

Is your training program adding value to your client's results? A framework and an application

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Abstract

This paper addresses the issue of how to evaluate whether a training program adds value to an organisation's results. Structured analysis was used to combine Shuttlebeam's CIPP model of evaluation and Kirkpatrick's model of product evaluation.

The CIPP model connects a) the context, b) inputs, c) processes, and d) products of a system while the Kirkpatrick model provides four levels of outputs from a training program: reactions, learning achieved, improved behaviour of the trainees, and the improved results achieved by the organisation concerned.

Data flow techniques were used to create a logic model (context diagram) of the four components of the CIPP model. This model was 'exploded' to show the main processes of the training system. Physical models show the interfaces between processes and people.

The use of the model was applied to a case in which an RTO provided training to staff from a client organisation. Possible limitations and benefits were considered..

1 Is your training program adding value to your client's results? A framework and application

1.1 Introduction

1.2 Evaluation of training programs

A study reported in a recent edition of Harvard Business Review (Bassi and McMurrer 2004) concluded that companies that invested in the development of their employees created value for their shareholders by outperforming the relevant market index. While these results might well suggest that the amount of money spent on training staff can serve as a useful predictor of a company's performance on the stock market, the results do not provide evidence of a causal connection between spending on training and the performance on the stock market. It still remains a possibility that the money had not of itself added value to the company's results.

1.3 Objective

The objective is to prepare a model for evaluating training programs and to apply it to a Registered Training Organisation.

1.4 Outcome evaluation

Outcome evaluation focuses on activities that are designed primarily to measure the effects or results of programs, rather than their inputs or processes (Kellaghan and Madaus 2003). There has been an increase in the use of outcome evaluation in education (Davies 1999). One reason for this increase has been the application of a corporatist approach to various areas of government administration, which has led to a focus on deliverables or results as a basis for remuneration (Davies 1999). A corollary of basing pay on performance, as determined by results, is an interest in 'value for money audits' (Davies 1999).

Although the present paper deals with all aspects of systems, namely context, inputs, processes, and outputs or products, the emphasis is upon the outputs.

1.5 Relevance of the question

In the 1990s, a system of Vocational Education and Training was implemented in an attempt to improve Australia's economic structure so that it would be competitive

internationally. As a consequence of the Carmichael (1992) Report a National Training Reform Agenda (NTRA) was implemented. This had the agreement of National and State governments and was supported by unions and employees (Gillis 2000).

The purpose of NTRA was to improve and expand vocational education and training in Australia by ensuring

1. Australian enterprises would compete more effectively in the growing world market place;
2. life long learning of Australians through the integration of training that addresses the needs of individuals, enterprises and industry;
3. nationally consistent outcomes of training through competency based training and the establishment of standards of competency;
4. greater flexibility in delivery of training; and
5. national recognition of competencies, however attained, with this recognition being portable across industries and States.

(Carmichael 1992)

2 Methodology

As the question to be investigated is whether a training program improves the results of an organisation, it has been necessary to establish a model for evaluating the benefits that the organisation receives. In Section 3 two models were looked at, Stufflebeam's CIPP model of evaluation (Stufflebeam 2000, 2003) and Kirkpatrick's model of product evaluation (Kirkpatrick 1998).

In Section 4 Structured analysis was then used to combine the CIPP and Kirkpatrick models. This was done in two stages, first creating logic models to map the flow of data, and then designing physical models to establish interfaces for the people doing the evaluating to interact with the system.

Section 5 describes how the combined model could be applied to a case study involving a Registered Training Organisation (RTO) that provides training to the staff of a client, and a university that collaborates with the RTO in the evaluation of the results of the training.

Section **Error! Reference source not found.** considers the limitations of the model.

