Chapter 2
Literature Review

2.0 The chapter discusses importance of training evaluation and importance of human assets. There has been an increasing importance attached to training as is evident from formal setting up of training societies and their increasing memberships. The 62nd SHRM 2010 (Society For Human Resource Management) was held at San Diego recently in July 2010 where keynote speakers, Forbes’ CEO and president, Steve Forbes, and former US Vice-President Al Gore discussed the shift in human resources from the traditional “personnel” role to that of a business leader who can seize opportunities to address domestic and global challenges in the workplace. There is a discussion on shift in the training paradigm, problem statement, scope of present study, delimitation of study and justification/significance of the study. The working of the simulator provided at one of the training institutes is also explained. The literature review carried out includes formal definition of training, its benefits, training steps namely identification of training needs, developing training objectives, designing curriculum, select training methods and designing training evaluation, which is an integral part of the training process. It is important to understand that the whole process is iterative. The reasons for wasted training expenditure and difficulty in training evaluation are also discussed. A number of case studies / research are cited where training evaluation has been done and training found beneficial. Fine distinction has been made in seemingly synonymous terms Testing, Assessment and Evaluation. The contribution of major thinkers in the field of evaluation is also discussed. The types and models of evaluation are also included. The questions required to be raised in “Building an Evaluation Strategy” are also included. The chapter has also discussed ROI, which appears rather difficult parameter as far as training evaluation is concerned being, little subjective. The chapter includes an elaborate discussion on “Philosophy, Approach and Structure” of Indian Railways’ training. The chapter ends by “Identifying the gap areas”.

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2.1 Importance of Training Evaluation:

Revolutionary changes and competition has led to changes in the way organizations treat their clients. For organizations to deliver effective service to their customers, employees are a critical link. A key challenge for future is to effectively train staff & create differentiation for sustainable competitive advantage. Training and learning are key weapons in the race for competitive advantage and market leadership.

Management training and development has become a major economic activity and an essential corporate activity from strategic perspective and training has emerged as an increasingly important component of effective and well rounded HRD programmes.
Training and Development achievements are difficult and expensive to evaluate. However, without quality programme evaluation, the long term viability of training and development, both as management tool and HRD intervention, are not secure.

Reser (1999), in his doctoral thesis on “An Evaluation Schema for Management Training and Development Programme”, has developed theoretically sound evaluation schema to help practitioners conduct higher quality assessments. The project entailed development of an adaptive evaluation model and evaluation research instruments. The research questions was: Can evaluation schema be developed to improve accountability, utility and professionalism in training programme evaluation? His study aims to improve training evaluation practice. It affirms the value of educational programme evaluation concepts and tools. It seeks to improve the management training profession and advocates greater investment of intellectual capital in human resources development.

The outcomes include a training evaluation design model, a questionnaire design model, and an interview design model. These generic evaluation models are designed to be adapted for specific evaluation projects by practitioners. Overall, three key research objectives are achieved:
(a) the evaluation schema can improve accountability, utility and professionalism in training evaluation,
(b) specific schema are developed and tested, and
(c) the evaluation schema are adaptable by practitioners.

2.2 Training as a vital element:
Training has been identified as a vital element of any corporate strategy and therefore, evaluating the effectiveness of training has emerged as a critical issue. In almost 80% of cases, no analysis on ROI on training is done (even in developed economies) and in cases where impact of training is evaluated, most organizations use ‘Happiness Sheets’ only, which are focused on training, training methodology and the organization of training facilities, not on learning and impact of training.
2.2.1 People are the key assets:

An organization can strive to excel only when it realize that the success today is a function of competent work force. In today’s copycat world, it is relatively easy to copy product and reduce price, but it is not possible to copy trained people and organic culture. The example of Southwest Airlines is an adept example in this regard. Southwest Airlines reinvented air travel 40 years ago with its low fares and zany, irreverent style. These NUTS made flying an event. Today, Southwest keeps air fares rock bottom by keeping costs low, satisfies customers by getting people and baggage to their destinations on time (and gives them some fun along the way), practices the Golden Rule at work and in the communities it serves, and has the best productivity and safety records in the industry (Freiberg, 1996).

How has Southwest done all this? It’s not rocket science that keep costs low, productivity high, service positively outrageous, and black ink on the financial statement. Three extra special things: being crazy enough to follow an unorthodox vision, being courageous enough to allow people to have fun and be “real” people who love and care at work, and being smart enough to recognize that their most valuable assets are their people and the culture they create. Southwest never forgets it is in the people business; the company just happens to operate an airline.

2.3 Recognizing importance of Training:

Although training has emerged as a distinct field with its own roles, structures and budgets, training is still young. However, its importance has been well recognized. This is proved from the fact that Membership of American Society for Training and Development (ASTD) has increased from 15 in 1943 to 70,000 presently across 100 countries (http://www.astd.org, retrieved on 12.05.2010). This shows the importance of training even in developed economies.

The Indian Society of Training and Development (ISTD) was founded in 1969. It has a large membership of individuals and institutions involved in the areas of Training and HRD from Government, Public and Private Sectors Organizations & Enterprises, Educational and Training Institutions and other
Professional Bodies. It has 44 Chapters throughout the country with the National Headquarters at New Delhi. The society is affiliated to the International Federation of Training and Development Organizations (IFTDO), USA and Asian Regional Training and Development Organizations (ARTDO), Manila.

Importance of training can also be seen by the fact that ‘National Training Policy’ of Department of Personnel and Training, Government of India, 1996 mentions that “Training is one of the effective and tested tools for performance enhancement, as well as up-gradation of knowledge and skills of the personnel”. Reforms have enhanced the focus on training and development of manpower. This is evident from the creation of first ever, ‘National Training Policy for the Power Sector’ in 2001 (National Training Policy for the Power Industry, 2001).

In the Vision 2020 document issued by Rly Ministry in Dec 2009, it is mentioned that the vision is to train, motivate and equip each member of the Railway to reach his unique and full potential for which the Railway training institutions will be upgraded and expanded.

2.3.1 Adoption of SHRM (Society for Human Resource Management) in India:

The last 20 years have seen radical changes take place in the HRM function in India. HRD function in India is not well structured, inadequately differentiated and poorly staffed. In the last 10 years, HRM specialists and departments were under severe pressure to bring about large-scale professionalized changes in organizations in order to cope with the challenges brought about by the challenges thrown by the new economic environment (Som, 2002).

A study of 54 organizations (Som, 2002) reported that more and more Indian organizations are creating a separate HRM/HRD department and adopting innovative SHRM practices. The HRD department has been more open to changes, suggestions, more flexible, fair and focused on building employee-employer relationship while playing a definitive role in the success of the organizations. The HR department utilized modern technologies and HR personnel were well trained in those technologies. The HR departments were
no longer being labeled as ‘a cost centre and a place for maintenance programmes’. Organizations were practicing job rotation, re-training and re-deployment to develop the necessary competencies and skills of their personnel.

The SHRM systems were characterized by an increasing emphasis on professionalism, skills development, incentives, accountability, flexibility, openness and rightsizing (Som, 2002). For example, the Aditya Birla Group, the third largest business group in India, grew from a US$1.5bn diversified conglomerate in 1995 to a US$7.59bn in 2006. With this growth came the necessity to restructure its businesses. The Group started restructuring its businesses to compete in the liberalized environment focusing on larger investments in fewer businesses. To manage the increasing size of the Group, it built systems and processes and institutionalized the Corporate Centre. The HR was a key player in this change process. The top-management and the HR department understood that to manage growth and size focus would have to be in building competencies and meritocracy. The growth necessitated push on the people front. The HR department institutionalized innovative HRM practices and created a management talent pool that identified over 200 manager as performers and put them on a fast track. With a view to provide for systematic and structured processes for career growth, the HR department trained more than 100 managers as job analysts and another 100 as job evaluators. With this evaluation, 5,000 jobs had been evaluated, resulting in the formation of 11 distinct job bands.

2.4 Quality Education and Training:

International Quality Rating System (IQRS) is a state of art TQM evaluation system propounded and introduced by Det Norske Veritas (DNV), Netherlands. As an organization existing or more than a century, DNV developed this rating system to facilitate the implementation of total quality efforts in the organizations. Designed for the primary purpose of obtaining an objective measurement of the effectiveness of work being done to manage quality, it provides a blueprint for the development of a management programme capable of ensuring sustainable quality improvements in all spheres of the organization with the implementation of IQRS, the eventual
status of an organization is recorded in terms of its current position, progress and possible area of improvement. Its accent is on continuous audit, review and improvement. It is not just a four-letter word; it is a symbol of qualitative excellence.

In the context of the changing scenario in the power sector, Debdatta Ray (2003) argues for a greater role for human resource development, and specifically training for retention and redeployment. His paper examines the causes and remedial measures of market failure in training and recommends, on the basis of empirical evidence, a policy to support increase of public-private partnerships in training, along with enabling and regulatory mechanisms. He has differentiated between old and new training paradigm.

2.5 The Training Paradigms – Old and New:

The traditional departmental structure of a HRD function cannot meet all the new demands for employee learning. The old paradigm of training was based on the classroom approach that focused on memorizing, and was responsible for the creation of centralized training departments to design and deliver training programmes. This had the in-built disjunction between organizational goals and programme designed on the one hand, and between learning and job performance on the other (what has been referred to as the “training myopia”).

The New Training Paradigm:

The socio-economic and technological forces have changed the traditional approach to training systems making knowledge and skills critical for competitiveness. There has been a shift in emphasis from training to learning, and to manage the learning processes in such a way that it adds value to the business. The trainer is less a subject specialist and more a facilitator of learning. In addition to the design and delivery of the learning mechanisms, the new approach aims at creation of alliances between the users of the training and the training providers (or facilitators). Basic Principles of the New Training Paradigm are:

- Strengthen the linkage of training results to strategic business goals.
- Maintain a strong customer service focus
- Integrate training efforts into a total performance improvement system
- Use measurement and feedback to continuously improve the process of learning and change.

RINL (Rashtriya Ispat Nigam Limited), a Public Sector Steel Plant at Visakhapatnam, made a miraculous turn-around and is making net profit now. RINL has surpassed all other Steel Plants of the country in various performance parameters. The strength of RINL lies in its Human Resources. RINL has strategically planned development of this crucial resource through training and other initiatives. The article by Rao and Gupta (2003) elaborates on how training has been systematically planned and implemented at RINL, how the top management is involved in Human Resource Development; and how the training function is interwoven in the hierarchical web of the organization, bringing out commitment at all levels.

2.6 Problem Statement:

Even though executives intuitively feel that there is value in providing learning opportunities, they logically anticipate a payoff in important bottom-line measures such as productivity improvements, quality enhancements, cost reductions and time-savings. Yet the frustration comes from the lack of evidence to show that the process is really working.

Rao (2001), in his article comparing management training in Indonesian and Indian health care system shared similar views. He observed that seldom are efforts directed to evaluate the understanding of participants. The feedback from the participants is usually focused on trainer, training methodology and the organization of training such as classroom facilities, boarding and lodging.

Some studies have been conducted to evaluate the impact of training on learning. This is evident by the study conducted by Singh (2001) of 27 supervisors from 10 mills, which concluded that as compared to control group, learning scores for training group had improved significantly, demonstrating, training did result in learning.

These studies demonstrate that training has been effective in improving knowledge and skills of learner. However, no conclusive evidence is available to evaluate
impact of training on business performance in India. Even in developed countries, only 30% of respondents evaluate their training in relation to behavior-job impact.

2.7 Scope of present study
The present study examines the impact of training on knowledge and on the job skills of the operating staff of Electrical Deptt. in Western Railway, which is a major Zonal Railway of Indian Railways. Specifically, this study addresses the following aspects concerning the impact of training on their performance.

