Research note

Effectiveness of on-the-job training

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Abstract
Investigates the effectiveness of on-the-job training (OJT). Presents a definition of OJT used for this research project which involved two studies: the first in the call centres of a large company, and the second in post offices. Gives the results of the study which indicate the OJT programs were only partially successful in realising training goals. Indicates that self-efficacy, prior experience with tasks, managerial support and workload were the most powerful predictors for training effectiveness. Concludes that the evidence suggests that OJT is not entirely an effective training method although more research is needed in this area.

Introduction

The majority of Dutch companies make frequent use of on-the-job training (OJT) to educate their personnel (Glaude, 1994). The frequent use of this type of training stems from three incentives: the favourable relationship between training costs and benefits, the possibility to train just-in-time; and the expectation of a positive transfer of what was learned to the employee’s own work situation.

Although in professional journals these advantages of OJT are frequently expressed, there is, however, relatively little research conducted in this area. Most of the research into OJT focused on the design and implementation of this type of training. Research dedicated to the topic of effectiveness is extremely scarce.

A well-known author is Jacobs, who investigated the costs and benefits of OJT. Jacobs’ projects show that OJT does not always result in favourable benefits. From the empirical data that are available, it is not possible to deduce whether OJT is an effective form of training, or what the factors are that determine its effectiveness.

The lack of sufficient data to underpin the effectiveness of OJT was the reason for conducting a research project to investigate the effectiveness of this type of training in more detail.

There exists no agreement on the definition of OJT. Various definitions are in use (De Jong, 1991; Jacobs and Jones, 1995). In the project OJT was defined as:

1. It is legitimate for employees to carry out learning activities.
2. The tasks to be learned correspond to the employee’s tasks and duties in the actual work situation.
3. The responsibility for the OJT rests with the employer.

OJT involves intentional learning: a training arrangement is required. This arrangement includes:
- agreements upon the length of the training;
- the presence of training objectives;
- the presence of learning sources to achieve the training objectives (for example a trainer, electronic/written manuals, list of assignments/Leitexten);
- the evaluation of the OJT to determine the achievement of training objectives.

The definition of effectiveness that is used in the project is in line with Kirkpatrick’s (1994) body of ideas. This author identifies four levels of effectiveness: reactions of trainees, learning results, job behaviour and returns for the organisation.

Previous research in the field of corporate training showed that it is particularly tricky to measure the last two levels of effectiveness in practice. The fact is that behaviour on the job and organisational returns (for example, an increase in sales) are influenced by a great number of factors. So it is difficult to determine to what extent the training contributed to both these levels of effectiveness.

The theoretical framework was primarily based on the work of Baldwin and Ford (1988). The authors developed a model, based on an extensive review of literature, wherein they distinguished three clusters of factors that impact the effectiveness of training: the trainee, the training and the workplace. The use of this model is advocated to gain more insight into the various factors that contribute to the explanation of training effectiveness (Gienel, 1995).

Although the Baldwin and Ford Model proved to be useful, an update was necessary to assure the model reflects the latest research insights. This was done by the analysis of recent studies into the
effectiveness of in-company and vocational training (see Van der Klink, 1999).

Research questions, settings and design of the studies
Two questions were addressed in the project:
1. Is OJT effective?
2. Which characteristics of the trainee, the workplace and the training explain the effectiveness of OJT?

In total two studies were carried out. The first was conducted in call centres of a large company. Telephone sales staff working in these call centres were individually trained by trainers, who listened along with employees and then provided feedback on how they had handled the call. The aim of the training was to improve the quality of the telephone sales call, with the underlying objective of increasing sales.

The second study was held in post offices. New counter clerks were familiarised with counter work by a mentor, who was an experienced counter clerk. In addition they studied a self-study package that provided them with knowledge of the products and services that were sold at the counter. The aim of the training was to teach new counter clerks the behaviour and knowledge to function independently at the post office counter.

Table I presents an overview of the design and methods that were used in both studies.

In both settings it was decided to opt for a one-group pre-test-post test design. In the perspective of Cook and Campbell (1979) this may not be the most powerful research design. However, it turned out to be the only design that was workable in these particular research settings.

