Conceptual frameworks of Vulnerability Assessments for Natural Disasters Reduction

Roxana L. Ciurean¹, Dagmar Schröter² and Thomas Glade
Chapter III

Theoretical Frame work

3.1. Introduction

Training and development refers to any effort to advance the present or prospective workers' performance, by increasing an employee's capability through learning. This process changes the employee's mind-set and also boosts his/her skills and knowledge. Training is a learning process that involves the acquisition of knowledge, sharpening of skills, concepts, rules, or changing of attitudes and behaviours to enhance the performance of employees whereas development is the act of improving by expanding or enlarging or refining and future growth. Human Resource Management, training and development is the field which is concerned with organizational activity aimed at bettering the performance of individuals and groups in organizational settings. It has been known by several names, including human resource development, and learning and development. Harrison observes that the name was endlessly debated by the Chartered Institute of Personnel and Development during its review of professional standards in 1999/2000. "Employee Development" was seen as too evocative of the master-slave relationship between employer and employee for those who refer to their employees as "partners" or "associates" to feel comfortable with. "Human Resource Development" was rejected by academics, who objected to the idea that people were "resources" – an idea that they felt to be demeaning to the individual.
3.2 Theoretical Framework To Measure Factors Determining The Effectiveness Of Training In IT Industry

Figure 12 Theoretical Framework
3.2.1 Development: This activity focuses upon the activities that the organization employing the individual, or that the individual is part of, may partake in the future, and is almost impossible to evaluate. The "stakeholders" in training and development are categorized into several classes. The sponsors of training and development are senior managers. The clients of training and development are business planners. Line managers are responsible for coaching, resources, and performance. The participants are those who actually undergo the processes. The facilitators are Human Resource Management staff. And the providers are specialists in the field. Each of these groups has its own agenda and motivations, which sometimes conflict with the agendas and motivations of the others. The conflicts that are the best part of career consequences are those that take place between employees and their bosses. The number one reason people leave their jobs is conflict with their bosses. And yet, as author, workplace relationship authority, and executive coach, Dr. John Hoover points out, "Tempting as it is, nobody ever enhanced his or her career by making the boss look stupid." Training an employee to get along well with authority and with people who entertain diverse points of view is one of the best guarantees of long-term success. Talent, knowledge, and skill alone won't compensate for a sour relationship with a superior, peer, or customer.

3.2.2 Talent development, part of human resource development, is the process of changing an organization, its employees, its stakeholders, and groups of people within it, using planned and unplanned learning, in order to achieve and maintain a competitive advantage for the organization. Rothwell notes that the name may well be a term in search of a meaning, like so much in management, and suggests that it be thought of as selective attention paid to the top 10% of employees, either by potential or performance.

While talent development is reserved for the top management it is becoming increasingly clear that career development is necessary for any employee, no matter what their level in the company. Research has shown that some type of career path is necessary for job satisfaction and hence job retention. Perhaps organizations need to include this area in their overview of employee satisfaction.

The term talent development is becoming increasingly popular in several organizations, as companies are now moving from the traditional term training and development. Talent development encompasses a variety of components such as training, career development,
career management, and organizational development, and training and development. It is expected that during the 21st century more companies will begin to use more integrated terms such as talent development.

3.2.3 Pedagogy

During the last 10–15 years, learning has become a key topic, not only for professionals and students in the areas of psychology, pedagogy and education, but also in political and economic contexts. One reason for this is that the level of education and skills of nations, companies and individuals is considered a crucial parameter of competition in the present globalised market and knowledge society. It is, however, important to emphasise that the competitive functions of learning are merely a secondary, late-modern addition to the much more fundamental primary function of learning as one of the most basic abilities and

![Image: Progress of Training Practice]
manifestations of human life. Learning is also a very complex matter, and there is no generally accepted definition of the concept. On the contrary, a great number of more-or-less special or overlapping theories of learning are constantly being developed, some of them referring back to more traditional understandings, others trying to explore new possibilities and ways of thinking. It is also worth noting that whereas learning traditionally has been understood mainly as the acquisition of knowledge and skills, today the concept covers a much larger field that includes emotional, social and societal dimensions. For example, learning sometimes takes on the nature of competence development, which has to do with the ability to manage different existing and future challenges in working life and many other fields of practice. It is thus quite difficult to obtain an overview of the present situation of the understanding of the topic of learning.