3 Establishing an evaluation model

3.1 Systems approach to evaluation (CIPP)

3.1.1 General system

The concept of a general system was developed by Bertalanffy (1968)

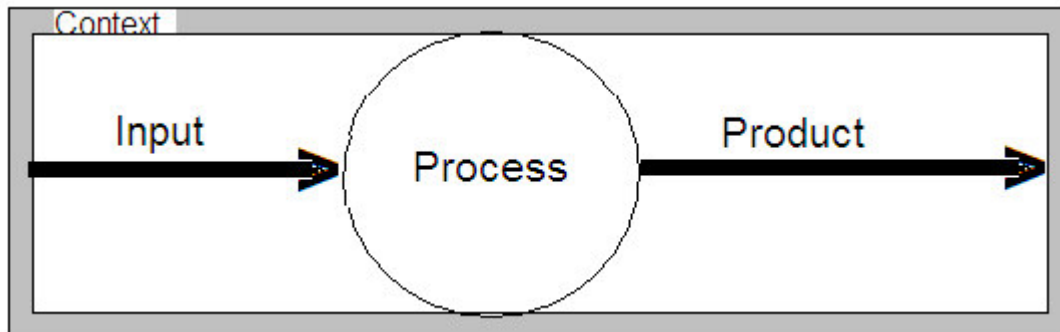


Figure 1 The four components of a general system

The initials from the four components of a general system have been used to form the name 'CIPP Model' Stufflebeam (2000, 2003), for evaluating systems.

3.1.2 Components of CIPP model of evaluation

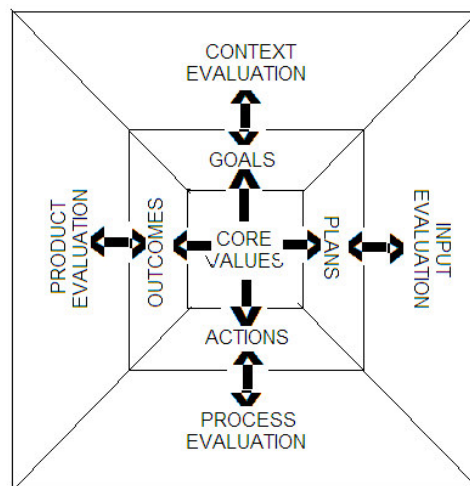


Figure 2 Key components of CIPP model of evaluation (After Stufflebeam 2003)

Figure 2 is derived from Figure 1 of Stufflebeam (2003) by replacing the original concentric circles with three four sided figures. The square in the centre represents the core values that form the bases for the various evaluations. The outside square is subdivided into four types of evaluation, each relating to one of the key components.

Between the inner and outer squares is a layer which is divided into four parts each of which forms a focus for the corresponding type of evaluation. The two way interaction between each evaluative focus and its corresponding type of evaluation is represented by a double headed arrow whereas the one way relationship between each evaluative focus and the core values is represented by a single headed arrow.

As the present paper addresses the question as to whether a training program adds value to a client's results, the emphasis is upon product evaluation within the context of the CIPP Model. This is done by incorporating Kirkpatrick's model of evaluation (Kirkpatrick 1998).

3.2 Kirkpatrick model of product evaluation

Kirkpatrick's model focuses on the outputs of training by establishing four levels that represent a sequence of ways to evaluate the products of education programs (Kirkpatrick 1998). Each of these levels is not only important in its own right, but also has an impact on the next level. These levels are:

Level 1 - the reaction of trainee to the training

Level 2 - the learning the trainee achieves from the training

Level 3 - the behaviour of the trainee following training

Level 4 - the results obtained by the enterprise as a result of the training

4 Model applying structured analysis to a combination of a systems approach (CIPP) and the Kirkpatrick Model

4.1 Objectives of structured analysis

DeMarco (1979: 15) set out goals for such a study, namely that a) graphics should be used where possible, b) problems of size should be partitioned, c) one should differentiate between logical and physical considerations, and d) one should build a logical model of the system.

As structured analysis depicts applications graphically, it not only requires structured tools for making the analysis, but also goals that are not included in conventional analysis, namely being able a) to maintain the products of analysis, b) to deal with problems of size with an effective method of partitioning, c) to use graphics where possible to differentiate between logical and physical considerations, and d) to build a model of the system (DeMarco 1979).