1. Does training bring about substantial changes in knowledge of Motormen of Mumbai suburban section trained at MX training school?
2. Does training bring about substantial changes in knowledge of Loco Pilots (Drivers) of W. Rly trained at BRCY training school?
3. Does training bring about substantial changes in on-the-job-skills of Loco Pilots (Drivers) of W. Rly trained at BRCY training school?

All above questions can be answered by evaluating the training being imparted by these Training Institutes.

2.8 Delimitation of the Study:
Evaluating the impact of training on key performance parameters is a vast area of study. But an experimental investigation needs a specific theme, with well-defined samples and tools. The study is thus, being delimited to the two Training Schools (MX & BRCY Training Schools) of a major Zonal Railway, i.e. Western Railway.

2.9 Justification of study:
This Research has focused on evaluating impact of training on performance and will be helpful to Management for training of employees by providing information in area of impact of training on employee performance, resulting in focused training, enhanced management commitment for training and use of training as key strategic tool for enhancing performance. This study is thus, a step forward in putting the training evaluation techniques to good use in Indian Railways.
2.10 Significance of the Study:

The study can revolutionize approach of training towards skill enhancement and way organizations value training. Interviewing various training-in-charges and Departmental Heads & Field Incharges corroborates this viewpoint. However, interviews are always subjective and provide a theoretical inputs and therefore, needs to be authentically researched to provide concrete proof and confirmation. This is the aim of this study.

Data has been collected from secondary sources of books, internet, journals, existing dissertations and theses. Primary and secondary data was collected from the two training schools (on the basis of pre & post training knowledge and on-the-job skills evaluation through computer test & computerized simulator respectively), for which validity and reliability test were not required, as these are being used regularly in-house. Data was collected for employee knowledge score and on-the-job skill evaluation scores. These scores were compared for employees who were trained, both before and after the training.

Primary data was also collected from staff who had undergone training at these two training schools, through a questionnaire. The questionnaire was decided and finalized after discussion with experts (Line Managers), to check whether these agreed with the findings of secondary data(computerized test and simulator test).

The primary data was also collected from Managers and their response regarding improvement in their staff after the training was taken.

On Western Railway, the promotion of Motorman and Loco Pilot is based on a written examination. This study, in which we are able to judge their performance through computerized test and Simulator can be used for the purpose of promotion (instead of following the examination procedure) by deciding criteria in the following way:

- From Goods Loco Pilot to Passenger Loco Pilot – 70% score on Simulator.
- From Passenger to Mail-Express Loco Pilot – 80% score on Simulator.
- From Mail-Express to Rajdhani/ Shatabdi Loco Pilot – 90% score on Simulator.
The Simulator gives marks in following broad areas:

1. Locomotive Score.
2. Dynamic Braking.
3. Efficiency Score.
4. Braking Score.
5. In train force.
6. Electric Score.
7. Railway Score.

The discussion with experts has shown these can be equated in the following way:

1. Locomotive Score = Working Knowledge.
4. In train Force + Electric Score = Safety.
5. Railway Score = Rules and Regulations.

Constant training (Refresher) is an integral component of the organizational strategy and is necessary to keep the future running smoothly. The refresher training of Loco Pilots & Motormen is imparted at a periodicity of 3 years for the same purpose.

2.11 What is training?

Training is “The process of preparing or being prepared for a job”. A learning experience that seeks a relatively permanent change in an individual that will improve the ability to perform on the job.

Training changes a person’s behaviour potential in a given situation brought about by his repeated experiences in that situation.

Training is “The acquisition of skills, concepts or attitudes that result in improved performance in an on-the-job situation”.

Training is the transfer of defined and measurable knowledge or skills that result in improved performance in an on-the-job situation. The aim of training activities is to achieve desired modifications in skills, attitudes and knowledge of employees so that they perform their jobs most efficiently and effectively.
2.11.1 Pedagogy of Learning

The traditional methods of teaching are as under:

- Lecture Method

- Catechism/Seminar – Teaching through questions and answers.

- Individual tasks.

- The Case Method – Introduced by Donhain B at Graduate Schools of Business Administration at Harvard.

- Incident Method – A slight modification of Case Method in which instead of giving the students a full fledged case, only outlines are given.

- Role Playing.

- Psycho Drama – It is akin to role playing in a “real life situation”.

- Business Simulation – It was developed in 1958 by American Management Association.

A new concept has been evolved by Shrivastava (2004) in Education and Teaching, i.e. the GORISE System (Game Oriented Rationalized Integrated Self-motivating Educational System), which is based on the notion that every learner has an inner urge to learn. The author has experienced the learning takes place in five stages as follows:

- Curiosity

- Retention

- Comprehension

- Convincing

- Application
Individual coaching (and not general training) produce better employee performance and results, as per Longenecker (2010), who carried out a survey of 219 experienced managers and took their response in the subject of coaching on a 4- point scale and concluded that individual coaching is based on the employees ability and motivation.

2.11.2 T-Group Training – Essentially Laboratory Training Method, it was first conducted by Kurt Lewin at the Massachusetts Institute of Technology, USA. T-Group (Training-Group) is a small unstructured training in which the participants learn, from their own interactions, and evolving dynamics about issues pertaining to inter-personal relations, group dynamics and leadership. This is also known as Sensitivity Training, and is a training approach based on experiential learning. According to Dr. Somnath Chattopadhyaya, the leading T-Group Guru, the Laboratory Training was introduced in India in the mid fifties, when Udai Pareek and his friends worked with Stephen M. Corey. Almost, at the same time, Rolph Linton was experimenting with the experiential learning methodologies in Yelwel, Mysore. Udai Pareek’s laboratory at Ferozpur in 1962 is considered to be the first formal, T-Group training in India. With the pro-active vision of these persons, along with a few others, the Indian Society for Applied Behavioral Science was founded in 1972, popularly known as ISABS. (Sarthi,2000).

Wilson (2000) in an article on “Emergency Response Preparedness: Small Group Training”, has commented that the learning styles and training methods for individuals and groups can be matched to maximize the efficiency of a training programme. He has listed and discussed 66 types of teaching methods.
2.12 Benefits of Training:

The basic purpose of training is to make a person do a job as per standards laid down. However, it has direct & indirect and intentional & unintentional benefits.

Training is a tool to fulfill all three basic requirements, which organizations must have i.e. people retention, people performing task in dependable manner and people going beyond their role and engaging in some form of creative spontaneous and innovative behaviour at work.

Training also provides a solution to high employee turnover, high absenteeism, proportionally high overtime, increasing customer complaints, employee grievances, low employee morale, high error rate, new employees not trained, low employee productivity and introduction of new procedures. At HP services, as a result of a voluntary training program, only sixty persons left the company vis-à-vis 100 from untrained group in a similar time period resulting in savings of over $1,600,000 towards cost to locate and hire.

Training is an effective retention strategy, as workforce view training and development opportunities as critical. This can impact organizational performance as concluded in a study for hospitality industry in U.K., where staff turnover is costing over $300 million per annum, averaged at over $3,000 per post (www.wivenhoe.gov.uk retrieved on 11.05.10).

It is important to conduct training at the time, when people can use skills immediately after training; People tend to forget a knowledge/skill when they do not use it. There is not only a learning curve; there is also a forgetting curve (Singh, 2000).

2.13 Training Steps:

The various steps of training are:

Identification of training needs
Develop training objective
Design training curriculum
Design/Select training methods
Design training evaluation methodology,
Conduct training programme and
Measure training results.

Cannons of financial proprietary demand that before starting the training process, it is pertinent to have a financial justification of training initiative, which include training need analysis and estimated return on investment of training.

2.13.1 Identification of Training Needs:

“Success of any training programme largely depends upon proper identification of training needs”. A training needs assessment is the systematic process of gathering and analyzing information about training needs. It has been referred to as “The art and science of finding the right problems and understanding them fully”.

The tendency to give needs assessment and needs analysis as separate processes is antithetical to a systems approach to organizational (OD) and instructional (ID) development (Benjamin, 1989). A careful and comprehensive reading of the literature points up past efforts at boundary work which has carved out different realms of activity for each process while weakening the systems approach to the analysis and resolution of performance problems. Needs assessment identifies and prioritize needs, while needs analysis breaks needs down and suggests causes of and solutions to needs.

Nagraj and Kamalanaban, (2000) surveyed the feedback of customers on the competencies of employees in a servicing firm and used the feedback to identify training needs and develop training programmes for training of employees. Using a structured questionnaire, customers were asked to rate five major groups of behavioral traits (Promptness, Care and comfort, Educating and skill imparting, Reliability and consistency and Problem solving), first in relation to its importance to the customer, and then the extent the customer experienced these traits as performance from the company employees. Results of the survey in two companies showed that, training gaps can be quantitatively identified through this method, and followed up with suitable training interventions.
Training needs identification is a vital phase in planning training, in the preferred areas, to ensure that anticipated outcome is achieved as well as maximum gains for the professionals and their organizations (INSPQ, 2008). Training is needed in the following situations:

- Changes in the system or in work.
- Introduction of new technology.
- Introduction of new Govt. standards.
- Decline in quality of work or performance
- Lack of skills and knowledge
- Lack/absence of motivation.

The final product of a training needs analysis is an accurate description of exactly what type of training is required, which is adapted to the real situation of the professionals in question and of the environment in which they operate.

To ensure optimum consistency in skills development between the training activities designed for the staff working in the Quebec health system and the training needs existing in these populations, the Institut national de santé publique du Quebec (INSPQ) Skills Development Unit considered it relevant to develop terms of reference for performing analyses of continuing education needs. The fact is that analysis of training needs is a step often skipped in the process of developing training activities. However, the needs analysis process is essential in order to maximize attainment of the objectives of this type of activity.

The key questions to be answered before working to link training to business objectives and these are, ‘What are the business objectives?’ and ‘How will the training help the business to meet those objectives?’ Here, training need assessment sets the stage for further stages in training cycle, including training evaluation. The first stage of training need analysis is identification of business needs i.e. ‘Why training is required?’ Once business needs are understood, the second stage of training need analysis is to understand the performance needs, i.e. “What performance issues this training is addressing?” Once, performance issues are identified, then learning needs in terms of knowledge, skills and attitude need to be identified and as a concluding step, who are the learners who need to be given this input which will develop their knowledge, skill and attitude, resulting in
developing their performance and impacting the business requirements. This model clearly demonstrates that the stage for training evaluation is set at time of training need analysis itself.

US organizations spend about $5 billion annually to train end-users of information technology (IT), and 50% of organizations do not assess their training need. It is, therefore, pertinent to analyze training needs first and then impart training accordingly.

2.13.2 Develop Training Objectives:

Training objectives are defined on outcome of training need analysis. Learning objectives may be the most critical input in designing training sessions. People are more likely to complete training sessions successfully if they are told at the outset of the session (in advance) what the goals of the training are.

2.13.3 Designing Training Curriculum:

Training design refers to factors built into the training program to increase the chances that transfer of training will occur. Instructional system design (ISD) model on the ADDIE (Analysis, Design, Development, Implementation and Evaluation) lines offers a concrete, step-by-step approach to developing training curriculum.

2.13.4 Design/Select Training Methods:

Training method is a tool used to deliver learning. There are a number of training methods e.g. Lecture, Extension Talk, Group discussion, Workshop, Demonstration, Skill Teaching, Teaching Aids (Visuals), Case study, Institutional visits/Study tour and Lab. Methods (Dr Singh, 1999).

