient and is usually filed away without any action being taken.

Partly, this happens because trainers feel evaluation to be a tedious chore, with little appeal. For the organization, it extends considerably the time, effort and cost of the training project, to plan the evaluation methodology and collect, treat and present relevant data so that meaningful information can be delivered to interested parties. On the other hand, a very thorough and comprehensive evaluation procedure with pretests, posttests and interviews can make trainees feel like rats in a maze, being observed all the time by evaluators.

Therefore, we may conclude that evaluation is indispensable but, there must be special care in the way it is conducted to be simultaneously valid, feasible and useful.

For a precise evaluation of a comprehensive program Stockard (1977) recommends using academic consultants. Such an experience is described in an article by Easterby-Smith and Mackness (1992) who were involved in the evaluation study of a training program of the Department of Social Security designed to help introduce a computerization project involving 68,000 staff all over the U.K.

Evaluation criteria

The usefulness of evaluation depends, first of all, on a proper definition of the purposes it intends

to serve which are associated with the identification of stakeholders of the information. These usually involve the sponsors, the designers and the managers of the course, the trainers, the organization whose workers are being trained and to some extent the trainees themselves.

The nature and extent of the information they require is obviously different. Since different types of information must be provided to several users during the project and upon its completion, we must be careful to design the evaluation procedure in such a way that relevant information is available to be processed in the manner and when necessary. This means, information should be collected on the stated objectives of the course, the inputs of the program, the process of the course, the course administration and outcomes of the program. The areas of a training program which deserve evaluation were defined by Kirkpatrick in 1976 and are still broadly accepted.

They include:

- Reactions (trainees' reactions to all facets of the learning experience itself).
- Learning (changes in attitudes, knowledge and skills of trainees).
- Job behaviour (how trainees behave differently because of the training).
- Organizational impact (how the functioning of the organization was affected).

The sources of information usually include questionnaires, tutor reports, interviews, observation and sometimes other data.

In fact, to obtain reliable evaluation data it is best to solicit information from as many sources as possible obtaining a true "potpourri" (information from different sources can be cross-checked and is better than information from only one source).

Reactions to the training are usually determined from answers to structured questionnaires (it is also useful the inclusion of open questions) and formal and informal interviews.

Since trainee reactions are generally obtained, Alliger & Jank (1989) tried to find some correlation among trainee reactions and learning, job behaviour and organizational impact, but found none.

However, Mathieu *et alii* (1990) ⁽¹⁾, reported a significant relationship between learning and subsequent performance, when there are not postraining environment constraints.

⁽¹⁾ Cited by Tannenbaum & Yukl, 1992.

Evaluation of learning tries to assess trainees' knowledge at the end of training and reveals the degree to which the training experience increased their knowledge. This is done through the application of tests (of knowledge, performance, attitudes) to determine how trainees score at the end of the training and compare this score with that of control group.

Evaluation of job behaviour can be obtained from questionnaires and interviews with ex-trainee, his superior, his subordinates or his peers after he has returned to his job.

Finally, organizational impact can focus on productivity increase, cost reductions, accident rates, absenteeism, employee's suggestions, supervisory ratings, sales volumes, turnover rates, customers complaints, improvement of interpersonal relations, culture building outcomes, etc. However, there are difficulties to determine how training contributed to these outcomes, since there are other possible causes (criterion contamination).

Evaluation Design

Goldstein (1988) considers Cook and Campbell's book "Quasi-Experimentation: Design and Analysis Issues for Field Settings" (1979) as the most comprehensive text on experimental and quasi-experimental design, focusing on how to conduct research in organizations including obstacles to evaluation.

The analysis of the sample size requirements to achieve various levels of statistical power for different designs was studied by Arvey *et alii* (1985).

The issues associated with the use of cost-benefit analysis, namely the comparison of training costs (in monetary terms) to benefits derived from training (in nonmonetary terms) was examined by Cascio (1982).

An econometric model was utilized by Simpson (1984) to examine how turnover discourages specific training but encourages general training and also the little impact of unionization on training decisions, in industry, in Canada.

In the book he published in 1986, Goldstein describes different types of evaluation models that can be useful in different situations like qualitative models, adversarial models and content validity models. This later type focus on the validity of the knowledge, skills and abilities developed in the training program for the content of the post training job. More recently,

different authors examined the situations when it is more appropriate to use different statistical methods like the analysis of variance or the analysis of covariance.

One of the problems encountered is the difficulty to use equivalent control groups in organizational training. And since it is unlikely that organizational realities will allow for extensive use of experimental designs it is necessary to continue to look for alternatives more consistent with evaluation constraints in organizations.

Conclusions

Earlier reviews of training literature (Campbell's, Goldstein's and Wexley's) complained of the faddish and atheoretical nature of the majority of training

literature. This situation has changed. Both Latham and Tannenbaum & Yukl recognize the encouraging trend of the last decade and foresee further promising research to increase our understanding of training effectiveness.

Recent developments focus on a better understanding of the learning process, the recognition of the active role of the trainee in the training process (with consequent research on which type of abilities can favour which type of learning as well as motivation issues) and the importance of the training environment on transfer of training.

Improvements are also found in high technology training methods and in evaluation techniques and methodology.

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