4.2 Types of diagrams used in systems analysis

4.2.1 Logic models using data flow approach

Logic models represent causal sequences of events and have become an important part of case studies (Yin 2003). As a logic model represents the underlying theory of a program that is being investigated, an examination of a model will reveal the data that will be required for the case study. Furthermore the construction of the model will often provide insights into the program that is being developed. Logic models are therefore important components of the present paper.

As the term implies, a logic model emphasises the logic underlying a system. The most common type uses data flow diagrams which require no more than four types of symbol to trace the flow of data through a system. As logic models avoid the possible distraction of physical details such as types of input and output devices, types of data store, or the methods for transmitting data, they are used in the present paper to illustrate the relationship between systems and subsystems.

4.2.2 Physical models

As logic models, by definition, do not include information about input and output devices, they do not provide an effective way to consider how users interface with a system. In the present paper, the involvement of evaluators makes it necessary to consider user interfaces, so physical models have been used. These physical models have used the principles of flow charts supplemented with a range of icons to illustrate the types of interfaces.

4.3 Logic models of Kirkpatrick' model of evaluation

4.3.1 Context diagram

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Figure 3 Context diagram for the case study

The interactions between a client and the training system of the RTO are depicted by the arrows in Figure 3. The client requests training from the RTO. This is shown as Input 5 into the RTO Training System. The first two outputs from the RTO Training System to the client are reports on the reactions of the trainees (Output 1) and on the learning of the trainees (Output 2). These are followed by two interactions between

the client and the RTO Training System concerning improvements in the behaviour of the trainees (Input/Output 3), and improved results for the client (Input/Output 4).

4.4 Level one diagram

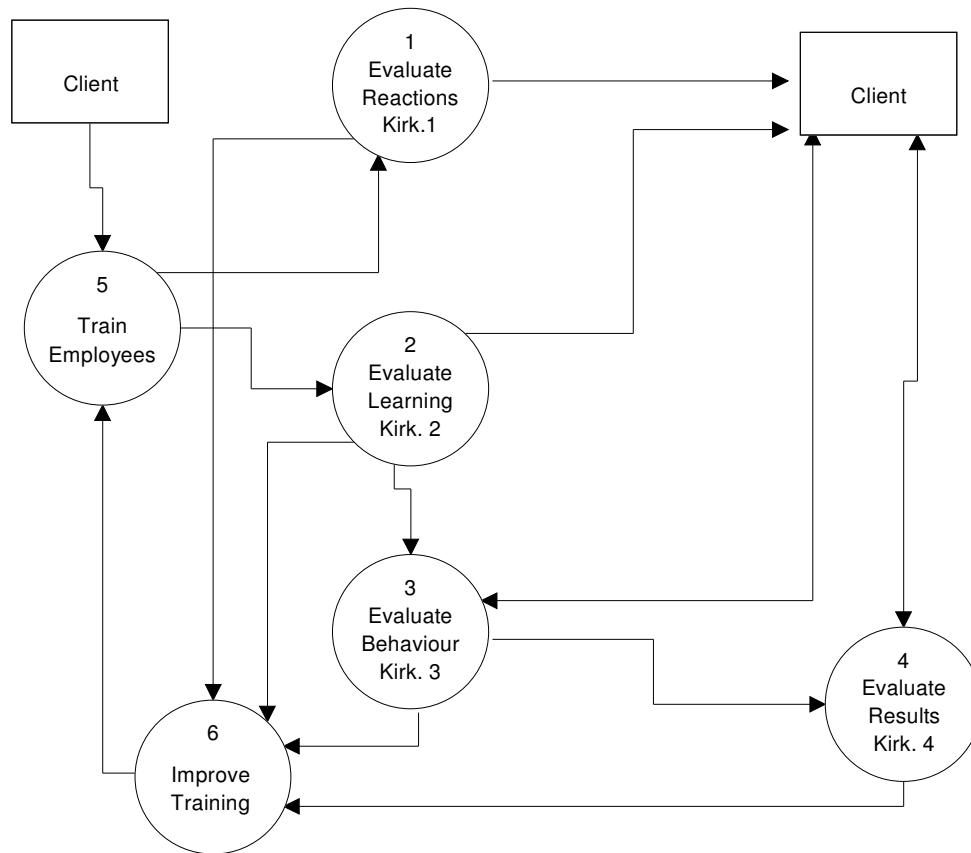


Figure 4 Data flows and processes involving the RTO Training System

A level one diagram is, as its name implies one level below the context diagram. It is formed by 'exploding' the system shown in the context diagram to reveal the system's main processes. If necessary individual processes can be further exploded to reveal level two processes and so on.

