perspective based on the sharing of assumptions within the organisation, as expounded mainly by Argyris & Schöon (1978).

These authors, (Argyris & Schöon, 1973 & 1978 and Schöon, 1983) have written about the need for theories-of-action, in contrast to research-based theory. They have concluded that theories created to understand and predict may be quite different from theories created to help people make events come about. The latter, called theories-of-action, must lead to understanding and prediction, but must go beyond these two important functions. This amounts to an epistemology of practice based on the idea of reflection-in-action. It is their ideas which have been selected to provide a simple, unifying theme in terms of which to review the training or content findings of this research. Their appeal lies in their relevance to the main problem, which is identified in the training or content findings, i.e. the need to better integrate training with the organisation. This in turn implies a need to integrate assumptions about training with assumptions about the organisation. A training theory-of-practice should be based on shared assumptions about the identity of the organisation, if it is to be effective. Their work links practice, reflection-on-practice, and learning from reflection-on-practice, ultimately leading to improved organisational effectiveness. It is relevant to this research because reflection-on-practice can take the form of evaluation.

2.5.3 Organisational Learning as Assumption Sharing

Organisational learning involves the detection and correction of error. When the error detected and corrected permits the organisation to carry on its present policies or achieve its present objectives, then that error-detection-and-correction process is single-loop learning. Single-loop learning is like a thermostat that learns when it is too hot or too cold and turns the heat on or off. The thermostat can perform this task because it can receive information (the temperature of the room), and take corrective action. Double-loop learning occurs when error is detected and corrected in ways that involve the modification of an organisation's underlying norms, policies and objectives. Most organisations do quite well in single-loop learning but have great difficulties in double-loop learning. One of Argyris & Schöon's (1976) major assertions is that organisations tend to create learning systems that inhibit double-loop learning which calls into question their norms, objectives and basic policies.
The authors develop the theme that individuals are programmed with Model I theories-of-action and hence they create organisations that facilitate single-loop learning and inhibit double-loop learning.

Just as individuals are the agents of organisational action, so they are the agents for organisational learning. Organisational learning occurs when individuals, acting from their images and maps, detect a match or mismatch of outcomes to expectation which confirms or disconfirms organisational theory-in-use. In the case of disconfirmation, individuals move from error detection to error correction. Error correction takes the form of inquiry. The learning agents must discover the sources of error - that is, they must attribute error to strategies and assumptions in existing theory-in-use. They must invent new strategies, based on new assumptions, in order to correct error. They must produce those strategies. And they must evaluate and generalise the results of that new action. ‘Error correction’ is shorthand for a complex learning cycle.

But in order for organisational learning to occur, learning agents discoveries, inventions, and evaluations must be embedded in organisational memory. They must be encoded in the individual images and the shared maps of organisational theory-in-use from which members will subsequently act. If this encoding does not occur, individuals will have learned but the organisation will not have done so (Argyris & Schön, 1978, p19).

2.5.3.1 Theory of Action

The organisation’s task system, its pattern of interconnected roles, is at once a design for work and a division of labour. The norms, strategies and assumptions embedded in the company’s task system constitute its theory of action. Taken together, component theories of action for all the divisions of a company, represent a theory of action for achieving corporate objectives. This global theory of action they call ‘instrumental’.
The company's instrumental theory of action is a complex system of norm strategies and assumptions. It includes in its scope the organisation's patterns of communication and control, its ways of allocating resources to goals, and its provisions for self maintenance - that is for rewarding and punishing individual performance, for constructing career ladders and regulating the rate at which individuals climb them, and for recruiting new members and instructing them in the ways of the organisation. Organisational theories of action need not be explicit. Formal corporate documents such as organisation charts, policy statements, and job descriptions often reflect a theory of action (the espoused theory) which conflicts with the organisation's theory in use (the theory of action constructed from observed actual behaviour).