The above structure of theory emphasis the development of a comprehensive and coherent theory construction. These include all the psychological, biological and social conditions which are involved in any learning. The main crux of learning is depicting by including its processes and dimensions, different learning types and learning barriers. Further there are the specific internal and external conditions which are not only influencing but also directly involved in learning. And finally, the possible applications of learning are also involved. There are five areas which emphasizes some of the most important features of each of them. This research develops a simple model of work organization to formalize the cost and benefits of job rotation and to identify factors that affect a firm’s choice of job rotation over specialization, and workers’ self-selection between
firms with and without rotation. There are two types of Job rotation. The first is that job rotation typically appears as a component of a bundle of attributes that also includes lifetime tenure, worker-participation in decision making, and distribution schemes that include some form of profit sharing. Consistent with recent research that stresses complementarities among work policies, we argue that firms possessing these additional attributes receive a distinct set of benefits from job rotation, making them more likely than other firms to adopt job rotation in the workplace. As a second stylized fact, job rotating firms tend to be innovative. We argue that innovations in these firms emerge as a consequence of job rotation by allowing workers to apply their knowledge of one task to the improvement of others.

1 See, for example, Ouchi [1981], Koike [1984], [1990], [1994].
3 See Leijonhufvud [1986] for a discussion of division of labor and a comparison of crafts and factory modes of production.
4 See, for example, the discussion and further references in Mason [1982, 169-70].
5 Mechanisms similar to job rotation have also been regularly used for training purposes. One of the methods of developing skills during the Industrial Revolution was a practice called migration, which involved rotating trainees among tasks within and among firms (More [1980, ch. 6]). Similarly, the training of medical students includes a system of periodic rotation among all specialties.
3.3 Information Communication Technology

3.3.1 Although there were many references in the research literature to ICT (Information Communication Technology) having a positive effect on motivation, few studies had specifically looked at the topic in detail and many of those that had were small scale. Motivation was often described in general terms and none of the identified studies related their outcomes to a conceptual framework to allow the nature of motivation to be identified in more exact terms. Motivation was conceived in this study in terms of eight different measures, which draw upon current motivational theory. Most are concerned with the reasons that employees have for engaging in tasks.

<table>
<thead>
<tr>
<th>MOTIVATIONAL MEASURE</th>
<th>DEFINITION</th>
<th>IDEAL “POSITIVE” LEARNING PROFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning goal</td>
<td>The reason for engaging in the activity using ICT is to further personal understanding and competence</td>
<td>High level</td>
</tr>
<tr>
<td>Performance approach goal</td>
<td>The reason for engaging in the activity using ICT is the pursuit of opportunities to gain positive feedback about one’s competence</td>
<td>Low level</td>
</tr>
<tr>
<td>Performance avoidance goal</td>
<td>The aim of engaging in the activity using ICT is to avoid feedback suggesting a lack of competence, often achieved by finding ways of not engaging in the task</td>
<td>Low level</td>
</tr>
<tr>
<td>Academic efficacy</td>
<td>The degree to which an individual believes they have the capacity to design and execute the courses of action necessary to achieve a particular goal using ICT</td>
<td>High level</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>The degree to which ICT directly engages the pupil and holds their interest</td>
<td>High level</td>
</tr>
<tr>
<td>External regulation</td>
<td>A willingness to engage in work with ICT because one feels obliged to do so by someone else, probably an authority figure such as a teacher</td>
<td>Low level</td>
</tr>
<tr>
<td>Identified regulation</td>
<td>Beginning to recognise and share the values that might have been assumed to drive the inducements offered by others to engage in the task using ICT</td>
<td>High level</td>
</tr>
<tr>
<td>Amotivation</td>
<td>A lack of any particular reason for engaging with ICT-supported work</td>
<td>Low level</td>
</tr>
</tbody>
</table>