In this case the level one diagram (Figure 4) shows the interactions between the main processes of the RTO Training System, as well as the Inputs/Outputs between the main processes and the client.

In Process 5 the RTO trains staff (trainees) of the Client. At the end of each training program the RTO assesses the reaction of the trainees (Process 1 = Level 1 of Kirkpatrick model). The RTO also assesses the learning of the trainees (Process 2 = Level 2 of Kirkpatrick model). The RTO uses this information to evaluate, and if necessary to improve its training program (Process 6).

In Process 3 (= Level 3 of Kirkpatrick model) the RTO uses feedback from the client about how the trainees have performed after their training. The RTO compares this input with its own observations about the learning achieved by the trainees, and uses this evaluation to improve the training.

In a similar manner the RTO obtains feedback from the client about whether there have been any improvements in the client's results. The RTO evaluates the data from the client (Process 4 = Level 4 of Kirkpatrick Model) and uses this evaluation to improve the training (Process 6).

4.5 Physical models of Kirkpatrick' model of evaluation

As explained in Section 4.2.1 logic models have been created to show the interfaces where the various people such as trainees and interviewers interactg with the system.

4.5.1 Evaluating the reactions of the trainees after training

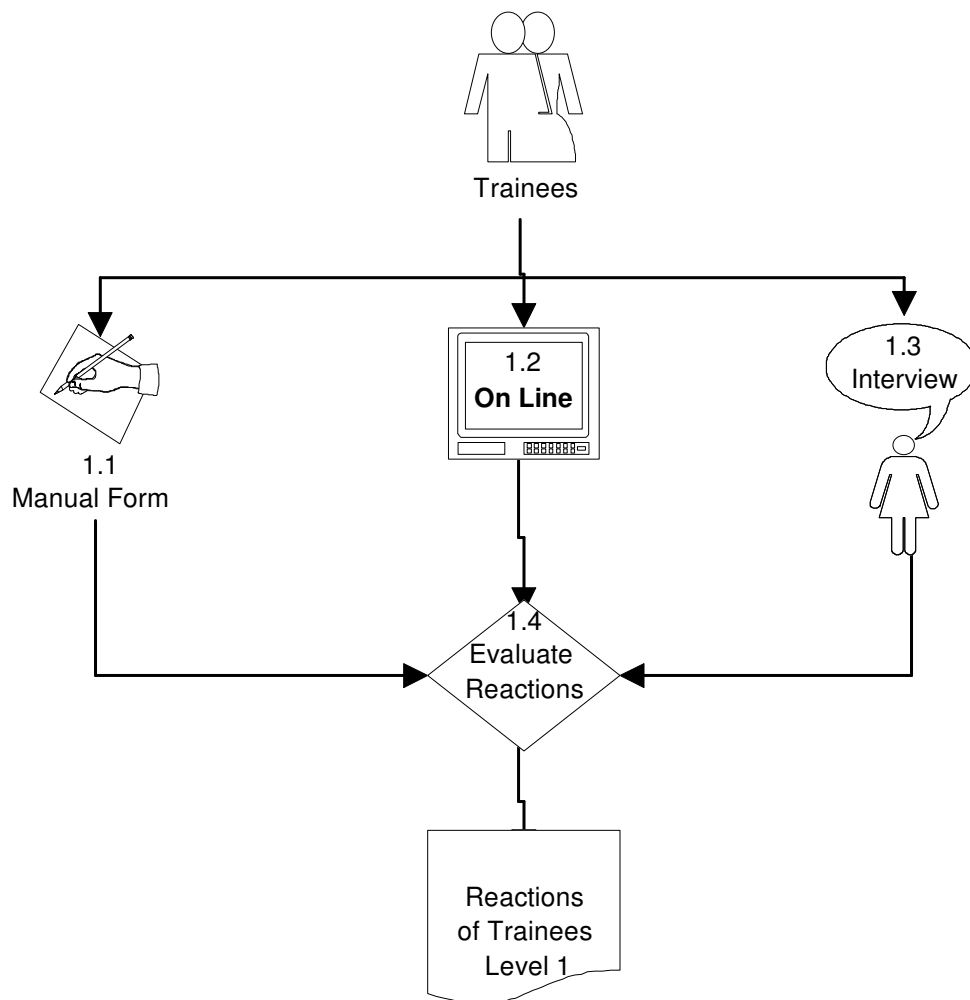


Figure 5 Evaluating Kirkpatrick Level 1: Reactions of trainees after training

Evaluating Kirkpatrick Level 1: Reactions of trainees at time of training is illustrated in Figure 5. At the end of a training program the reactions of the trainees will be assessed by having them complete one or more of a manual survey ('smile sheet'), an on-line survey, or an interview.

4.5.2 Evaluating trainees' learning

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Figure 6 Evaluating Kirkpatrick Level 2: Learning of trainees after training

The evaluation of learning (Figure 6) will be done by one or more of a written, an oral, or a practical demonstration. The trainer/assessor will determine the levels of performance of the trainees and report to the trainees' employer (the client).

4.5.3 Evaluating behaviour of trainees

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Figure 7 Evaluating Kirkpatrick Level 3: Behaviour of trainees