2.5.3.2 Theory-in-use

Organisation is an artifact of individual ways of representing organisation, which is essentially a cognitive enterprise. When the task system is large and complex, most members are unable to use face-to-face contact in order to compare and adjust their several images of organisational theory in use. They require external references. There must be public representations of organisational theory in use to which individuals can refer. This is the function of organisational maps. These are the shared descriptions of organisation which individuals jointly construct and use to guide their own enquiries, e.g. diagrams of workflow, compensation charts, statements of procedure etc. Organisational theory in use, continually constructed through individual enquiry, is encoded in private images and in public maps. These are the media of organisational learning. As individuals continually modify their maps and images of the organisation, they also bring about changes in organisational theory in use.

Organisational theory in use is to be inferred from observation of organisational behaviour, that is from organisational decisions and actions. Decisions and actions carried out by individuals are organisational insofar as they are governed by collective rules for decision and delegation. The organisation's theory in use may be inferred from the ways in which its members go about their work. In order to discover an organisation's theory in use, we must examine its practice, that is, the continuing performance of its task system, as exhibited in the real behaviour of its members. This is, however, an outside view. When members carry out the practices appropriate to their organisation, they are also manifesting a kind of
knowledge and this knowledge represents the organisation's theory in use as seen from the inside.

Organisational theory in use is often tacit, and may remain tacit, because its incongruity with espoused theory is undiscussable. Or it may remain tacit because individual members of the organisation know more than they can say - because the theory in use is inaccessible to them. Whatever the reason for tacitness, the tacit theory in use accounts for organisational identity and continuity.

2.5.3.3 Single Loop Learning (Model I)
In Figure 2.7 members of the organisation respond to changes in the internal and external environments of the organisation by detecting errors which they then correct so as to maintain the central features of organisational theory in use. This is single loop learning. It is learning which functions to preserve a certain kind of constancy. There is a single feedback loop which connects detected outcomes of action to organisational strategies and assumptions which are modified so as to keep organisational performance within the range set by organisational norms. In organisational single-loop learning, the criterion for success is effectiveness. Individuals respond to error by modifying strategies and assumptions within constant organisational norms.

2.5.3.4 Double-loop Learning (Model II)
In some cases, see Figure 2.7, error correction requires an organisational learning cycle in which organisational norms, themselves are modified. In double-loop learning there is a double feedback loop which connects the detection of error not only to strategies and assumptions for effective performance, but to the very norms which define effective performance. Argyris & Schön (1978) give the name double-loop learning to those sorts of organisational enquiry which resolve incompatible organisational norms by setting new priorities and ratings of norms, or by restructuring the norms themselves together with associated strategies and assumptions. In double-loop learning, response to detected error takes the form of joint enquiry into organisational norms themselves, so as to resolve their inconsistency and make the new norms more effectively realistic.
FIGURE 2.7
Single and Double Loop Learning Systems

SINGLE LOOP LEARNING

DOUBLE LOOP LEARNING

(From: Argyris & Schön, 1978, p112-113)

2.5.3.5 Deutero-learning

The requirements of organisational learning, especially for double-loop learning, are ongoing as reflected in ideas concerning the management of change, creative management, innovative management etc. The organisation needs to learn how to carry out single and double-loop learning. This sort of learning to learn has been called deutero-learning i.e. second-order learning. Each time the organisation learns to deal with a larger order of problems it learns about the previous context.
for learning. When an organisation engages in deutero-learning, its members learn too about previous contexts for learning. They discover what they did that facilitated or inhibited learning, they invent new strategies for learning, they produce these strategies, and they evaluate and generalise what they have produced. The results become encoded in individual images and maps and are reflected in organisational learning practice.

2.5.4 Summary
Argyris & Schön (1978), in referring to their ideas in experiential learning terms, have summarised them as follows. An individual, or an organisation, which recognises its theories in use can:

- look forward to predict the consequences of its actions consistent with its existing theories-in-use

- look backward to determine what consequences would result if its theory-in-use were consistent with its theory-of-action

- adjust its theories-in-use to be congruent with its theory of action or vice versa (Argyris & Schön, 1974, p99).