Two post-tests were scheduled: one at the completion of the training and again ten to 15 weeks later.

Written questionnaires were used to collect data. Also sales data from the organisation’s management information system were used to determine the increase in sales in the study into the call centres. A test to measure the knowledge was used in the study into the counter clerks. This test was scheduled at the second post-test.

For the dependent variables scales were developed in co-operation with the training staff of both organisations.

When possible existing scales were used for the measurement of characteristics of the training, the trainee, and the workplace. Sometimes items were changed, excluded or added to the scales in order to adjust them for the purpose in this particular research project. In general the reliability of the scales was satisfactory (Cronbach’s alpha 0.70 or higher). Further single items were used to measure various trainee characteristics (for example previous training in sales) and to measure the length of the training.

In the studies 36 trainees from call centres participated and 45 new counter clerks were involved. In both studies the co-operation of trainers was not quite satisfactory and only limited use was made of the data of this group of respondents. The same counts for the participation of trainees’ managers in the study into the call centres.

| Results |

First attention will be paid to the data with regard to the effectiveness of the training programs and then the focus will be on the factors that explained the effectiveness of the training programs.

The effects of the training programs
Observation of training deliveries and the inspection of the means of variables showed
that what trainees in the call centres learned was highly influenced by the questions and requests of the customers. Further, the trainers used a classical straightforward behaviourist training approach and did not spend any time on discussing questions about why certain behaviour was important. They were only focussed on the “what” and the “how” of sales performance. Further, it was rather surprising that trainees did not regard the training as an important tool for improving their behaviour. And trainees’ saw relatively few opportunities for applying what they have learned in their everyday work.

The trainees of the call centres did improve their sales behaviour. Sales behaviour was rated on a seven-point rating scale that consisted of 25 items (higher score implies higher level of sales behaviour). The trainees mean O1-score was 5.10 (SD 0.69), the O2-score was 5.37 (SD 0.67) and the O3-scores was 5.42 (SD 0.61). The increase in behaviour between the start (O1) and the completion of the training (O2) was modest but proved, however, to be statistically significant ($t = 5.13$, df = 32, $p = 0.00$). No statistically significant difference was found between the scores for sales behaviour at O2 and O3. This indicated that transfer of sales behaviour occurred.

With regard to the sales it proved to be difficult to establish whether the training had resulted in an increase of sales, which was the ultimate objective of this training. The five call centres where the training had taken place realised a more rapid growth in sales in percentage terms during the quarter in which training was carried out than did the 26 call centres where this training had not been carried out. In the following quarter too the relative increase in sales was higher in the call centres where the training had taken place. There were, however, great differences in sales performance within the group of call centres where training had been carried out. Not all the five call centres where the training had taken place established an increase in sales.

Observation of training delivery and the inspection of the means of the variables showed that what trainees learned was determined by the questions and requests of customers at the counter. Further, there was significantly less time devoted to self-study than had originally been intended. It appeared that employers interrupted the trainees’ self-study by asking them to perform additional tasks. Further, trainees’ mentors were not interested in their trainees’ self-study.

The research data revealed that at the end of the training counter clerks showed a satisfactory behaviour at the counter. This behaviour was rated on a seven-point rating scale (higher score implies a higher level of behaviour). In total three scales were used to rate the trainees’ behaviour. The first scale (nine items) measured the communication with clients (O2-score = 5.86, O3-score = 5.84), the second scale (five items) measured the trainees’ behaviour with regard to the technical aspects of sales (O2-score = 5.60, O3-score = 5.62) and a third scale (six items) measured some general skills that are needed to handle the work at the counter (O2-score = 5.63, O3-score = 5.64). The O2 and O3-scores did not differ significantly and this indicated that transfer of behaviour occurred.

The means that are presented here are computed with the data that were collected through the trainees’ questionnaires. In general the trainees’ perceptions of their behaviour did not differ significantly compared to the mentors’ ratings at O2 and the trainers’ ratings at O3.

Further, a test was scheduled at the O3 measurement. The results showed that the mean score was 5.81 (SD = 1.82) which means that in general trainees had answered only 53 per cent of the questions in this test correctly.