As Figure 7 illustrates there are two aspects of evaluating trainees' behaviour as a consequence of training, namely obtaining information from the trainees and their employer and/or supervisor. This information can be obtained by personal interview, a questionnaire, or an on-line survey. After the two sets of data have been evaluated separately. It is then necessary to evaluate the two previous sets of evaluations and to convey the conclusions to the employer (client). In the logical models (Figure 3 and Figure 4) the data input from the employer, and the conclusions output to the employer are represented as double headed arrows.

This is an important step towards answering the primary question of this paper, namely whether the training improved the results of the Client's business. To have an effect on the results, the behaviour of the trainees has to have been improved which requires the trainees to.

- Have a desire to change.
- Know what to do and how to do it.
- Work in a right environment.
- Be rewarded, intrinsically and/or extrinsically, for changing.

To verify the information obtained from the supervisors, the trainees, in turn, can be asked questions such as the following

- Are you doing things differently as a result of the training?
- Can you briefly describe what you are doing differently and how it is working out?
- If you are not doing anything differently can you tell me why? Eg nothing relevant on the course, restrictions in the workplace?
- What plans do you have for making improvements in the future?

4.5.4 Evaluation of Level 4 - evaluating results or return on investment for client

This evaluation of the results achieved in the workplace is the primary objective of the study. The ultimate success would be to be able to give quantitative results such as the training course increased profits by 4 per cent. However, there is a danger in quantitative results. An increase in one measurement may have been obtained by a reduction in a more important measure. This part of the evaluation is explained by applying the model to a case study (Section 5).

5 Applying the model of evaluation to a RTO

5.1 Philosophical bases for case research

Case studies that have been used in research in information systems have been classified, according to their underlying philosophies, as belonging to either a positivist research philosophy, or an interpretive research philosophy (Doolin 1995).

A positivist research philosophy presupposes a reality which exists independently of our knowledge of it. This reality can be known in time by the application of sound investigative procedures. (Lincoln and Guba 1985). Case research under a positivist research philosophy tends to be evaluated with criteria common to experimental and survey research (Dutton 1988). Case studies should, according to positivist philosophy be conducted in such a way as to satisfy the standards of the natural science model of scientific research, namely, controlled observations, controlled deductions, reliability, and generalisability (Yin 1989).