Finally, the ideas developed by Argyris and Schön have been taken up and adapted for use in a practical consulting situation by ODISA, the Organisation Development Institute of Southern Africa. The backwards and forward orientation foreshadows the U-procedure developed by ODISA (1985a & b) and its international associates, a world-wide network of institutes working on questions arising from the human side of organisations over a wide range of industries and functions, both public and private. The adoption of the ideas of these authors by ODISA is noteworthy because a citation search revealed that nowhere else in the management/training literature were the authors mentioned either jointly or with Schön on his own (ABI/Inform Database). This can perhaps be attributed to the difficulty of following what they are saying (Schön in particular) and would explain why it has been left to ODISA, which is highly innovative, to pick up their ideas and apply them.
2.6 Summary of Literature Review

The previous section has reviewed the literature in four areas relevant to the research. First, the evaluation literature in general was overviewed. Then particular attention was given to the description and discussion of the new evaluation, and its orientation to a user-focus. This was followed by a review of the currently available tools for meta-evaluation, especially the evaluation standards of the Joint Committee (1981). The newly emergent Strategic Human Resource Management literature was then reviewed to establish a conceptual framework for the integration of training within the organisation. This was followed by a brief review of the organisation learning literature to identify an integrative tool for synthesizing training evaluation feedback with the organisation’s basic policy and assumptions.

The answers contained in this literature review, to the relevant research questions identified in 2.1, have served in part to address the research aims of:

- identifying an improved approach to training evaluation for use by the company and in other South African companies (a process aim);

- assessing aspects of the nature and purpose of training effectiveness in industry in South Africa of relevance to the company and other South African companies (a content aim);

- prescribing a model(s) for monitoring training evaluation and integration on an ongoing basis (a meta-evaluation/strategic HRM aim).
3. RESEARCH METHODOLOGY

3.1 Introduction to Methodology
This section describes methodology at two different levels. First, there is the level of the general research approach - what kind of research was being conducted (3.2). It was considered important to think this out and spell it out because there is still a dominant attitude towards research, on the part of researchers of the hypothetico-deductive school. However, holistic-inductive research, which is the general research approach of the dissertation, is legitimate research in its own right.

The second level of description is at the level of the specific methodologies of the three individual evaluations (3.3) followed by the meta-evaluation method (3.4) and the double loop learning analysis (3.5). These specific methodologies are designed to provide answers to research questions two to four as in 1.6.

3.2 General Approach

3.2.1 Introduction
In Section 1, Introduction, it was pointed out that evaluation research differs from other research and that these special features of evaluation research constituted a hidden, predetermined blueprint for this research undertaking. This affected the general approach which was adopted to the research design. It is therefore first necessary to explain the general research method of the dissertation. This is done under the headings of action research, contract research, grounded theory and inductive research.

3.2.2 Action Research
The fact that the initial research was done for the use of a client, who also defined the research problem, immediately implied that the research would be of the action research type.
Action research is small-scale intervention in the functioning of the real world, and a close examination of the effects of such intervention. Action research is situational - it is concerned with diagnosing a problem in a specific context and attempting to solve it in that context (Cotton & Manion, 1980, p174).

Action research is in vogue in research for management today. "Action research is a reaction against the failure of conventional methods to provide generalizations about the behaviour of individuals in organisations that are both valid and useful for managers" (Orpen, 1983, p1).

Conventional research methods, such as experiments and surveys, produce the kind of knowledge which management, subjectively, finds difficult to apply. For example, in surveys researchers impose their questionnaires/interviews on others instead of allowing the subjects themselves to generate items/questions that are important to them. In experimental research there is an inevitable loss of direct resemblance to the real world by virtue of the very nature of experiments, which are abstractions from reality.

For these reasons, an increasing number of researchers, and particularly those who are committed by research contracts to deliver useful and usable information to management, are either consciously or through trial and error, opting for alternative approaches such as action research.