Figure 15 Motivational Measure on Training

This framework translated into measures of motivation which formed the basis of the employee’s questionnaire. Employee’s were asked to reflect on recent experiences of using ICT in organisation and to answer questions about their experience, which represented scales corresponding to each of the eight motivational measures, above. The relative strengths of the different type of measure were then analysed to draw conclusions about the types of
motivation arising from ICT use. The ideal learning profile (illustrated in Figure below) provides an indication only, as different motivational profiles may well be suited to different activities and in different situations. For example high levels of performance approach goals (the pursuit of positive feedback on personal performance) may be good in a crisis situation, but not necessarily good in an organisational discussion of mathematical strategies to solve problems, where it may result in over-competitiveness. Failure to match the ‘ideal’ profile should not be taken as a sign of great concern; it is the relative strength of particular measures in the profile that is important. Performance approach goals, for example, can act as powerful motivators that will enhance learning, so high levels are not necessarily a problem. Overall, however, it is better to have stronger learning goals. Among other things, this approach allows an understanding of the balance between ‘intrinsic’ motivation (i.e. the use of ICT in itself is motivating), and other motivational measures. This is important to understanding whether using ICT in organisation impacts in direct ways, which may be short-lived or in ways more deeply linked to learning processes.

Figure 16 Hypothetical “Good” and “Poor” Motivated profiles
3.4.1 Training Qualities

Since environmental data operations can be complex, a systematic structure for quality must be established to provide confidence in the quality of information used to support decisions. Such a structure is provided by a quality system and is defined by the organization conducting environmental data operations. The EPA Quality System consists of three structural levels: Policy, Organization, and Project. Effective implementation of the EPA Quality System requires that training occur at each level of the organization that performs activities affecting environmental data quality. Training needs at the various levels of the organization are task specific. Senior and line managers can benefit from training to help understand the structure, concepts, and operating principles of the quality system. Technical personnel can benefit from training to help understand their organization's quality system and the QA and QC tools and techniques necessary to fulfill the requirements of the system. A quality systems training program should facilitate the achievement of an organization’s mission, goals, and objectives. Once the details of the quality systems training program are established, they are documented in a training plan. To be properly aligned with the organization, the training program should be developed with accurate information, stakeholder participation, and attention to the unique needs and constraints of the organization. We may specify six steps for developing a proper training program and they are:

1. Up-front Review
2. Needs Assessment
3. Analysis of Needs Assessment Data
4. Development of the Quality Systems Training Program
5. Construction
6. Evaluation of the Plan

A quality systems training program may include a variety of methods for helping employees attain specific levels of knowledge, skills, and abilities (KSAs) to employees. Ultimately the quality systems training program should ensure that all personnel have the necessary level of experience or training to enable them to competently perform designated tasks. Therefore, it
is important that each level of the EPA organization be analyzed in terms of its training needs and KSA requirements.

Policy

The impact of various policies on training and development can’t be understated. Policies at various levels need to be taken into consideration, and importantly, they relate to the following:

- Agency Mission, Organizational Functions, Policies, and Procedures;
- Implementing Agency and Government-wide Regulations;
- Decision- and policy-making processes for Environmental Protection
- Budget Formulation and Executive Processes.
- Organization/Managerial
- Defining Roles and Responsibilities of staff and
- Carrying out the organization’s mission through programmatic initiatives.

Though these policies relate to diverse areas and agencies, they all could exert serious impact on training. For instance, even a Government which is external to the Company could bring about a policy change that might automatically call for a training of all staff to alert them of its policy implication and how their work will change post the policy announced by the government.

3.5 Up-Front Review

Right at the beginning of designing a Training, it is worthwhile to review the situation obtaining in the company. Such a review will reveal what needs to be done; and how to achieve what needs to be done by training, and by what kind of training. That is, potentially, up-front review can give both the justification for a training and its orientation, too. For such a review:

1. Describes reasons for building a quality systems training program,
2. Determines the best solution, and helps to
3. Create a team and assign roles.
3.6 Needs Assessment (Knowledge, Skill, Ability)

A Needs Assessment is the process used to identify and understand the particular quality-related training goals of a specific job, team, organization, or agency (Figure). Identifying the training goals helps to ensure that the quality systems training program makes the best use of available resources. The needs assessment process involves identifying the gaps in KSAs that an employee needs to perform his or her job.