An interpretive research philosophy, in contrast to a positivist philosophy, asserts that reality and our knowledge of it are social products which cannot be understood independently of the social actors who construct and make sense of that reality. A

shared social reality is produced and reproduced through ongoing social interaction, and can only be interpreted rather than discovered (Orlikowski and Baroudi 1991). The interpretive tradition encourages a less strongly structured approach to case research than does the positivist research philosophy. Such research is based on experience and interpretation.

5.2 Criteria for a case study

Ferreira and Merchant (1992) set out two criteria for case studies, that a) the primary source of research data is the direct contact that the researcher has with organisational participants, and b) the research focuses on actual organisational tasks or processes.

Case studies are the study of social practices in the field of activity in which they take place (Scapens 1990), that is, the phenomenon under study is investigated within its real-life context (Yin 1989: 13). Experiments and surveys are excluded from this definition since an experiment divorces the phenomenon from its context while surveys are limited in their ability to investigate context (Yin 1989: 13).

5.3 A profile for designing a case study

Yin (2003) described three features that should be included in a case study. First, the case study should be able to use information from a range of sources of evidence such as direct observations, interviews, documents, and archival files. The consistency of the data from these sources will influence the conclusions drawn from the case study. Secondly, a range of sources is desirable to enable a case study to examine a phenomenon in a real-life context. It is therefore important to collect data about the context as well as about the phenomenon itself. Thirdly, whether a research study is based on a single case study or multiple case studies, the design of the research should include the development, testing, and replication of theoretical propositions if the conclusions are to be generally applicable (Yin 2003).

5.4 Organisations involved in the case study

Three types of organisation are involved in the project, a) the Registered Training Organisation (CSM Knowledge), b) Clients of CSM Knowledge, eg "Client A" and "Client B", and c) the University of Melbourne that is conducting the study.

The interaction between these groups is shown in Figure 8.

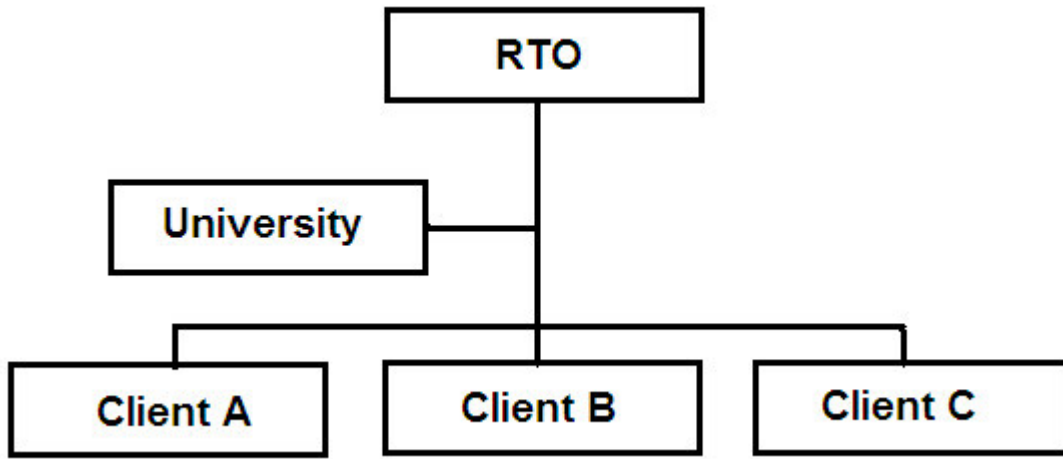


Figure 8. Organisations involved in the case study

5.5 The Registered Training Organisation

CSM Knowledge provides a range of educational services to government clients, as well as to corporate clients, such as "Client A", and hospitals such as "Client B".