In fact, instead of trying to reproduce complex human events in a laboratory (as in experiments) or splitting out certain elements from an integrated system (as in surveys), action research attempts to understand things as they occur, with the researcher being an integral part of what he is studying (Orpen, 1983, p3).

Because action research does not try to develop law-like generalizations subsuming a range of instances, the action researcher is content to 'get into' a particular problem situation and try to solve it, as an end in itself. It is therefore possible to provide the appropriate information which makes sense of the work situation, which is essential for effective management.
3.2.3 Contract Research
This research exercise took on some of the characteristics of applied research where the significance of the findings was considered with a view to their possible application in solving the wider problem of training evaluation in other companies, in South Africa, and even elsewhere, where training evaluation is a matter for concern.

It was the client's original intention that research conducted for its own use should also be applicable to, and available for, the use of other South African companies as well. This additional requirement was contained in the research contract and the funds attached to the contract supported a university research project to undertake the applied research aspects. In this regard it is interesting to note what Bailey (1982, p22) observes:

Probably the strictest form of applied research funding is the research contract, a form used increasingly by United States government funding agencies. In a contract, in contrast to a grant, the investigator makes a binding legal agreement with the funding agency, to perform a certain study, with a certain sample size, for a certain amount of money, and by a certain deadline. In such an arrangement the application of findings is given first priority, although this does not mean that the researcher cannot be intellectually motivated or that his or her findings cannot be theoretically important.

3.2.4 Grounded Theory
Finally, the research becomes grounded theory with the formulation of a dissertation discovered or generated from the data. This is in contrast to the classical approach which serves to verify theories by entering the field with preconceived concepts which are to be measured empirically by the derivation of hypotheses. The classical approach is deductive and includes verification.

Grounded theory, in contrast, is developed inductively by: "1. entering the field work phase without a hypothesis; 2. describing what happens; and 3. formulating explanations as to why it happens on the basis of observation" (Bailey, 1982, p55). Glaser & Strauss (1973, pp1-2) have suggested that there is: "...an
over-emphasis in current sociology on the verification of theory, and a resultant
de-emphasis on the prior step of discovering what concepts and hypotheses are
relevant for the area that one wishes to research."

Grounded theory is important in sociology today because such a theory fits
empirical situations and is understandable to sociologists and laymen alike. As
evaluation shares similar problems, it follows that grounded theory is of
particular relevance to evaluation research. Grounded theory and evaluation must
both work to provide relevant predictions, explanations, interpretations and
applications. Generating grounded theory about training evaluation is a way of
arriving at evaluation theory suited to the actual uses of evaluation. This is in
contrast to evaluation theory generated by logical deduction from a priori
assumptions.

Glaser & Strauss (1973) believe that theory must fit the situation being researched
and work when put into use. By 'fit' they mean that the categories must be readily
(not forceably) applicable to and indicated by the data under study; by 'work' they
mean that they must be meaningfully relevant to and able to explain the behaviour
under study. When theory is developed as grounded theory one can be relatively
sure that the theory will fit and work.

In contrasting grounded theory with logico-deductive theory and
discussing and assessing their relative merits in ability to fit and
work (predict, explain, and be relevant), we have taken the position
that the adequacy of a theory for sociology today cannot be divorced
from the process by which it is generated (Glaser & Strauss, 1973, p5).

Their position is not logical, it is phenomenological. Therefore verification is
not required in grounded theory because concepts are mirror images of empirically
observed data. However, because deduction is not involved, abstract concepts which
can be generalized are difficult to use and theorising is limited to a certain
extent.

Generating theory puts a premium on emergent conceptualisations as Patton (1980b,
p41) explains:
The strategy in inductive (research) designs is to allow the important dimensions to emerge from the analysis of the cases under study without presupposing in advance what those important dimensions will be. Theories about what is happening in a programme are grounded in this programme experience, rather than imposed on the programme a priori based on hypothetico-deductive constructions.