The different training methods can be described as the arteries and veins of the training system through which training messages reach the trainees, and trainers receive concurrent feedback on the training programmes from the trainees. The choice of an appropriate training method is required to be guided by the level and background of trainers as well as training curriculum as also the time available. While the appropriate choice of training methods will certainly enhance the effectiveness of a training programme, an appropriate choice of training method is equally likely to mar or diminish the effectiveness of a training programme. A
variety of training method is often the spice of a training programme as it captures and sustains the interest of trainees during a training programme. In the choice of appropriate training methods, there must be emphasis on ‘Learning by doing’. Training methodology must have practical orientation. A new training method, nevertheless, should not be tried out merely for novelty. There must be evaluation of the training method for its effectiveness. It is only after success in repeated small pilot trials that the new training method should be considered for replication on a large scale. Otherwise, novelty can wear off quite quickly.

The development of a four component Instructional Design (ID) model – The ID model consists of four components. The first component pertains to organizational context and consists of a qualitative judgment on the organizational character, project complexity and available resources, serving to initiate working relationships, formulate overall working processes and the scope of the ID model development. The second component pertains to the orientation to learning, learning and ID theory and the ID strategy underpinning the development of the ID model. The ID model is based on a constructivist approach to learning, which focuses on preparing learner for real-life situations. The third component pertains to the ID model processes that include the decisions to be made in the development of the ID model, resource allocation, project management, quality assurance and implementation. The fourth component pertains to the ID model activities and incorporates design activities, development activities, allowance for possible future revisions and updates and evaluation. The four component ID model has positively contributed to learning and improvement of job specific knowledge and productive behavior and has been used in Kirk Patrick’s evaluation (up to level three).

In a case study of a South African organization, Leonie Le Roux (2008) on the subject of “The development of an ID Model as a strategic enabler for sustainable competitive advantage”, found out five main reasons why and how the ID model was seen to positively contribute to learning and the improvement of the job-specific knowledge and productive behavior. First, the self-paced, “Learning By Doing” design of the ID model was seen to contribute positively to why the ID model worked. The practical application of knowledge through the in-field tasks was a facilitator of this. Second, the learning contents’ relevance to the specific organization and the specific jobs of learners caused the ID model to be seen as
making a positive contribution to relevant learning job-specific knowledge was measurably increased. Third, because of the organization and job-specific contents, the ID model worked because it was seen to impact positively on organization-relevant productive behavior, and the application thereof in practice, when servicing customers. Fourth, the ID model was seen as an easy-to-use system, which allowed easy access to learning contents and clear instructions on the processes to be followed. Lastly, the ID model was positive, i.e. learners liked it and preferred it to classroom-based training, as it was seen to be empowering and the way of the future.

The success of instructional design depends upon a clear understanding of the end result, in other words what we want to achieve. The ADDIE model encompasses five phases – analysis, design, development, implementation and evaluation. It is a dynamic and iterative process with the evaluation activity being performed after each stage – analysis, design, development and implementation – to gather feedback and incorporate it into the next phase. It offers a systematic process for designing instruction to achieve this goal, guiding instructional designers to scope, sequence and deliver training. It involves the analysis of learning needs and goals, and the development of a delivery system to meet those needs (Valiathan, 2010).

2.13.5 Design Training Evaluation:

Evaluation is an integral part of the training program; instructional design is incomplete without evaluation. Evaluation should be inbuilt in the training program. It is necessary to consider basis of evaluation & how the information required to evaluate should be obtained and analyzed. Training must enable and link directly to bottom-line initiatives, not just build skills.

The basic objective of training evaluation is to keep all concerned with training informed that the training activities are proceeding as planned; and, if there is any deviation from the planned course, what is the nature and extent of the deviation for setting the course right. It is essentially a management tool. No training programme can be said to be organized completely without training evaluation. To evaluate it is to determine the worth; or more precisely, the effectiveness of a training programme. A typology of training evaluation according to its level
consists of four types of training evaluation, namely (1) the reaction level; (2) the learning level; (3) the job behavior level; and, (4) the impact level. Evaluation and feedback mechanisms are interwoven in the process of training in the “Critical Events Model” (CEM). At every stage of training programme design, both evaluation and feedback mechanisms play an important role. These provide enough scope for the improvement of every element of training. Moreover, they are the heart of the training systems having interactive relationships with every element of training process.

The training evaluation process begins with determining the training needs, which in turn helps to identify what knowledge, skills, attitude, behaviour or other learned capabilities are needed. Next step is to identify specific measurable training objectives to guide the programme. The more specific & measurable these objectives are, the easier is to identify relevant outcomes or criteria for the evaluation. Based on the learning objectives, outcome measures are designed to assess the extent to which learning and transfer have occurred. The next step is to determine an evaluation strategy. A training evaluation plan should provide for each of the elements including learning, its use “on the job” and impact on “bottom line”.

Some organizations like GE, which attach utmost importance to the training, the trainers have access to key decision-makers and have established greater legitimacy for training and development activities. The importance of training which GE gave reached a climax in time of its legendary chairman Jack Welch at their training institute at Crotonville. He wanted to bring the place to life and recruited a former Harvard professor to lead the efforts in 1981. He saw Crotonville as a place to spread ideas in an open give- and- take environment which could be the perfect place to break through the hierarchy. There was need to connect with managers deep in the organization, without chairman’s messages being misinterpreted by layers of bosses.

In a study of UK based manufacturing companies to identify current evaluation methods and identify the predominant barriers to the implementation of effective training programme, it was concluded that most of the companies believed that their training programme did not realize the full potential in terms of higher
productivity, better "on the job" performance and improved quality. (Tennant Charles, 2002)

With huge investments made in training after understanding its utmost importance, the question no longer is, “Whether training is needed”? but rather, “Are training initiatives worthwhile and effective?”

Evaluation is defined by Deptt. Of Trade & Industry as, “The assessment of the total value of training or course”. Evaluations differs from validation in that it attempts to measure the overall worth & benefit of the course, and not just the achievement of the laid down objectives (Validation)”. Simply stated, it means “Was it worth doing the training?”

Training expenditures by American business has reached large proportion of their budget. Despite this, there may be little demonstrated return from business training efforts. Literature reviewed contains ample information on evaluation techniques, yet it is seldom applied by business training groups. A national survey indicated less than 25% of training was evaluated against business results in the companies surveyed. Past research presents reasons for the lack of effective training evaluation ranging from trainer ignorance to lack of business support. A study reviewed the five-year history of a technical training programme in a high-tech industry to examine the relationship between training and job performance. Utilizing a case study approach, Michelle (2002) examined the impact of organizational factors on training capability and the resulting implementation of evaluation and instructional methodologies. Correlation analyses identified significance and strength, by year, of demonstrated relationships between training and job performance.

The case study yielded a clear pattern of effective program practices that evolved over the five years. The correlation analyses revealed significant relationships between training and job performance, beginning in the third year. While initial strength of these relationships was weak, it increased somewhat by year five.

2.14 The Training Impact Assessment (TIA) is a simple, effective method that can help managers gauge the real value of training and select specific, targeted training programmes. There are six steps to the TIA method: 1. Invite key clients,
such as the trainee’s boss, to participate in the assessment sessions. 2. Ask the key clients to gather data on the effectiveness of employee training. 3. Ask subgroups to share positive results of training. 4. Ask subgroups to list negative or unachieved results, and post all lists in the general-session room. 5. Have the entire group reconvene to share overall results. 6. Consolidate lists, agree on actions, set a follow-up date, and prepare a summary report. The TIA process is valid, but it is only as strong as the organizational commitment behind it. (Linn, 1990).

Galanou and Priporas (2009) carried out a study on “A model for evaluating the effectiveness of middle managers’ training courses: Evidence from a major banking organization in Greece”. He examined the effect of six evaluation levels – Reactions, Learning, Job behavior, Job performance, Organizational team performance and some wider, Social effects – in measuring training interventions with regard to the alterations to learning, transfer and organizational impact. The model was tested with data obtained from 190 middle managers employed by a large banking organization in Greece and the results suggest that there is considerable consistency in the evaluation framework specified.

Hanratty (2010) in an article “Training centres are inadequate”, has commented that performance levels at more than half of Vocational Training Institutes reviewed in Bahrain have been deemed inadequate. The figure was revealed by the Quality Assurance Authority for Education and Training’s (QAAET) third set of education and training report.

Al-Athari and Zairi (2002) in An empirical study in Kuwait on Training evaluation examined the current training evaluation activity and challenges that face Kuwaiti organizations. The study sample was five UK organizations (recognized as best practice organizations in their Training and Developmental activities) and 77 Kuwaiti organizations (40 government and 37 private). Interviews and questionnaires were used. The study revealed that the majority of respondents, both in government and in private sectors, only evaluate their training programme occasionally. The most popular evaluation tools and technique used by government and private sectors were questionnaires. The most common model used by Kuwaiti organizations is the Kirkpatrick model, while the
most common level of evaluation for both government and private sector is reaction type.

2.15 Berge (2008) in an article “Why it is so hard to evaluate training in the workplace” explores reasons regarding why it is difficult or perhaps impossible to properly evaluate the impact and effectiveness of workplace training. The approach taken is to describe the barriers to effectively measure training in the workplace. He found that, essentially, training sometimes lacks planning, sponsorship, budget, or because training is done for the wrong reasons. Evaluation of training is also difficult because operating unit managers are looking for increased performance and not necessarily the increased learning on which trainers usually judge the success of their training.

Stolovitch (2007) states there are many reasons for wasted training expenditures:

- Poor Trainee selection
- Unclear expectations from supervisors
- Little on-the-job support
- No post-training monitoring
- Inadequate resources to implement new skills
- No incentives to apply new skills &
- Knowledge and trainee discomfort with change.

Philip and Adrian (1994) in their article “The evaluation of training: An organizational culture approach” argued that what is required to make training more effective is the adoption of an integrated approach to evaluation and, most significantly, the creation of an appropriate organizational culture, which promotes and recognizes the value of evaluation in general and training evaluation in particular. Reasons for the absence of, or ineffective practice of, evaluation within so many organizations are discussed and these reasons are shown to be related to organizational cultures which discourage training evaluation, especially organizational-level evaluation.

The practice of evaluation in training has received a lot of criticism, due to the unsystematic, informal, and ad hoc evaluation that has been conducted by training institutions. In Malaysia, training activities are monitored by the government. Organizations are required to obtain training services from approved training
providers registered with the government. The paper examines the clients’ demand toward evaluation, the commitment given by training providers, and the overall practice of evaluation by the training providers in Malaysia. It finds that the government, client and economic situations have influenced the evaluation practice in a positive direction. (Hashim, 2001).

In 1990, the results of a “Training Evaluation Practices” survey conducted by Grider, Capps, and Toombs were published. In this survey, members of the American Society for Training and Development (ASTD) were asked to identify the evaluation methods they believed most effective and to indicate which techniques they most employed. Trainees’ reactions to training was the most commonly used, although behavioral indices, skill-based competencies, and cost/benefit results were the most preferred. Why didn’t respondents use the evaluation method they most preferred? The reasons found were as under:

- The best method costs too much or takes too much time.
- Professionals within the organization don’t know how to use the preferred technique or how to collect the needed data
- Top management doesn’t view training evaluation as important.
- Many factor other than training determine on-the-job performance.
- Top management prefers the use of the reaction method.

John (2007) carried out a research study to “Evaluate the training services in TransAlta”. This study evaluated TransAlta’s training services for the operations and maintenance departments. The study revealed that training services are reactive, underutilized, inconsistent, and seldom measured for effectiveness. A proposal with recommendations to improve the field training services has now been presented to the Operations Council to consider what changes they wish to implement.