![Figure 17 Need Assessment Chart](image)

To do the Training Need Analysis, we need to:

1. Decide which jobs to assess
2. Identify the quality-related KSAS required to perform the jobs
3. Determine the existing level of knowledge and experience.

The focus of this phase is on the actual job roles or functions in the unit. The information will be used later to identify which KSAs personnel need to perform their jobs effectively. The Unit Assessment Form should result in a list of responsibilities and activities that can be examined in terms of what is needed to perform them. See Figure for an example of a completed Unit Assessment Form.
<table>
<thead>
<tr>
<th>Date: January 24</th>
<th>Manager’s Name: Jane Doe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit Description:</strong> Program Oversight Section</td>
<td></td>
</tr>
</tbody>
</table>

**Job List (include all functions in the unit listed above)**
- Work Assignment Manager (WAM)
- Hydrologist
- Database Managers
- Technical Liaison

**Staff Size:** 8-10 full-time employees

**Job Title**  | **Responsibilities**  | **Primary Tasks**  
--- | --- | ---
Environmental Scientist  | WAM  | Assure effective performance  
 |  | Evaluate performance  
 | Technical Liaison  | Manage communications networks for local governments  

**Figure 18** Example Unit Assessment Form
Figure 19 Example of Hierarchical Job Assessment Form
3.7 Analyzing the Needs Assessment Data

Needs assessment information analysis is the process of identifying the differences or gaps between what is needed to perform a job and what performance criteria are currently being met by comparing existing skills and required skills and verify the results.

<table>
<thead>
<tr>
<th>Required KSAs</th>
<th>Requirement Met?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to apply quality-related concepts to environmental study plans and reports</td>
<td></td>
</tr>
<tr>
<td>Ability to apply QA and QC criteria to technical directives as appropriate</td>
<td></td>
</tr>
<tr>
<td>Knowledge of basic quality-related concepts and terms</td>
<td>✓</td>
</tr>
<tr>
<td>Knowledge of QA Project Plan review skills</td>
<td>✓</td>
</tr>
<tr>
<td>Ability to perform technical systems audits</td>
<td></td>
</tr>
<tr>
<td>Ability to perform environmental data evaluation</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 20 Gap Analysis Matrix**

Any KSAs that are not currently met, either by job category or unit, should be documented. The resulting list of KSAs is the gap that needs to be bridged in the development of the quality systems training program and should be translated into training goals. A training goal should be stated in as much detail as the KSA gap indicates, along with any other criteria the training program should meet. The training goals should describe what would change, how work might flow, how quickly it might be completed and to what result.

**Figure 21 Gap Analysis Model**
Conceptual frameworks of Vulnerability Assessments for Natural Disasters Reduction

Figure 22 Roxana L. Ciurean¹, Dagmar Schröter² and Thomas Glade
Figure 23 Reflective Practice of Training
Figure 24 The Need for 21st Century Competencies Generated by the Three World Trends
### Evaluation Description and Characteristics

<table>
<thead>
<tr>
<th>Level</th>
<th>Evaluation Type</th>
<th>Evaluation Description and Characteristics</th>
<th>Examples of Evaluation Tools and Methods</th>
<th>Relevance and Practicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reaction</td>
<td>Reaction evaluation is how the delegates felt about the training or learning experience.</td>
<td>'Happy sheets', feedback forms. Verbal reaction, post-training surveys or questionnaires.</td>
<td>Quick and very easy to obtain. Not expensive to gather or to analyse.</td>
</tr>
<tr>
<td>2</td>
<td>Learning</td>
<td>Learning evaluation is the measurement of the increase in knowledge - before and after.</td>
<td>Typically assessments or tests before and after the training. Interview or observation can also be used.</td>
<td>Relatively simple to set up; clear-cut for quantifiable skills. Less easy for complex learning.</td>
</tr>
<tr>
<td>3</td>
<td>Behaviour</td>
<td>Behaviour evaluation is the extent of applied learning back on the job - implementation.</td>
<td>Observation and interview over time are required to assess change, relevance of change, and sustainability of change.</td>
<td>Measurement of behaviour change typically requires cooperation and skill of line-managers.</td>
</tr>
<tr>
<td>4</td>
<td>Results</td>
<td>Results evaluation is the effect on the business or environment by the trainee.</td>
<td>Measures are already in place via normal management systems and reporting - the challenge is to relate to the trainee.</td>
<td>Individually not difficult; unlike whole organisation. Process must attribute clear accountabilities.</td>
</tr>
</tbody>
</table>