He contrasts this discovery mode of research with the verification mode of the hypothetico-deductive paradigm.

Glaser & Strauss (1973, pp45-47) extend this emergent characteristic to sampling as well, in what they call theoretical sampling.

Theoretical sampling is the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges. This process of data collection is controlled by the emerging theory whether substantive or formal. The initial decisions for theoretical collection of data are based only on a general sociological perspective and on a general subject or problem area. The initial decisions are not based on a preconceived theoretical framework.

Beyond the decisions concerning initial collection of data, further collection cannot be planned in advance of the emerging theory (as is done so carefully in research design for verification and description). The emerging theory points to the next steps - the sociologist does not know them until he is guided by emerging gaps in his theory and by research questions suggested by previous answers.

By contrast, in conventional practice, the researcher is expected to stick to his prescribed research design, no matter how irrelevant it may subsequently become.

Britain (1970, p230) describes the holistic-inductive approach to evaluation research as contextual: "While an experimental approach assumes that action
programs can test generalizable theoretical propositions, contextual evaluations are, first of all, exploratory and assume that valid theoretical questions themselves must still be formulated."

He asserts that a theoretical and methodological basis for contextual evaluations can be found in Foster's (1969, p57-58, cited in Britain, 1978) more general discussion of directed social change:

"Where the technical, social, cultural, economic, psychological, and other pertinent factors are nearly infinite, and usually not recognised in advance, this exploratory quality is enormously advantageous. It vastly increases the investigator's chances of hitting upon the critical element in any situation."

Britain (1978) continues that contextual research is inductive - issues are defined on the basis of empirical findings, and answers to preliminary questions are the questions in the next stage of research.

Another term which has been used in this regard is that of 'contingency' approach. For example, Clement & Aranda (1982, p39) write:

"...little emphasis in evaluation has been placed on important variables beyond the training course itself and upon which the success of management training may be contingent. These variables include (for example) the organisational setting within which the manager attempts to use the training, the unique characteristics of the manager to be trained and the nature of the organisational problem to be solved by the training."

In other words, an holistic, inductive research strategy is associated with the term 'contingency' approach.

3.2.5 Inductive Research

In inductive research, the researcher tries to make sense of the situation without imposing pre-existing expectations on the research setting, unlike deductive research which proceeds from a priori assumptions. In this research, the inductive
approach was used both with regard to research content and research process. The advantage which the inductive approach offers for the generation of new content knowledge, or grounded theory, has already been covered in Section 3.2.4. However, the inductive approach can also apply to how new knowledge is generated.

The inductive research approach is most often linked to qualitative research methods, but this need not necessarily be the case as quantitative research methods are just as capable of producing new knowledge, depending on how they are used. What is at stake is the potentially limiting effect of existing research methodology, particularly with regard to the a priori determination of research designs.

Daft (1983) has argued for the conceptualisation of research as a craft, involving fundamentally different attitudes and ways of thinking from anything which is traditionally taught in a research methods course. In other words, the researcher on the job needs to acquire important new experience beyond what he has been taught. He believes that the challenge is for researchers to get beyond sheer techniques and research designs and to introduce the craft attitude into the research process. Research is enhanced, he claims, by the development of seven crafts: the constructive use of surprise and error; the capacity for story telling and research poetry; the development of confidence in emotion and commonsense; and recognition of the importance of first-hand learning and research colleagues. What these ideas mean for this research is that the inductive development of research design and research techniques does not represent neglect of traditional research procedures. Instead, it contributes elements of research craft essential to the conduct of good research and the development of new knowledge.