2.16 A few cases of Training Evaluation:

Raed (2005) carried out a research study on “An investigation into the impacts of the Engineering Management Training Programs(EMTP) in Saudi Arabia”. This descriptive study employed an integrated framework by combining the EMTP with
training evaluation in order to investigate the impacts of the EMTP and the affecting training factors that inhibit or facilitate the EMTP. The framework’s hypothesized impacts on engineers, projects, and organizations, and hypothesized associations between the affecting training factors and each evaluation level, were examined. The EMTP’s survey questionnaire was developed as a data-collecting instrument, and a 5-point Likert-type scale was utilized as a measurement scale. The reliability coefficient alpha for this survey was 0.89. The study’s subjects were 149 former trainees of the EMTP at the Institute of Public Administration (IPA) in Saudi Arabia. The subjects’ responses to the EMTP’s questionnaire were analyzed through descriptive statistics analysis (e.g., frequencies, measures of associations). The majority of the subjects reacted positively (favorably) to the EMTP; achieved “B” or above as their EMTP’s final grades; transferred the gained skills and knowledge of the EMPT to their work-settings; agreed that the EMTP had positive impacts on them, their projects, and their organizations; and agreed on the affecting training factors, which inhibited or facilitated the EMTP.

Analyzed at the 0.05 level of significance, this study produced statistically significant associations between most variables in the study’s framework.

Nerza (2005) carried out a study on “The influence of training evaluations on the training transfer: An experience of DANAVEN, a multinational Venezuelan-American corporation”. This study proposed that to achieve a positive training transfer rate it is necessary to develop and implement a formal evaluation training system, which is able to track all factors-individual and organizational-affecting transfer effectiveness before and after training occurs. In order to empirically demonstrate the influence of the pre and post-training evaluations on the transfer rate, a case study was conducted to examine the relationship between the dependent variable, positive training transfer, and the two primary independent variables, the pre-training evaluation and post-training evaluations. The research utilized a multi-method approach combining quantitative design predominantly, and qualitative design as an alternative technique. The results obtained from the three sources used, questionnaires applied to 215 trainees, in-depth interviews conducted to 8 trainees, and existing data reporting the transfer rate of each trainee surveyed, led the researcher to demonstrate the relationship between both variable studied. The summary of study conclusions is as under:
• Pre-training evaluations did have a positive and statistically significant relationship with training transfer (p=.026<.05).

• Within pre-training evaluations, Training Needs based on Organizational Objectives had a positive relationship with training transfer, but the relationship was not statistically significant (p=.083<.05). However, Training Goals Setting did have a positive and statistically significant relationship with training transfer (p=.019<.05).

• Post training evaluations did have a positive and relationship with transfer (p=.004<.05)

• Within post-training evaluations, Achievement Training Goals did have a positive and statistically significant relationship with training transfer (p=.004<.05). Likewise, Organizational support did have a positive and statistically significant relationship with training transfer (p=.001<.05).

Tipton (2003) carried out a study on “The effectiveness of the current training practices of middle-level managers in industry as reflected in the practices of the Verizon Corporation”. This study examined 60 nos. (34 nos. “Leadership in action” and 26 nos. in “System thinking”) middle level managers who worked for Verizon Communications. The subjects took a management training course designed to improve a skill or behavior that is measured on their end of year performance evaluation. The researcher examined two years worth of data to determine if the courses had an impact on the skill or behavior it was designed to improve. The design of this research followed the four-step training evaluation module of Dr. Donald Kirkpatrick. Each level was used to determine the effectiveness of the current training practices of middle level managers as reflected in the practices of Verizon. The data was collected using a post course questionnaire provided by the Verizon Communication training department. The Verizon employees who took the management courses were asked to share three years of evaluations. The researcher’s goal was to determine the effects of the training on their end of the year performance and their responses to the post course questionnaire. The results of this study were:

1. Usefulness of course
   i) 4.78 (on a scale of 5) for course in “Leadership in Action”
   ii) 4.51 (on a scale of 5) for course in “System Thinking”
2. Changes in Year end performance appraisal in competency area of –

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<th>Competency Area</th>
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<td>i) Customer Focus</td>
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<td>ii) Planning, Organization &amp; Implementation</td>
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<td>iii) Team Work</td>
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<td>iv) Continuous Learning</td>
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<td>v) Leadership &amp; Development of employees</td>
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3. Overall performance rating. 2.7 3.0

Day (2002) carried out a study in “Changing a corporate culture: Implementing safety leadership at a pulp and paper mill”. This study examined the management strategies and cultural changes responsible for reduction in accidents. It also explored the content and outcomes of a health and safety leadership course delivered to almost 200 unionized workers and staff members in the winter of 2002. The purpose of this course was to instill beliefs, values, and practices that would move the organization to world class levels of health and safety performance. Principles of action research were employed in the assembly, delivery, and evaluation of the leadership course. Pre- and post-course performance measures were based on Kirkpatrick’s (1998) four levels of training evaluation. According to these measures, the course was successful in three of Kirkpatrick’s (1998) four levels of evaluation. More importantly, repercussions from the course and the overall corporate emphasis on employee safety continue to be felt throughout the organization.

Clemenz (2001) carried out a study in “Measuring perceived quality of training in the hospitality industry”. Operating from the paradigm that training is a service, a rigorous scale development process was initiated to discover the dimensions of perceived quality of training, a new construct within the realm of training evaluation based upon trainees’ impressions of training. 164 trainees from six different instructor-led training classes in the hospitality industry completed pre-training and post-training surveys that evaluated scale items as expectations as well as perceptions of training. Comparing measurement techniques, findings indicated that a perception only measure of training quality was more highly correlated with trainees’ overall quality of training ratings than was a gap measure (perceptions minus expectations).
Exploratory factor analysis revealed that the six dimensions of perceived quality of training, as determined by the perception measurement, are interactivity, climate, courtesy, relevance, tangibles, and credibility. These dimensions are similar to the dimensions of service quality, thereby giving credence to the idea of tapping into eclectic literature bases to address issues of training evaluation. Lastly, test results indicated that the perception measurement of the perceived training quality scale was significantly and positively correlated with trainees’ intentions to use training when they returned to their jobs.

Anderson (2000) carried out a study in “Training needs assessment, evaluation, success, and organizational strategy and effectiveness: An exploration of the relationships”. The purpose of this study was to carry out a detailed examination of needs assessment and evaluation practices, and comparing those practices with perceived levels of training program success and organizational effectiveness. In addition, the variables of respondent characteristics (including level of knowledge, years of experience, and position in organization) and respondent organization characteristics (including size, industry, business strategy, resource allocation, integration of evaluation, and training staff knowledge-involvement-size) were examined to determine if a relationship exists between these variables and needs assessment, evaluation practices, perceptions of training program success, and organizational effectiveness.

A mail survey was sent to 1,115 members of the American Society for Training and Development of which 231 surveys were returned (a return rate of 21%). Survey results showed that the majority of organizations do not involve most of their training staff in needs assessment or evaluation, most training staffs do not have formal training in needs assessment of evaluation, and evaluation is usually independent of program development.

The majority of organizations perform a general needs assessment of any kind in only about half (53%) of their training programs, and perform more detailed organizational, person, and task analyses in 41% and 36% of their training programs, respectively. The most prominent reason for not performing organization, person, and task analyses and general needs assessment is that it is not required by the organization.
The majority of organizations perform a Kirkpatrick Level 1 (reactions) evaluation of most 82% of their training programmes and perform Level 2 (learning), Level 3 (behavior), and Level 4 (results) evaluations of less than half of their training programs, 41%, 21% and 17% respectively.

Whitlock (1995) carried out a study on “An analysis of small business training evaluation and transfer”. The study investigated the evaluation and transfer of training provided to small business owners, managers, and entrepreneurs by the Oklahoma Small Business Development Centre (OSBDC). The three primary training programs offered by the OSBDC—Going into Business, Loan Briefing, and Tax Planning—were targeted. During a nine-week period, every trainee enrolled in one of these programs offered throughout the state, was given a pretest evaluation and post-test evaluation. Trainees responded to six specific training objectives listed for each respective program. Pretest knowledge and need level, and post-test knowledge and value/utility of the training was measured. Approximately six weeks later, a similar follow-up evaluation was mailed, or administered over the telephone. The follow-up instrument consisted of the same six items, and measured responses to knowledge (retention) and application (transfer). A total of 126 participants completed all three evaluations. Descriptive statistic indicated that trainees had an increase in knowledge after training, and that six week later, virtually all knowledge had been retained. Participant’ score indicated a high perceived need for the training, and that the training was generally perceived as valuable or useful. Transfer or application of training was also indicated. Statistically significant correlations were found between pretest, post-test, and follow-up variables indicating relationships between the pretest, post-test, and follow-up evaluation instruments.

Training is pervasive, expensive, and strategically important. To maximize the payoffs from this investment, organizations must effectively plan, implement, and evaluate their training. Historically, many companies have not “closed the loop” through systematic evaluation and thus the make many training decisions based on anecdotes, trainee reactions hunches, or inertia. Tannenbaum (1992) argue that training evaluation can be critical and highlight several organizational factors that should be considered when determining an evaluation strategy. Author also presented a case study from a large financial service company that illustrates how organizational constraints influence the determination of an appropriate evaluation.
strategy. The author also concluded that training is not the only vehicle for developing people, nor is training always an appropriate solution to organizational problems. Organizations should carefully consider whether a formal training program is the best possible strategy to address the particular need(s) at hand. If careful analysis suggests that training is an appropriate intervention, then training evaluation data can help determine whether the training is accomplishing what was expected. Evaluation date can also be used to revise and improve the training or to suggest that other non-training alternatives may needs to be considered.

Razia and Srinivasan (2000) carried out a study on “The training programme for self employment –Trainees’ perception on its impact” commenced in two voluntary institutions which were helping poor students. It was concluded that knowledge cum skill training programmes were for creating and promoting self employment for the females of vulnerable sections of the society. The trainees benefited through the knowledge and skill training programmes. They were given certificates which would help them in obtaining a job, or starting their own enterprises.

2.17 Testing, assessment and evaluation – A maze of concepts, clarified:
(Bille,2008)

Testing, assessment, and evaluation are three terms often used interchangeably. However, understanding their differences is crucial to ensure an assessment strategy that makes sense for business objectives. Here is a look at the definitions of the three terms and their implications for professional practitioners:

a) Test – A test of knowledge, skill, or ability is a measurement activity, and is only meaningful in relation to the purpose and context in which it is used. It may be part of a “formative” process that assess progress toward an objective or a “summative” process that measures the whole.

Before beginning a testing program, one should be clear about what impact the test results will have on individuals, as well as the organization. It is essential to understand what is being tested (e.g. recall of the regulations and skill in parallel parking), as well as the purpose of the test (e.g., whether to assist a novice car driver, or to certify a professional trucker). The relevant question to be posed are: Do we provide different types of tests for different domains of learning? Do we have a clear objective for each test? Does each
test item have a purpose? Do we use subject matter experts (SMEs) to develop or approve test items?

b) **Assessment** – By nature, assessment are formative, capturing progress toward a goal. With this in mind, individual assessment results are intended for the learner, the instructor, and the instructional designer. This allows the learner and instructor to mold their respective efforts based on individual need. The instructional designer uses the feedback to improve the overall course and curriculum. The relevant questions are to be posed are: Do we provide for formative testing in our course design? Are we assessing in relation to a goal the learner understand?

c) **Evaluation** – Evaluation is the summative. An evaluation confirms whether or not a goal has been attained, and when one pass (or fail), it “counts”. Tests should not be used to evaluate performance until they have been piloted, and passing scores have been set after reviewing results. Determining the standard for “passing” involves judgment, data, and statistics. There is always an element of judgment in evaluation-the “expert” who sets the standard for passing should be qualified to do so, and should use established and defensible criteria. The relevant questions to be posed are: Do we validate our tests with experts? Do we “test the test” with a pilot to make sure poor performers can’t fake their way through it or that the good performers are not failing?