5.6 Pre-training assessment employed by CSM Knowledge

Pre Training (VAST)

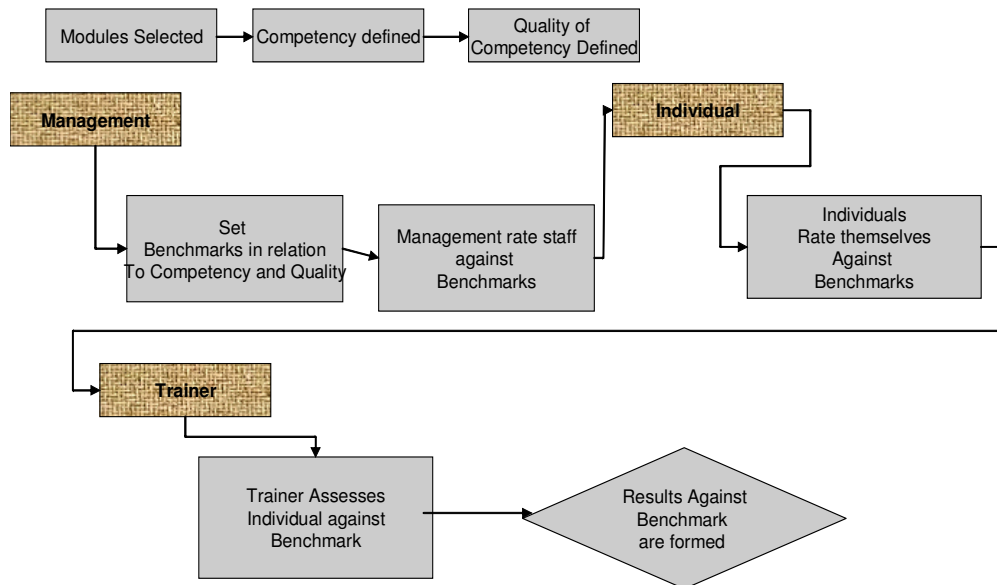


Figure 9 Pre-training assessments

Before recommending a training program to a client, CSM Knowledge systematically analyses the client's training needs (Figure 9) and produces a detailed report. This report includes, among other things, benchmarks, training needs of the client, and a range of educational solutions.

5.7 Training method employed by CSM Knowledge

Once the client and CSM Knowledge have agreed on the benchmarks and training needs, CSM Knowledge works with the client to design a program that will suit the client's requirements, while at the same time giving the trainees a tertiary qualification.

The steps taken during the actual training are shown in Figure 10. In the first phase of the training CSM Knowledge asks the individual trainees assess themselves against the criteria that they will have to achieve during the training. They are also asked to rate these criteria in terms of the relevance of the criteria for their job.

Training Method per Module Per Topic

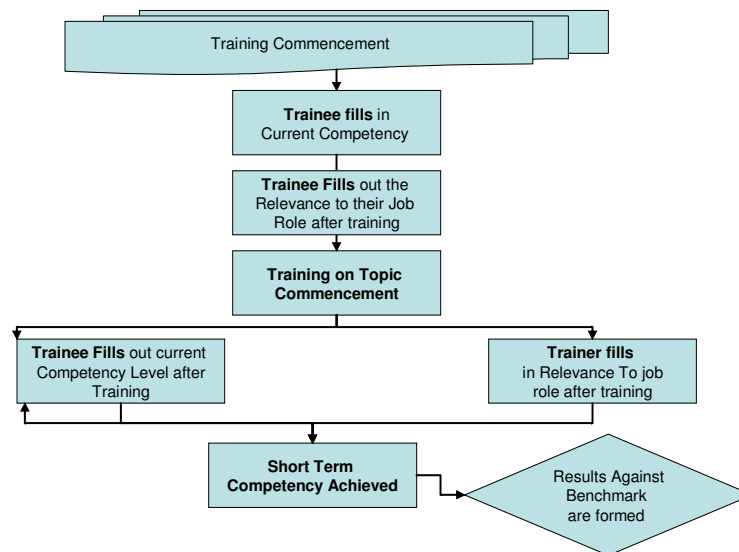


Figure 10 Training method used by CSM Knowledge

After the training has been completed the trainees are asked to again rate their competency using the same criteria as before. They are also asked to record how in the light of their training, they would rate the relevance of the criteria to their jobs. At

the same time CSM Knowledge evaluates the learning that the trainees have achieved and compares these results with the benchmarks that had been set.