3.2.6 Summary
This section on general research method has described the general approach which was adopted to the research design. A feature of the approach was that of action research within a research contract. Grounded theory was identified or developed through an inductive research process using the 'crafts' of research. The result is an holistic, context-based study of the evaluation of training, in which concepts and study samples emerge from the data. The findings and conclusions are therefore rooted in reality and should be readily usable to the client, hence the title 'user-focused evaluation'.
3.3 Methodology of Three Evaluations

3.3.1 Introduction
This section covers case study (3.3.2) and triangulation (3.3.3) which are the major methodological approaches used in the individual evaluations. Also, within case study and triangulation specific techniques were used, i.e. methods of observation (3.3.4) and survey (3.3.5).

The methodology was planned in such a way as to experientially develop, by trial and error, what could be an improved approach to training evaluation, i.e. a practical (do-able), creative (non-technical) evaluation approach for use in real-life situations by laymen, not specialist evaluators, and for the benefit of management, who were not the traditional audience of the scientific community. In addition, the evaluation approach which would be identified, developed and recommended, should be applicable, if possible, to a whole range of industrial training situations in South Africa.

It was also important, that the evaluations done for Carlton Paper should actually inform them, and the national community of trainers of the nature, extent, associated problems, developments in, frustrations with and achievements of their industrial training programme, as an example of private sector training in South Africa. The aspect of what is actually happening in South African training, insofar as this one company constitutes an example, is of interest in order to establish some features which may be of significance, because there is a need to see clearly what is being expected of training and what more needs to be done by the company to make training genuinely effective.

3.3.2 Case Study
The term 'case study approach' is not interpreted here in the narrower sense of the studying of records by a social agency or psychotherapist. Nor is it interpreted as the case study for study purposes, e.g. the Harvard case study. It is the intensive study of a selected instance(s) or the phenomenon in which one is interested - individuals, situations, groups or communities - for the purposes of research or evaluation (Selltiz, Jahoda, Deutsch & Cook, 1965, p60). An evaluation case study is the documentation of individualized client outcomes (Patton, 1980b).
The aim of a case study for research purposes is described as follows:

Scientists working in relatively unformulated areas, where there is little experience to serve as a guide, have found the intensive study of selected examples to be a particularly fruitful method for stimulating insight and suggesting hypotheses for research (Selltitz et al., 1965, p 59).

According to this definition, it is a form of exploratory study.

According to another definition, a case study could be seen as a form of qualitative sampling.

The purpose of such observation is to probe deeply and to analyze intensively the multifarious phenomena that constitute the life cycle of the unit with a view to establishing generalisations about the wider population to which that unit belongs (Cohen & Manion, 1980, p 99).

As an evaluation tool, the aim of this case study is to improve the understanding of the reader, or audience of the evaluation, primarily by showing them how others perceive the programme being evaluated. When the aim of the evaluation is understanding rather than explanation, the case study type of evaluation is often superior to other methods.

What features of the case study, as an exploratory method, make it an appropriate procedure for the evoking of insights or understanding? It is the attitude of the investigator, which should be one of alert, responsive, receptivity. One should be seeking rather than testing and he should be guided by features inherent in the unit being studied. It is the intensity of the research on the case selected for investigation which can make of it a sample study. The researcher attempts to obtain sufficient information to characterise and explain both the unique features of the case being studied and those which it has in common with other cases. The approach relies heavily on the integrative powers of the investigator - the ability to draw together many diverse bits of information into a unified interpretation (Selltitz et al., 1965).
The case study approach is a specific way of collecting, organising and analysing data by specific cases. The purpose is to gather comprehensive, systematic and in-depth information about each case. Information should be as complete as possible. This permits thorough study of the case (Patton, 1980b).

Theoretical preparation is important. The researcher may identify, modify, or develop a checklist as a guide to things to look for. This checklist can serve as a basis for the formal research design and even as a format for the research report. In the field the checklist serves as a place to start, an initial focus of attention and point of reference or departure for later explorations. However, in some cases the field worker may proceed by finding an arbitrary starting point in the field (Diesing, 1972).