Research on training transfer continues to intrigue scholars and workplace practitioners interested in discovering how best to support the application of new learning. As organizations attempt to maximize human capital investments, leveraging knowledge from training and other performance interventions is critical to maintaining a competitive advantage. Training and other learning investment expenditures (measured in U.S. companies) approximate over $100 billion of firm budget allocations each year; however, most reports of training transfer indicate only a small amount of new learning is actually applied on the job. In a review of evaluation benchmarking data conducted by Knowledge Advisors, a human capital metrics firm, organizations reported that trainees had applied less than 40% of their knowledge and skills from training experiences when measured 90 days after training. The remaining 60% is considered “scrap learning”, a term used to describe knowledge and thus investments in learning that is wasted and raises concerns about the efficacy of training as per performance improvement
intervention. Data were gathered from members of a large professional training organization regarding their practices for supporting training transfer. Transfer factor categories grounded in the literature were used to code the data using content analysis procedures. Commensurate with the transfer literature, results suggest that trainers reported strategies used within the training setting and in the work environment as having the most influence on training transfer. Transfer practices that do not have a firm grounding in the research but that emerged in the data, trainer characteristics and evaluation practices, were reported by trainers as being important influences on training transfer. This study extends previous work on training transfer practices by elucidating the specific transfer influences perceived by training professionals as critical for supporting transfer in organizations. Implications for practices and research are offered that focus on building trainer proficiency for training transfer in organizational settings. (Hutchins, 2009).

Training evaluation is critical both for the users of training (line managers) and Training Institutes (Internal & External customers). The training organizations in Netherlands have created an association ‘VETRON’, to evaluate quality of training programs and benefits to clients. Measuring the results of training shouldn’t be the responsibility of training department alone. Instead, line managers should also be involved.

Michalski (1999) in his research study “Stakeholder variation in perceptions about training program evaluation” examined the perceptions of three distinct stakeholder groups, namely training participants, training providers, and training sponsors, in terms of their perceptions relative to an entire program (consisting of multiple course interventions). A conceptual framework was developed to accommodate complex organizational contextual elements especially in terms of effectiveness, multiple-constituency group perceptions, knowledge work, and organizational learning. Multiple methods were used in three phases of research to analyze perceptual variation across the stakeholder groups. These methods included the use of concept mapping and pattern matching (phase 1), semi structured interviews (phase 2), and a survey instrument using quantitative techniques (phase 3). The integrated results of the study support that stakeholder group views of training evaluation do correspond with an depend on their perceptions of training results. While all groups perceived a similar set of training
results as beneficial to the organizations, each group emphasized different aspects of the results in terms of training evaluation. These differences were found to correspond with the specific organizational role of each group.

Miller (1987) used a “true” experimental design (present/posttest and control group), to evaluate the attitudinal and behavior changes of randomly selected municipal employees after a two-day human relations training seminar. Posttests for attitudinal change were done immediately after the training sessions. Posttest for behavior changes were done six months after the training sessions were completed. In addition to the testing of employees, supervisors were also asked to participate in a pretest/posttest evaluation of their subordinates’ job behavior. The results of the “t” tests performed on the group means indicated no statistically significant attitudinal or behavioral changes on the part of the experimental group. This result has a number of significant implications. One implication is the hypothesis that training has no effect on employees’ job attitude and/or behaviors. Another implication is that current testing and evaluation instruments cannot measure the changes in employee attitudes or behaviors. A third major implication is that the criteria and values used are not the proper criteria for evaluating the effect of training on employees.

Foxon (1989) carried out review of the Training and Development literature including definition of evaluation, the purpose of evaluation and the models of techniques proposed. There is ample evidence that evaluation continues to be one of the most vexing problems facing the training fraternity. Catanello and Kirkpatrick’s 1968 survey of 110 industrial organizations evaluating training (Burgoyne and Cooper, 1975) revealed that very few were assessing anything other than trainee reactions.

Providing a sound definition is more than a lexicographic exercise; it can clarify and refine concepts, generating a framework within which to develop a pragmatic approach to the subject. Evaluation is not exception, and the apparent confusion in the minds of many as to the purposes and functions of evaluation corresponds to the ignorance or misunderstanding of what is meant by this and related terms such as research, validation and assessment. A variety of definitions can be found in the literature, many of them stipulative, and the inconsistencies in the use of the terminology has “muddied the waters” of training evaluation a great deal, affecting
the success of evaluation efforts. Bramley & Newby (1984a) summaries the diversity of terminology used over the past decade, and offer a most helpful comprehensive definition showing the interrelationships between various concepts of evaluation.

The majority of writers tend to view it as the gathering of information in order to make a value judgment about the program, such as necessary changes or the possible cessation of the program. Williams (1976) defines evaluation as the assessment of value or worth. Harper & Bell (1982) refer to the planned collection, collation and analysis of information to enable judgments about value and worth. However, as Williams (1976) observes, value is a rather vague concept, and this has contributed to the different interpretations of the term evaluation.

Many writers not only differ in their definition of evaluation – they also use evaluation terminology interchangeably and in some cases quite confusedly. Burgoyne & Cooper (1975) for example, use the term evaluation research as synonymous with evaluation. While evaluation and research may appear at first sight to be similar, there are clear differences. Unlike research, it is the context of the evaluation which defines the problem, the evaluator’s task is to test generalizations rather than hypotheses. The evaluator may not be able to avoid making value judgments at every stage whereas the researcher must avoid any subjectivity.

Evaluation is also confused by some with the terms measurement and assessment. Evaluation involves description and judgment; measurement and/or assessment provides the data on which to base the evaluation. This confusion of terms is most obvious when considering the use of “evaluation and “validation”. While most do not see validation as separate from evaluation, there are a few who appear to draw the distinction.

2.18 Bramley and Newby (1984a) identify five main purposes of evaluation: feedback (linking learning outcomes to objectives, and providing a form of quality control), control (using evaluation to make links from training to organizational activities, and to consider cost effectiveness), research (determining relationships between learning, training, transfer to the job), intervention (in which the results of
the evaluation influence the context in which it is occurring), and power games (manipulating evaluative data for organizational politics). Burgoyne and Cooper (1975) and Snyder et al. (1980) discuss evaluation in terms of feedback and the resultant issue of control.

Reser (1999) has carried out literature survey of “Educational Program Evaluation” and found out major contribution of following four:

**Ralph Tyler:** His general statement on evaluation offers six valuable advices namely: setting fundamental purpose of evaluation, ground rules for selecting evaluation techniques, specific evaluation procedures, use it as a quality control process, identify immediate benefits and articulating the central purpose of program evaluation.

**Robert Stake** addressed four issues of importance to training evaluators. He reasoned that evaluation could detect the difference between the intentions and results of education. Evaluation is flexible, capable of changing emphasis over time to reflect different purposes and procedures embedded in educational programs he notion of flexibility and breadth is central to his concept of “countance”.

**Cronbach** recognized the problem associated with the transfer of learning. He differentiated applicational from cognitive learning transfer. Learning how to learn is a valuable skill and evaluating it requires an exploit strategy. He believed evaluation must be capable of detecting change and should ascertain what changes a course produces and should identify aspects of course that need revision.

**The Joint Committee on Standards for Training Evaluation** (JCSEE, 1994) benchmarks are the generic QC standards for the evaluation profession.

### 2.19 Evaluation Types:

Evaluations have been classified evaluations on basis of objective with which evaluations is done as Formative evaluation, Pilot testing and Summative evaluation.

#### 2.19.1 Formative Evaluation: It refers to evaluation conducted to improve the training process. Employees and Managers participate in the programme before it
is made available to rest of company. As a result of the formative evaluation, training content and process may be changed to be more accurate, easier to understand or more appealing.

2.19.2 Pilot Testing: Pilot testing refers to the process of previewing the training programme with potential trainees and managers. Programme developers use the information gained from this preview to improve the programme before it is administered to all employees.

2.19.3 Summative Evaluation: It refers to evaluation conducted to determine the extent to which the trainees have changed as a result of participating in the training programme i.e. Have trainees acquired knowledge, skills, attitudes, behaviour or other outcomes identified in the training objectives? Summative evaluation may also include measuring the monetary benefits (ROI) the company receives from the programme. It usually involves collecting quantitative data using tests, ratings of behavior or objective measures of performance such as increased value of sales, reducing or preventing accidents or getting new patents.

These evaluations may be done internally by organization or by an external agency. A few models of training evaluation evolved over the years are discussed below:

1) Bell System Approach
2) Donald Kirkpatrick
3) G.Raj Kumar
4) Hamblin
5) Holton
6) Jack Phillips
7) Parker
8) Virmani
9) Warr

2.20 Models of Evaluation:

2.20.1 Bell System Approach: This approach was developed as a result of a study at AT&T and Best System Unit, at following levels of outcomes:
i. Reaction Outcomes.
ii. Capability Outcomes – Participants expected to know, do or produce by the time the training is finished.
iii. Application Outcomes – Participants know, think, do or produce in their job-settings.
iv. Worth Outcomes – Value of training in relation to its cost (cost benefit).

The outcomes represent the benefits from training in terms of the money, time, effort and resources invested.

2.20.2 Donald Kirkpatrick’s Model for Assessing Training Impact:

Kirkpatrick’s 4-level training evaluation model was first introduced in 1959, and serves as a gold standard for evaluating training. There are four basic levels in measuring the impact of training:

**Level 1: Reaction** – Did the participants like the training?
Reaction is commonly obtained at the end of a seminar or workshop by asking the participants through a questionnaire regarding their feelings. Trainers refer to this level as “Happy Sheets” or a “Feel Good Measure”.

Such measurement should not be underestimated although the validity and objectivity of such a questionnaire is quite doubtful. Participants’ reaction can be of help to determine the effectiveness of a program and how it can be improved. Kirkpatrick believes the first level can’t be bypassed because if participants do not react favorably; they will not be motivated to learn.

Extensive usage of level 1 evaluation has been done by number of researchers.

**Level 2: Learning** – Did the participants learn something in the training?
Kirkpatrick defines learning as the “Extent to which participants change attitude, improve knowledge and/or increase skill as a result of attending the programme”.

Tests are the most frequent method of evaluating learning. Learning is determined by Post Course Surveys, written and oral tests and knowledge & performance based testing (Pre & post training).
Level 3: Behavior – Did the participants apply what they earned in the training back on the job?

The third level of training helps assess use of learning on the job. This form of evaluation can be time consuming and costly, but it is critical in determining if classroom knowledge was transferred to the workplace, which can be directly attributable to the learning.

The candidate will be assessed periodically once in a year and sometimes even half yearly, after completion of training, mostly through a questionnaire designed to measure behavior considered critical for performance. This feedback is taken both before and after the training program and the results on comparison would indicate the change in behavior of the trainee, if any & to what extent, reducing/controlling the effects of extraneous factors.

Level 4: Results – Did the participants’ application of learning on the job impact the bottom line?

As per Kirkpatrick the impact on bottom line may mean, “Reduction of costs; reduction of turnover and absenteeism; reduction of grievances; increase in quality and quantity of production; or improved morale which might lead to some of the previously stated results”.

Nicco Internet Ventures Ltd. (NILV) evaluated its training program at four levels. A summative evaluation of the training course at Level 1 got excellent feedback from participants. At level 2, 91% agreed that they have gained important new knowledge, 82% agreed that they have gained important new skills and 91% agreed that these learning would help them in negotiating with clients. Evaluation done at Level 3 at Nicco Internet Ventures Limited through pre and post training quizzes showed an improvement from 24 to 92 percent. At level 4 evaluation at Nicco Internet Ventures Limited, it was concluded that rate of professional charges negotiated with clients improved from 33% to 44% of contracts negotiated, showing improved negotiation skills (Lahiry, 2005).

2.20.3 G. Raj Kumar:

G. Rajkumar, General Manager, Learning & Development, at Dr. Reddy’s Laboratories, advocates that if the content of training is contextual and the delivery is excellent, the results will definitely follow and that there is no need
to spend time, efforts & money on evaluation. He proposed a model for measuring training effectiveness, where the first step is to decide the desired behavior and define measures to scale them.