**Explanation of the effects**

For the investigation of the variables that explained the effects of the training correlations were computed and consequently regression analyses took place. These calculations were only carried out with the data of the trainees. The score for

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<th>Table II</th>
<th>Beta-weight of the variables that explained the progress and the transfer of sales behaviour</th>
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<tbody>
<tr>
<td>Support of manager</td>
<td>0.53</td>
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<tr>
<td>O1-score sales behaviour</td>
<td>-0.38</td>
</tr>
<tr>
<td>Experience as sales employee</td>
<td>0.36</td>
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<tr>
<td>O2-score self-efficacy</td>
<td>0.36</td>
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<tr>
<td>Explained variance (%)</td>
<td>49.0 / 13.0</td>
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<th>Table III</th>
<th>Beta-weight of the variables that explained the scores for behaviour at the end of the training for counter clerks</th>
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<tr>
<td>Pressure of workload</td>
<td>Communication skills</td>
</tr>
<tr>
<td>O2-score self-efficacy</td>
<td>0.65</td>
</tr>
<tr>
<td>Quiet place for self-study</td>
<td>0.36</td>
</tr>
<tr>
<td>Explained variance (%)</td>
<td>24.0 / 54.0 / 38.0</td>
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<th>Table IV</th>
<th>Beta-weight of the variables that explained the scores for transfer of behaviour for counter clerks</th>
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<tr>
<td>O2-score technical skills</td>
<td>-0.57</td>
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<tr>
<td>O2-score general skills</td>
<td>-0.47</td>
</tr>
<tr>
<td>Explained variance (%)</td>
<td>32.0 / 22.0</td>
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Progress in sales behaviour was computed by subtracting the O1-score from the O2-score. The score for transfer of sales behaviour was computed as follows: O3-score minus the O2-score for sales behaviour. The results of the regression analyses are presented in Table II.

In total three variables explained the progress in behaviour. From these three variables the trainees’ perceptions of the managerial support experienced during the training was the factor that was of utmost importance. The transfer of sales behaviour was only explained by the trainees’ self-efficacy at O2. This trainee characteristic explained only a modest percentage of the variance.

Tables III and IV present the results of the regression analyses that were computed to investigate the factors that explained the trainees’ behaviour at the counter.

Table III shows that characteristics of the workplace had a great impact on the behaviour at the end of the training. Also, trainees’ self-efficacy plays a significant role. Table IV shows that the trainees’ behaviour at the end of the training was the only predictor for the transfer of behaviour. As Tables II-IV (inclusive) shows, one may conclude that training characteristics did not contribute significantly to the explanation of the training effectiveness. There was only one variable that correlated with the test trainees filled in: the pressure of workload trainees experienced between the completion of the training and ten weeks ($R^2 = 0.34, p < 0.05$). Therefore it was not adequate to carry out regression analyses with the test score as dependent variable.

Conclusions

The two OJT programs were only partially successful in realising the training goals. In particular, negative workplace factors inhibit effective training delivery.

The results of the two studies show that trainee characteristics such as self-efficacy, prior experience with the task and workplace characteristics such as managerial support and workload turned out to be the most powerful predictors for training effectiveness. The relatively strong impact of workplace factors on the effects of the training programs is, of course, not surprising when OJT is used as a training method. A possible explanation for the fact that training characteristics (such as length of the training, quality of the training delivery) did not have an impact on the effectiveness of both training programs can be that in both settings the design and deliverance of the training programs can be regarded as less than optimal.

In both studies the explanation of the immediate effect of the training was satisfactory. However, the transfer of training was in both studies not adequately explained. Previous research into the transfer of training encountered similar problems: the percentage of explained variance of transfer scores were in general rather low (e.g. Rouiller and Goldstein, 1993; Hastings, 1994; Van der Klink et al., 2001). Intensifying the search for factors that impact the transfer of training is therefore needed.

The findings do not provide evidence for the idea that OJT is an effective training method. Nevertheless, it should not be deduced from this that OJT is by definition an ineffective form of training. This would require more research in more settings. Although the study of the effectiveness of OJT is fairly labour intensive, and makes great demands on co-operation from labour organisations, a case is put forward for intensifying the research, in view of the frequent application of this form of training.

References