5.8 Subsequent assessments

Medium Term 3 Month

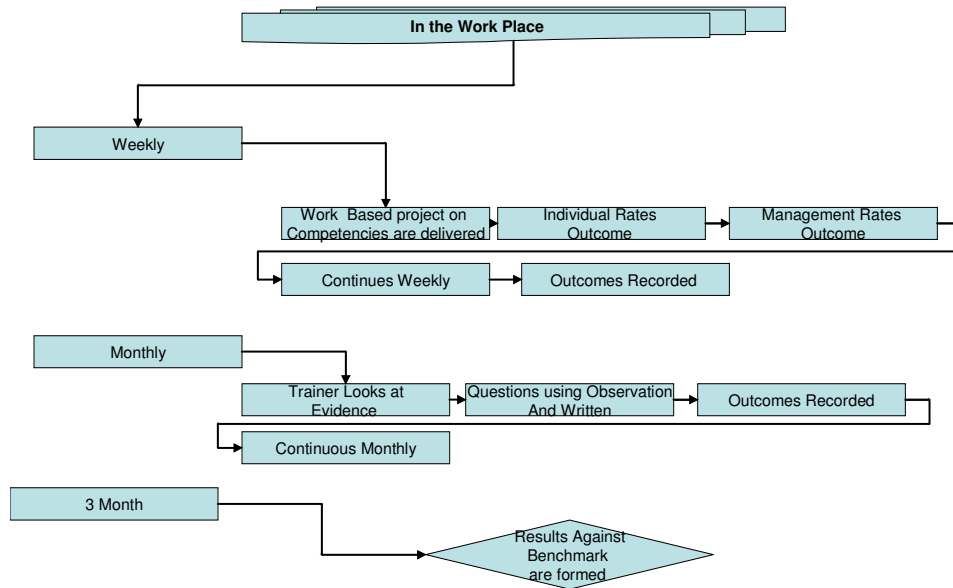


Figure 11 Post-training monitoring performed by CSM Knowledge

CSM Knowledge continues to monitor the trainees levels of achievement in the workplace. This done on a weekly, and monthly basis for three months, as shown in Figure 11.

6 Importance of the model

An important objective of the model is to determine if more detailed reporting of trainees' learning during a training session would improve the value of the training for the trainees' employer.

6.1 Reaction of trainees

The feedback from the trainees can be used to evaluate the program of training, with particular emphasis on making improvements. These improvements can include the content of the course, the training materials and facilities, and scaffolds employed to assist the trainees

6.2 Reporting on learning

This report should enable the employer, to decide

- What specific tasks each trainee is able to perform.
- What further training (intervention) may be required.
- Whether the trainees are being given work that they are capable of performing, while at the same time being provided with work that is challenging enough to maintain their interest and enthusiasm.

6.3 Influence of reports on behaviour of trainees

The report on the behaviour of the trainees should also enable the employee to determine whether the trainees are showing the improved behaviour that could be expected from the training. If the behaviour is falling short of expectations the employee should be able to assess not only the training, but also the situation in the workplace to see if other influences are inhibiting the performances.

6.4 Relevance of reports to results in workplace

Finally the client/employer should be able to discover if the improved behaviour of the employees is actually improving the results of the organisation or whether the trainees are doing the wrong things better. If the latter were the case, the employer may have to change what the organisation is doing. Although this may be a painful decision, it is important for the future of the client's organisation.

6.5 Limitations of the model

The main limitation of the model occur in levels 3 and 4 of Kirkpatrick's model, in that the behaviour of the trainees is heavily influenced by their supervisors while, the assessment of the results achieved are influenced by the supervisors.

Another limitation is the difference between the weight of evidence required for a conclusion, as distinct from proof beyond reasonable doubt. Furthermore, there could also be a conflict of interest for the RTO which not only provides a service, namely the provision of training, but also assesses the learning of the trainees.

The most important limitation, however, is whether the management of an organisation can confront any internal problems within could prevent the potential benefits of the training from being expressed as profitable results.

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