A study by a gas filling company proved that the training may not deliver bottom line results. The company selected 200 filling stations to try out the hypothesis that if windscreen were cleaned, the motorists may get more petrol filled. The attendants were given training in how to approach the customer and clean the windscreen quickly & effectively. A few months later, the sales of gasoline of these filling station with those of others were compared. The evidence was that the sale in selected 200 stations were not significantly different than the rest. This case study illustrated that even though the motorists may have responded with pleasure; they did not, on the whole, buy more petrol at those stations.

Therefore, it would be advisable for the organizations to identify which problems can be solved by training and which cannot, before the process of training is started (Singh, 2000).

There is a whacky example of SEMCO, a Brazilian firm, which does not have a training department and still it is one of Latin America’s fastest-growing companies, acknowledged to be the best in Brazil to work for, and with a waiting list of thousands of applicants hoping to join it. (Semler, 1993)

Semco manufacturers an impressively varied roster of products, including pumps that can empty an oil tanker in a night, dishwashers capable of scrubbing 4,100 plates an hour, cooling units for air conditioners that keep huge office towers comfortable during the most sweltering heat waves, mixers that blend everything from rocket fuel to bubble gum, and entire biscuit factories, with 6,000 separate components and 16 miles of wiring. But it’s not what Semco makes that has executives and management experts the world over waiting months for a chance to visit its plants and office. It’s the way the people of Semco make it.

The factory workers set their own production quotas and even come in on their own time to meet them, without prodding from management or overtime pay. They help re-design the products they make and formulate the marketing plans.
Their bosses, for their part, can run business units with extraordinary freedom, determining business strategy without interference from the top brass. They even set their own salaries, with no strings. Then again, everyone will know what they are, since all financial information as Semco is openly discussed.

Some people have likened the Semco philosophy to socialism, in the old, Eastern European sense. The company proves that worker involvement doesn’t mean that bosses lose power. What is stripped away is the blind, irrational authoritarianism that diminishes productivity. The workers are self-governing and self-managing. It means they care about their jobs and about their company, and that’s good for the company.

The company also reduced corporate staff, which provides legal, accounting, and marketing expertise to their manufacturing units, by more than 75 per cent. They no longer have data processing or training department. Everyone vouches for his own work, so they don’t need a quality control department either. After taking a good look at themselves, they whittled the bureaucracy from twelve layers of management to three and devised a new structure based on concentric circles to replace the traditional, and confirming, corporate pyramid.

In a study for Motorola, Canada, with 42 people in each of control group and experimental group, the revenues from new customers for experimental group, went up by 63%, against reduction in sales by 16% for control group. Whereas sales for experimental group went up by 1%, against reduction by 13% for control group.

CIGNA (an insurance company) evaluated the impact of 7-day training program in basic management skills observed that insurance premium collection improved from 75% to 96% in one year, giving an ROI of 50:1.

At Tata Steel, training evaluation is done as a proactive measure for future training programmes.

Effectiveness of training programmes offered by Neyveli Lignite Corporation Limited (NLC) were evaluated & it was concluded that 22.67% respondents
felt the training programmes highly effective, but 4% considered them as highly ineffective.

The evidence of training effectiveness is quite less and most of the programs make no or little difference to performance at work.

Although there are enough arguments to substantiate that training impacts the business results, evidence of impact of training are few. There are few case studies for demonstrating impact of technical training and training in manufacturing/product industry, but none in case of service industry, which is the fastest growing segment. In India, focus has been to evaluate impact of training on employee knowledge and skill, but little work is done in Indian Railway to evaluate impact of training on on-the-job performance.

2.20.4 Hamblin’s Model of Evaluation:

Hamblin (1974) classified evaluation into five levels of cause-and-effect chain i.e. Reaction, Learning, Job-behavior, Organizational improvement and ultimate value. According to him, evaluation of objectives are linked up with training objectives at each of the five stages.

2.20.5 Holton proposed the HRD Evaluation and Research Model as a comprehensive framework for diagnosing and understanding the casual influences of HRD intervention outcomes (Holton, 2005).

2.20.6 Jack J. Phillips was instrumental in adding a fifth level to Kirkpatrick’s Model; the ROI or ‘Return on Investment’ level, which compares the monetary benefits or the training programme with its costs. The ratio of the benefits to program’s cost is the return on investment of the programme. It is most comprehensive and objective evaluation technique, but the process can be very costly and time consuming.

Philips, Founder of Performance Resource Organization, defined some measures of training. He divided these measures in hard data and soft data. Hard data is the traditional measure of organizational performance; it is objective and easy to measure and convert to monetary values like units produced, scrap downtime and sales expenses. Soft data on the other hand, is
typically the measure of soft skills such as communication. It is subjective and more difficult to measure and convert to monetary values. Some examples of soft data are employee work habits, safety rule violations, work climate factors like employee turnover and job satisfaction, impact of new skills like decision making and problem solving and increased employee initiative.

ROI of technical training and sales training was calculated in a study by Leslie and Benson (1996) While calculating ROI of technical training, in a comparison of 70 trained engineers and 30 untrained engineers, all the trained engineers were able to perform a construction task while less than half of untrained engineers could. The conservative estimate of ROI for one year was 4,000 percent per year.

Dell Computer Corporation implemented a five step ROI Measurement for their Sales Negotiation Training Programme in 1997 and found that the ROI for a period of 3 months was 523.25%. The total net profit to the company was $763,297. Control & Experimental Groups were tested on specific business metrics both before and after the training programme and an overall improvement of 17.63% was calculated for the training group.

Green (2004) in his research study of “Corporate training programs: A study of the Kirkpatrick-Phillips model at Electronic Data Systems” investigated usage levels of the Kirkpatrick-Phillips method of training evaluation of Electronic Data Systems (EDS) and how training programs are perceived at EDS. Descriptive statistics were used to analyze survey data and evaluate the associations between continuous scaled measures using correlation statistics. The following table gives a comparative figure of recommended percentage of evaluation required at various levels, done by EDS and ASTDs figure of study of US organizations.

Table 2.1 : Comparative figure of Evaluation at various Levels.

<table>
<thead>
<tr>
<th>Level</th>
<th>Recommendations</th>
<th>Done by EDS</th>
<th>ASTD’s Study of US Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>100</td>
<td>78.5</td>
<td>75</td>
</tr>
<tr>
<td>II</td>
<td>60</td>
<td>33.03</td>
<td>41</td>
</tr>
<tr>
<td>III</td>
<td>30</td>
<td>6.68</td>
<td>21</td>
</tr>
<tr>
<td>IV</td>
<td>10</td>
<td>9.04</td>
<td>11</td>
</tr>
<tr>
<td>V</td>
<td>5</td>
<td>2.19</td>
<td>N/A</td>
</tr>
</tbody>
</table>
2.20.7 The Parker Approach

Parker divided the evaluation into four groups:

i. Job Performance.

ii. Group Performance.

iii. Participant Satisfaction.

iv. Participant Knowledge Gained.

2.20.8 Virmani and Premila’s Model:

As per this model, training comprises a three-stage system. The first stage is the period before training (expectations from the course). The second is the teaching/learning stage. The third stage is back on the job, wherein the trainee is expected to integrate training with his job.

2.20.9 Warr’s CIRO Framework of Evaluation:

Warr, Bird & Rackham (1970) advocated the four level of evaluation in their CIRO model, which are: Context evaluation (inquiry of the training needs and goals), Input evaluation (resources used to reach the goals), Reaction evaluations (reaction of the participants) and Outcome evaluation (immediate outcome: change of knowledge and attitude; intermediate outcome: change of behavior at the workplace; ultimate outcome: effects on company level).

**Context Evaluation**: Obtaining and using information about the current operational context, that is, about individual difficulties, organizational deficiencies and so on. In practice, this mainly implies the assessment of training needs as a basis for decision.

**Input Evaluation**: Determining and using facts and opinion in order to choose amongst alternative training methods.

**Reaction Evaluation**: Monitoring the training while it is in progress. This involves continuous overseeing the administrative arrangements and feedback from trainees (Akin to on-line monitoring).

**Outcome Evaluation**: Measuring the impact of training in terms of short term & long term, namely:

i. Immediate outcomes: The changes in participants’ knowledge/skills and attitudes, which can be capture immediately, post training.
ii. Intermediate outcomes: The changes in trainees' actual work-behavior, which result from training (2 – 6 months post-training).

iii. Long-Term Outcomes: The changes in the functioning resulting from changes in work behavior attributed to the training.

2.21 Schmalenbach (2009) in an article “Building an evaluation strategy” raises questions to be asked to build training strategy.

1. Stakeholders - Who are they, what is their interest, what do they want to get from the training activity, and how will evaluation help them achieve their wants?

2. Purposes - What is the primary purpose of the evaluation i.e. which key stakeholder needs to dominate?

3. Evidence and proof – Whether stakeholders accept limited evidence and an argument about the value of the training that suggests that, on balance, a proportion of any changes in performance is due to the training activities? Or will they require unequivocal proof and some hard, robust numbers?

4. Coverage - To what extent will activities be evaluated, and what are the criteria that will normally be used to select an activity for evaluation?

5. Responsibilities – Who is responsible for evaluating? Who is accountable for the results? What skills, attitude, knowledge and experiences are needed by these people, and will these be provided in-house or outsourced?

6. Process and product- Will the evaluation activities include looking at the process of training design, delivery and maintenance, as well as outputs?

7. Reporting and communicating – How will evaluation activities be reported on, to whom in what format, and with what frequency?

The study of knowledge management at BHEL was based on the perception of 20 middle level managers. The study attempted to examine and evaluate the effectiveness of training system in practice and suggest the ways to translate individual talent into corporate advantage. The study concluded that the ability
to manage knowledge has become a major survival factor for BHEL (Suchi & Singh, 2001)

2.22 An evaluation for the training project for the modernization of Workshops was carried out. British Rail Engineering Limited (BREL) in Derby had financed 20 courses for Indian Railway’s Managers from 1984 to 1989 with a purpose to give managers of Indian Railway an opportunity to deepen their theoretical and practical understanding of relevant workshop practices at a total cost of 1 million pound for 175 study fellows.

In order to establish the impact, a sample of returned study fellows were interviewed. Benefits which could be attributed solely to the training of the individual were identified, described and then assessed. The aim was to establish “clear-cut cases” where the tangible benefits of the training were either worth significantly more than the unit cost of 7,000 pounds or significantly less than that unit cost. The evaluation concluded that the project has been highly successful in that it has produced benefits far in excess of the training cost. The main benefits were obtained by study fellows observing technology and practices in BREL and British Rail which were new to Indian Railway, which they then applied in their job on return to India. Even higher returns, however, were potentially capable of being achieved.

The Main Findings were as under:

- **Identification** Indian Railway and the British Council identified a generally sound set of training needs or courses to meet. Specific jobs were not identified but skills and subject areas for training were indicated. There was a general recognition that operational constraints within the IR personnel system meant that it was not always possible to assign individuals to posts which utilized fully the specialized character of the training.

- **Course Design** Some of the theory and class work was found not to have been of much relevance and applicability. In any case, some of this work could have been carried out in India at least as effectively and at lower cost. There should have been more focus on the initial objectives. These emphasized the exposure to current practices with new technology.
• **Pre-course** Early notification to selected candidates of course details, by allowing them time to select relevant topics and to prepare a job study or task with line manager involvement, was found to be highly beneficial.

• It was found to be of particular importance that the post-course job enabled the study fellows to apply the result of their training. It was more productive if they knew this prior to leaving India. Training was most productive when the training provided matched both the needs of the subsequent job and those of the individual study fellow.