3.3.2.1 Case Study Evaluation of Technical Training

The International Council for Educational Development (ICED) have developed guidelines for the World Bank for preparing case studies on non-formal education (Coombs & Ahmed, 1974). Their aim is to facilitate a common analytical pattern in compiling and analysing case materials, to ensure systematic coverage of key points and to maximise comparability. This checklist was modified to suit a case study evaluation of training in industry and was used for the evaluation of technical training at Carlton Paper (See section 3.3.4.3.1).

Case data consisted of all the information that was collected about the case. It included programme documents and reports, interviews with programme participants and staff, observation of the programme and its history. The first task was to write a written case record. This pulled together and organised the voluminous case data into a comprehensive primary resource package. It contained all the major information that would be used to do the case analysis and construct the case study. The case study (see Section 4.4) is the descriptive, analytic, interpretive and evaluative treatment of the comprehensive descriptive data that is in the case record. It should produce a highly readable and useful narrative, which, in its own right, takes the reader right into the case situation (Patton, 1980b).

The purpose of classifying and analysing qualitative case data is to facilitate the search for patterns and themes within a particular setting, or across cases.
This search for patterns can be a process of waiting to be impressed by recurring themes which re-appear in various contexts. It may involve running over the checklist and noticing that something is recurrently absent, or noticing a regular contrast with some other situation. Often it is simply being surprised by something (Diesing, 1972). Alternatively the process can consist of conscious research or evaluation questions in the mind of the researcher/evaluator as he reviews the collected data - a form of content analysis.

Once a theme is identified, it must be interpreted - what does it mean? Interpretations can be developed by observing the context in which the theme appears. When several themes have been identified, interpreted and tested, the researcher can move on to the next step. This may be the formulation of hypotheses for research or the focusing of further specific research questions for in-depth evaluation, for example.

3.3.3 Triangulation

The term 'triangulation' is not new in research. It can also be known as multiple methods/multitrait research, or convergent methodology/validation (Jick, 1979). These concepts all imply an appreciation of the real nature of research. This is that the research act is an act of symbolic interaction with the environment of the researcher. Each sociological research method, and in fact, each sociologist, will generate different lines of action toward the research environment (Denzin, 1978).

The generic definition of triangulation as defined by Denzin (1978) is the combination of methodologies in the study of the same phenomenon. The triangulation metaphor is from navigation and military strategy.

In its original and literal sense triangulation is a technique of physical measurement: maritime navigators, military strategists and surveyors, for example, use (or used to use) several locational markers in their endeavours to pinpoint a single spot or objective. By analogy, triangular techniques in the social sciences attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint, and in so doing, by making use of both quantitative and qualitative data (Cohen & Manion, 1980, p 208).
In other words, multiple reference points are used to locate an object's exact position. Given basic principles of geometry, multiple viewpoints will allow for greater accuracy. Similarly, social researchers can improve the accuracy of their findings by collecting different kinds of data bearing on the same phenomenon (Jick, 1979).

Triangulation is a process by which the evaluator can avoid the accusation that his findings are simply an artifact of a single method or data source, or a single investigator's bias (Patton, 1980b). Given that research methods represent different means of acting on the environment, and that their sociologist users lend unique interpretations to them, then the different types of triangulation - methods, data sources, theory and investigator - are all strategies for reducing systematic bias. In each case, the strategy involves checking findings against other sources (Denzin, 1979; Patton, 1980b).

The advantages of this model of research have not been appreciated. Perhaps the most common examples of the use of triangulation have been in attempts to integrate fieldwork and survey methods. Quantitative methods can make important contributions to fieldwork and vice versa, but research designs that extensively integrate both fieldwork and survey research are rare (Jick, 1979).

There are four basic types of triangulation: method, data, investigator and theory. Within method and data triangulation there are further sub-types (See Fig. 3.1). Triangulation can best be described as thick description. It can capture a complete, holistic and contextual portrayal of the units under study.

3.3.3.1 Triangulation in the Evaluation of Induction Training
In this evaluation three different sources as well as different methods were used. The three different sources were perceived as:

- the innovators and developers
- the facilitators and implementers, and
- the recipients.