• **Implementation.** The provision of the training was generally good but more communication and contact visits between the provider (BREL) and the client (IR) would have enabled the courses to be better tailored to needs. More follow-up action could have been taken on the results of the study fellows’ post-course evaluation forms and on the commendations of the joint reviews which identified a number of improvements which could be made to the procedures. The ex-post evaluation has revealed the importance of more active management during the training process by both the client and the Training provider.

• **Unit Costs and Cost-Effectiveness.** In comparison with other training projects the overall cost per study fellow was very reasonable. The course size was increased from eight to ten to increase cost-effectiveness but could have been increased further to twelve.

2.23 Most organizations as well as people tend to be short sighted, self constraint, doing just sufficient to survive. In a study, Ms. Azmi(2003) has focused on the need and importance of strategic learning i.e. a fit between organizational strategies and organizational learning, in order to ensure sustainable growth, proposing a model. She has concluded that learning strategies have to be aligned with corporate strategies. According to her, a major transformation is taking place in the corporate world. The transformation has rendered the environment uncertain, if not chaotic. It has necessitated the need for greater alacrity and prudence. Organizations are seeking innovative ways to outdo the competing forces. There has been an observable paradigm shift in the global economic situation in the past ten years or so. The hallmarks of the new dispensation is
competence. Nothing else is going to help much. We have moved to a new scheme of things where complacency has no place.

There is another study on how to make training more effective by fitting it more closely into the organizational context. Models of training are examined to consider the difference between training an individual and changing the way in which the individual performs in the work context. In order to highlight the ways in which individual and organizational needs can be integrated, the identification of training needs is discussed. To emphasize the essentially cyclical nature of learning, the learning experience is broken down into a sequence of events. Most of these attempts to define effective training imply that it is often an attempt to change the way the organization functions and use the training department as an agent for change (Bramley, 1989).

Dr. Hale (2003), a leading proponent of action learning argues that the time has come to shatter the myths that have emerged based upon the propositions of Donald Kirkpatrick some 43 years ago. Learning should be seen as the responsibility of the learner not the trainer. Proving learning should be integral to the process of learning not based on before and after statistics. This is based on Richard Hale’s own learning from action with international organizations through the International Management Centers Association.

Wiele (2010) in his article “The impact of training participation and training costs on firm productivity in Belgium” examined at the possible relation between employer provided training and firm performance for a sample of over 10,000 large Belgian firms. He first estimated a standard Cobb-Douglas production function to assess the firms’ expected performance based on the input of capital and labour. The results show that the extent to which a firm performs either better or worse than expected, can partly be explained by the relative number of workers or employees that participate in employer provided formal training or education programme.

Suar and Dan (2001) carried out a study on “Assessment and Need Identification for Training” of an Oil company. Nine supervisors of sales office, eight supervisors of office-in-charge, 20 supervisors of operation office and eight supervisors of location heads evaluated the competencies of their respective
subordinates on 47 dimensions. Gaps were assessed between required and existing level of competencies. By analyzing gaps in ten important competencies for each work area, existing competencies of the employees were found to be lower than required competencies. Deficiencies or gaps in competencies were found in more number of behavioral skills compared to technical skills. Researchers have argued that many organizations hire professionals on the basis of skills and knowledge. But knowledge and skill competencies are relatively easy to develop compared to self-concept, traits, and motives (personal competencies). Organizations should select for core motive and trait competencies, and then teach knowledge and skills required to do specific jobs. This link between recruitment and training is missing in Indian Railway.

2.24 Return on Investment:

In today’s ever-changing business climate, as organizations seek ways to remain competitive they have significantly increased their efforts to develop to knowledge, skills, and capabilities of each employee to maximize their organizational impact. According to a report from ASTD, organizations spend $109.25 billion annually on workplace learning and performance (WLP). The average annual expenditure per employee in the ASTD’s Benchmarking Forum sample of large organizations increased to $1,424 per employee in 2005, an increase of 4 percent from 2004, and the average expenditure per employee in ASTSD’s BEST organizations increased 3.7 percent to $1,616.

Murray & Efendioglu (2007) in their article “Valuating the investment in organizational training” provide a better methodology for evaluating the value of corporate training to make it easier to compare with other organizational investments. They propose and demonstrate how “time value of money” and “hurdle rate”, which are significant components of traditional investment valuation methods, can and should be incorporated into the valuation of organization training.

In spite of the best efforts of organizations and the professional trainers’ associations, there are significant problems in evaluating the true impact of training. The published results of the survey administered to the delegates of the 2006 conference and published by the British Learning Association in May 2006 found that 72 percent of a representative sample of Britain’s leading learning
professionals considered that learning tends not to lead to change, and only 51 percent of respondents said that the learning and training programs they delivered were actually evaluated after the learning or training took place (Anon, 2006).

The training professionals use four different methods to define and calculate a "training ROI" (Rowden, 2005). Three of these methodologies generate a ratio and the fourth produces a numerical value. Additionally, one of the three ratio based methods calculates RIO based on a forecasts whereas the other two are determined by a review of benefits actually realized from the training.

ROI is a single most important factor that shows whether the economic benefits of the training are more than the cost of staff turn-over. The Cranet Network (an International HRM survey with responses from 5000 private organizations in 26 countries) was established in 1989 by five founding countries (UK, Germany, France, Sweden & Spain) and is coordinated by Center of European HRM at Cranfield School of Management. This is the largest and most reputed independent survey in the world on HRM policies and practices. The survey found that the amount spent on training was 3% of the wage bill and that 45% employees were trained annually.

2.25 Dr Chakravarty(2004) in a paper has revealed a shift “From training to learning” and “From learning to learning to learn”, as a new approach of training where training is considered as an agent of growth and change. He has also emphasized that the training should be related to the end results. He has suggested a paradigm shift as shown in table below:

<table>
<thead>
<tr>
<th>Learning to Learn</th>
<th>Rather than</th>
<th>Learning Specific Skills.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intuitive and Experimental</td>
<td>Rather than</td>
<td>Rational and pre-programmed.</td>
</tr>
<tr>
<td>Wide Boundaries</td>
<td>Rather than</td>
<td>Limited by objectives.</td>
</tr>
<tr>
<td>Learning to Challenge</td>
<td>Rather than</td>
<td>Learning to accept.</td>
</tr>
<tr>
<td>Learning integrated with</td>
<td>Rather than</td>
<td>Separately conceived and</td>
</tr>
<tr>
<td>organizational process</td>
<td></td>
<td>provided.</td>
</tr>
</tbody>
</table>

On-the-job Training (OJT) can be among the most effective ways of training workers because of its direct focus on tackling workplace challenges. Aik (2007) in his research study on “Effects of visual training and visual aids on the
performance of new workers on a wood products assembly line”, determined the effects of two visual methods, a pre-work video training session and a large graphic sign illustrating assembly procedures. The research question was how these supplemental methods affected the performance of assembly trainees in comparison to unstructured OJT alone. The theoretical bases of this study were information processing approach and Visual Factory Management. Three groups of 12 new workers were trained for 6 days to assemble wooden tiles. The control group was trained with unstructured OJT alone, the others with unstructured OJT plus one of the visual methods. Acceptable units assembled and accuracy percentages were measured. One-way analysis of variance, Dunnett’s C tests, t tests, the training evaluation, and the post-training interviews were used to analyze findings. While the workplace sign group had significantly lower productivity and accuracy than the other groups there was no significant difference for the video group. Overall, the results of this study indicate that visual supplements of OJT vary in their effectiveness. When the supplements lead to greater performance and quality from the assembly workers it benefits the overall system.

A study was conducted in Haryana to study the extent of use of 10 important training methods (Lecture, Extension, Talk, Group discussion, Workshop, Demonstration, Skill Teaching, Teaching Aids (Visuals), Case Study, Institutional Visits/Study Tour, Lab Methods) by the trainers of the Department of Agriculture and it was found that lecture method is mostly used by the trainers.

2.26 Developing sustainable interest in management training – A case study was carried by Imanyi (1999) in which 16 factors were observed, some of them inter-related, which hinder interest in training. These include lack of training awareness; the notion that training is wasteful; communication between training departments/organizations and their clients; problems of transfer of management learning to the work place; etc. The validity and authenticity of the study, in spite of the ‘smallness’ of the sample, is shown to derive from the fact that, the thrust of the study is an analysis of in-depth structures and processes, as also the fact that truth is not necessarily a function of copious data.

2.27 Indian Railways’ Training – Philosophy, Approach & Structure:
The Indian Railways is responsible for providing and managing training activities, including:

- Personnel Department.
- Training Managers of each department.
- Heads of Training Centres.
- Trainers (Faculty Members).
- All Managers and Supervisors.

2.27.1 **Training activity:**

Training activities include:

- Direct Training (Tutor / Trainer based)
- Work Based Projects.
- Individual Study.
- On-the-job Coaching / mentoring.
- Desk instructions / performance aids.
- Open learning.
- Workshops.
- Conferences / Exhibitions.
- Secondments / Visits.

2.27.2 **Types of Training:**

Broadly, Training can be categorized under the following four types:

- Initial training (For the purpose of orientation of new entrants in the organization).
- Refresher training (For the purpose of refreshing).
- Promotional training (For the purpose of preparing staff for higher responsibilities).
- Special training (For the purpose of providing specialized knowledge).

2.27.3 **What can an effective training provide:**

Apart from the most obvious advantage of right number of trained people being available at right time, effective training should provide:

- Relevant in-house specialist knowledge and expertise being captured and retained so that it is available for accessing at any time.
• A base on which Business / Strategic Planning can be developed.

• Capability to achieve pre-determined standards of Quality of customer service.

• Satisfaction on identified training needs, both corporate and individual.

• Identification and control of training cost.

• Value for money.

• Identification of the ‘must know’, ‘should know’ and ‘could know’ in a real life situation.


• Learning relevant to business needs.

• Learning available on demand.

• Opportunities for meeting individual learning styles for personal learning.

• Increased accountability and responsibility of staff.

• Enhanced staff motivation and commitment.

2.27.4 Purpose and Importance of Training:

Training is important from the point of view of both the employer and the employees. While employers depend on the quality of their employees’ performance by bringing up their competence through training to a level by which organizational aims and objectives could be achieved, the employees need training to meet their motivational needs for development, recognition, status etc. through job satisfaction.

Training should necessarily lead to effective performance by the employee. Since the basic aim of training is to bring about effective performance of work, training has to be recognized as an integral and essential part of the whole work system.

2.27.5 Effectiveness of Training:
Effective training should do the following:

- Ensure that trainees have learnt.
- Develop feeling amongst trainees that what they have learnt has potential value to their work.
- Develop capabilities amongst trainees to apply their learning to the work.
- Meet the specific needs of work for which the training was designed.

2.27.6 Centralized Training Institutes:

Training of Group ‘A’ and Group ‘B’ officers is organized at the following five ‘Centralised Training Institutes’, which are under the administrative control of the Ministry of Railways (Railway Board).

- Railway Staff College (RSC), Vadodara.
- Indian Railways Institute of Mechanical & Electrical Engineering (IRIMEE), Jamalpur.
- Indian Railways Institute of Civil Engineering (IRICEN), Pune.
- Indian Railways Institute of Signal Engineering & Telecommunications (IRISET), Secunderabad.
- Indian Railways Institute of Electrical Engineering (IRIEEN). Nashik.

The Railway Staff College, Vadodara is headed by a Principal in the rank of General Manager. Other four Centralised Training Institutes are headed by Directors in Higher Administrative Grade.

2.27.7 Training Centres for Staff:

Training of Group ‘C’ and ‘D’ employees is organized in the ‘Main Training Centres’ and ‘Other Training Centres’ which function under the administrative control of Zonal Railways / Production Units. In order to ensure availability of at-least the minimum necessary inputs required for desired quality of training, additional Training Centres, if needed, be established only with prior specific approval of the Board.
2.27.8 Training Plan:

Initial / Induction / Apprenticeship Training for Electrical Department:

Employees are required to undergo an initial / apprenticeship training for the duration as prescribed below:

1. a) Jr. Engineer Gr.II (W/shop) 18 Months.
   b) Intermediate App. 18 Months.

2. Section Engineer (W/shop) 1 Year.

3. a) Jr. Engineer Gr.II (C&W) 18 Months.
   b) Intermediate App. 18 Months.

4. Section Engineer (C&W) 1 Year.

5. a) Jr. Engineer Gr.II (DSL) 18 Months.
   b) Intermediate App. 18 Months.

6. Section Engineer (DSL) 1 Year.

7. a) Jr. Engineer Gr.II (/Elec) 18 Months.
   b) Intermediate App. 18 Months.

8. Section Engineer (Elec) 1 Year.

Zonal Railway / Production Unit administrations would follow the scheme of providing Initial / Induction / Apprenticeship Training and for all other categories of Group ‘C’ and Group ‘D’ employees within the framework of Indian Railway Establishment Manual (IREM) and ‘Approved Modules for Stage-wise Training of Group ‘C’ and ‘D’ staff.

Refresher Training:

Selected categories of Group ‘C’ and Group ‘D’ employees are required to undergo periodical Refresher Training Programems. The duration and periodicity for these Refresher Courses is as under:

1. Artisans (P S & OHE) 4 Weeks once in 5 years.
2. Artisans (Elect. Loco) 4 Weeks once in 3 years.
3. Running Supervisor 4 Weeks once in 3 years.
5. Train Drivers 1 Week once in 3 years.

In addition, General Manager may prescribe refresher course, their duration and periodicity for categories not listed above, depending on local needs and such courses may follow the modules prescribed in the Approved Modules for Stage-wise training of Group ‘C’ and Group ‘D’ employees of various departments.

Staff employed in train passing / train running duties, like station masters, assistant station masters, switch-men, cabin-men, guards and drivers, must pass an appropriate examination at the end of periodical Refresher Course. In case they fail to pass the prescribed examination, special arrangement will be made by the Railway Administration to repeat the refresher course immediately or after a short period, the staff being granted leave as due to cover the intervening period or temporarily deployed in other jobs. However, if they fail in the second attempt also, they would be absorbed in an alternative category. An employee so absorbed in an alternative category is allowed to undertake further refresher course at intervals of not less than six months, but such a course is to be taken by the employee availing his / her own leave. On passing the refresher course examination such staff are reabsorbed in the original category on the occurrence of the first vacancy.

Promotional Training:

Certain categories of Group ‘C’ and Group ‘D’ employees are required to undergo promotion courses as prescribed in the “Approved Modules for Stage-wise training of Group ‘C’ and Group ‘D’ staff” circulated by Railway Board.

General Managers may prescribed the categories and the stages in the career of Group ‘C’ and Group ‘D’ employees at which passing the promotion courses would be a pre-requisite for promotion to the next higher grade. No exemption from successful completion of these mandatory Promotion Courses is to be granted.

2.28 Management of Training Functions - Guidelines for systems Approach to Training (SAT)
Guideline-1: To integrate training systematically with entire work system.

2.28.1 Why SAT:

Money spent on training is not only and ‘expenditure’, but an ‘investment’. All investments including that on training call for close and continuous scrutiny, backed by suitable mechanism and machinery to get maximum benefit out of the investments made.

To integrate training systematically with the whole work system and making it cost effective, the entire training activities have to be based on SAT.

2.28.2 What is SAT:

Systems Approach to Training is nothing but application of principles for effective management in “Training”. These principles are – defining aims & objectives; defining the requirements for effective performance by job analysis; planning, sourcing and implementing; and assessing achievement and doing necessary changes. SAT is so called because it involves a series of interdependent system, functionally linked together so as to achieve total effectiveness. In applying SAT, training is undertaken on planned basis in logical serial steps.

In the systems approach to any activity or process, the following four broad stages are involved.

A. Analysis:

Identification of problem in order to define the objective and, tasks to be undertaken – Identification if training needs.

B. Synthesis Exploring various ways to achieve the objective and selecting the suitable cost effective one – Formulation of Training Plan and Strategy.

C. Implementation:

Implementing the course of action decided in the synthesis stage – Implementation of training.
D. Operation:

Checking operational system regularly for effect and corrective measures –
*Validation of training – assessing training effectiveness and application of corrective measures.*

The cyclic diagram shown below explains SAT. Because of introduction of Feedback mechanism, various activities under SAT become cyclic.

Fig. 2.1 :SAT Training Cycle

The detailed activities under each of the four stages are as under:

1. **Identification of Training needs**

1. Recognizing training needs.

2. Job Analysis.

3. Specifying skills, knowledge and attitudes needed on the basis of job Analysis.

4. Specifying the target population and groups.

5. Deducing training objectives for desired level of competence.

**II. Formulation Training Plan and Strategy**

1. Determining ‘how’ and ‘when’ a particular training requirement would be met.
2. Determining method of training.
3. Assessment of resources needed and action plan for resource mobilization.

**III. Implementation**

1. Assembling training resources.
2. Course sequencing.
3. Development of training material.
4. Running of pilot course.

**IV. Validation of Training:**

1. Establishing measures of control to ensure achievement of training objectives.
2. Establishing machinery to validate training.
3. Implementing corrective measures.

**2.28.3 The Iterative Training Process:**

All the above activities taken in sequence constitute ‘Training Process’ as shown in the fig. 2.2:
Fig. 2.2: Iterative Training Process

### Guideline 2 – Training Needs Analysis:
To establish means for essential training needs being systematically and continuously identified and prioritized.

### What is Training Need Analysis:
An examination of the organization’s present and expected operations and the manpower necessary to carry them out, in order to identify the numbers and categories of staff needing to be trained or retrained and the types of training programmes necessary. It may also refer to the training need of an individual to enable him to reach the required standard of performance in his/her current or future job.
Main Issues to be considered:

- Identification of training needs is an essential pre-requisite for designing and providing effective training and should be conducted every year by all major training centers to be identified by the concerned Training Managers.

- Training needs arise at three levels – organizational, subgroup and individual.

- All needs are not training needs and therefore, whenever a problem is perceived, it needs to be ascertained whether a related training need exists.

- Training needs arising out of changes in technology, processes etc. need to be considered before actual introduction of such changes.

Participants in Training Need Analysis Workshop:

- Training Manager(s)

- Line Managers

- Supervisors

- Selected staff

- Members of the Advisory Committee attached to the Training Centre.

Steps in Training Need Analysis:

Collection of Information on

- Manpower profiles for different kinds of jobs undertaken

- New methods / technologies / processes / management practices introduced / proposed to be introduced

- Collective evidence from performance appraisals

- Reports on accidents, customer / market surveys etc.

Identification of challenges and problem areas in performance, viz.

Agreeing on

- Skills knowledge and attitude specification for the prospective trainees.
• Target population
• Training objective
• Assessment scheme

Report of Findings including

• Priority list
• Training action plan

Guideline 3 – Selection and evaluating training methods

To select from a wide range of options the most appropriate blend of training and learning methods having regard to all relevant factors.

Guiding factor in selecting Training Methods:

Guiding factor in selecting training methods would be ‘how best training aims and objectives can be met in a cost effective manner.

Guiding factors in evaluation of Training Methods:

Following factors should be taken into consideration while evaluating training methods:

*Application of learning principles – As to how and to what extent the particular training method to be used considering;*

• Motivates the learner
• Promotes learner’s participation
• Helps in acquiring skills
• Provides flexible learning

*Application of ways of learning*

• Being told including discussions / seminars
• Demonstration
• Trial & error
• Thinking

Guideline 4 – Designing effective and efficient Training:
To develop effective and efficient training programmes based on training needs.

Questions to be answered in designing training:

- What methods are going to be used? How are we to achieve the learning?
- Who is the trainer to be? Who can help the learner?
- What place is to be used? Where is training to take place?
- What is the time factor? How long should the training time be?

2.28.4 Roles and functions in relation to training activities:

**Personnel Department.**

- Determine training policy and design training plans to secure value for money.
- Relate training policies and plans to corporate and departmental objectives, and ensure its conformity with personnel management and career development policies.

**Line Managers and Supervisors.**

- Demonstrating support and commitment for training.
- Identifying training needs in their areas.
- Ensuring a system for picking up training needs continuously.
- Seeking to ensure that a satisfactory and cost-effective training programme exists, either on or off the job, to meet the needs.
- Ensuring that the trainees are clear about the objectives of the training to be undertaken and the expected level of performance to be attained.
- Providing on the job training including individual coaching/counseling where appropriate.
- Checking if the training received has been relevant, objectives met and performance levels achieved and taking remedial actions including reporting on shortcomings of formal training or learning package to the appropriate authority.
- Contributing to the validation and evaluation of training.
Gupta (2005), Chief Electrical Engineer, North-Western Railway carried out a study on evaluation of the Contents of Training in reference to technological obsolescence and proposed a modification to the syllabus of stage-wise training to the employees of Electrical Department of Indian Railways.

2.29 PSYCHO TECHNICAL DIRECTORATE OF INDIAN RAILWAYS:

Psycho Technical Directorate of Railway Board carried out studies and research on operating staff of railways. Some of the milestones achieved by them are as under:

1. Job-analysis of Station Master, Switchmen, Locomotive Drivers and Motormen.
2. Standardization of personnel testing programmes for selection of Station Masters, Switchmen, Motormen and Locomotive Drivers including High Speed Train Drivers.
3. Development of modular training programmes for Locomotive Drivers.
4. Assessment of physiological and psychological work load on Locomotive drivers in relation to varying speed vis-à-vis variations for rationalization of duty hours and work-rest cycles.
5. Personality studies of Staff involved in accidents.
6. Study of superannuation of driving staff.
7. Competency-based placement of front-line commercial staff.
8. Study on causes of stress among operating categories of Staff (ASMs and Switchmen), its relationship with performance and intervention techniques for control of stress.
9. Development of item bank of psychological tests for recruitment of ASMs and drivers.
10. Study on Enhanced age of superannuation and its impact on performance of drivers.
11. Development of norms on physiological parameters on biofeedback system for drivers.
12. Consultancy to Delhi Metro Rail Corporation and Konkan Railway Corporation Ltd. For selection of their train operating staff.
13. Study on relationship between written test and psychological test result in respect of ASMs and Asst. Drivers.
15. Computerization of existing in-service psychological test batteries of ASMs, Loco Pilots and Motormen.

16. Procurement and adaption of Computerized Psychological test package for railways.

17. Study of relationship between written examination and psychological test results in respect of ASMs and Asst. Drivers.

18. Follow up study on job performance of drivers tested on computerized high speed drivers test battery.

19. Accident involved ASMs correlation study.

20. Preference for paper-pencil v/s computer aided tests.

21. Concept paper on setting up of computer-aided aptitude test on Indian Railways.

22. Various research reports (Appendix XIII) undertaken by the Directorate.

On the basis of the review of these studies, it is evident that there are comprehensive literature support and well laid-out conceptual framework for the training effectiveness evaluation in general, but not in the field of evaluation of skills of train’s drivers (Loco Pilots and Motormen).

2.30 **Identification of Gap Areas** – There are no studies on effectiveness of training imparted to loco pilots & motormen on IR. There are two types of training for them namely, Initial (after appointment) and Refresher (after every 3 years periodicity with a purpose to reinforce, retain utilize & updating). The initial training is definitely beneficial as initially a person is raw and after training he becomes acquainted with working of train. The formation of control group is difficult in this scenario as training is to be imparted to all. The focus is, therefore, on evaluation of refresher training where control group is not possible because refresher overdue is not permitted. The study based on control group and experimental group also has vital difficulty of ensuring initial parity.