**Figure 25** Kirkpatrick's Four Levels of Training
### Evaluation level and type

<table>
<thead>
<tr>
<th>Evaluation level and type</th>
<th>Evaluation description and characteristics</th>
<th>Examples of evaluation tools and methods</th>
<th>Relevance and practicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reaction</td>
<td>Reaction evaluation is how the delegates felt, and their personal reactions to the training or learning experience, for example: Did the trainees like and enjoy the training? Did they consider the training relevant? Was it a good use of their time? Did they like the venue, the style, timing, domestics, etc? Level of participation. Ease and comfort of experience. Level of effort required to make the most of the learning. Perceived practicability and potential for applying the learning.</td>
<td>Typically 'happy sheets'. Feedback forms based on subjective personal reaction to the training experience. Verbal reaction which can be noted and analysed. Post-training surveys or questionnaires. Online evaluation or grading by delegates. Subsequent verbal or written reports given by delegates to managers back at their jobs.</td>
<td>Can be done immediately the training ends. Very easy to obtain reaction feedback. Feedback is not expensive to gather or to analyse for groups. Important to know that people were not upset or disappointed. Important that people give a positive impression when relating their experience to others who might be deciding whether to experience same.</td>
</tr>
<tr>
<td>2. Learning</td>
<td>Learning evaluation is the measurement of the increase in knowledge or intellectual capability from before to after the learning experience: Did the trainees learn what what intended to be taught? Did the trainee experience what was intended for them to experience? What is the extent of advancement or change in the trainees after the training, in the direction or area that was intended?</td>
<td>Typically assessments or tests before and after the training. Interview or observation can be used before and after although this is time-consuming and can be inconsistent. Methods of assessment need to be closely related to the aims of the learning. Measurement and analysis is possible and easy on a group scale. Reliable, clear scoring and</td>
<td>Relatively simple to set up, but more investment and thought required than reaction evaluation. Highly relevant and clear-cut for certain training such as quantifiable or technical skills. Less easy for more complex learning such as attitudinal development, which is famously difficult to assess. Cost escalates if systems are poorly designed, which increases work required to</td>
</tr>
</tbody>
</table>
### Chapter 3 – Theoretical Frame work

### 3. Behaviour

<table>
<thead>
<tr>
<th><strong>Behaviour evaluation</strong> is the extent to which the trainees applied the learning and changed their behaviour, and this can be immediately and several months after the training, depending on the situation:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Did the trainees put their learning into effect when back on the job?</strong></td>
</tr>
<tr>
<td><strong>Were the relevant skills and knowledge used</strong></td>
</tr>
<tr>
<td><strong>Was there noticeable and measurable change in the activity and performance of the trainees when back in their roles?</strong></td>
</tr>
<tr>
<td><strong>Was the change in behaviour and new level of knowledge sustained?</strong></td>
</tr>
<tr>
<td><strong>Would the trainee be able to transfer their learning to another person?</strong></td>
</tr>
<tr>
<td><strong>Is the trainee aware of their change in behaviour, knowledge, skill level?</strong></td>
</tr>
</tbody>
</table>

Observation and interview over time are required to assess change, relevance of change, and sustainability of change.

Arbitrary snapshot assessments are not reliable because people change in different ways at different times.

Assessments need to be subtle and ongoing, and then transferred to a suitable analysis tool.

Assessments need to be designed to reduce subjective judgment of the observer or interviewer, which is a variable factor that can affect reliability and consistency of measurements.

The opinion of the trainee, which is a relevant indicator, is also subjective and unreliable, and so needs to be measured in a consistent defined way.

360-degree feedback is useful method and need not measure and analyse.

Measurement of behaviour change is less easy to quantify and interpret than reaction and learning evaluation.

Simple quick response systems unlikely to be adequate.

Cooperation and skill of observers, typically line-managers, are important factors, and difficult to control.

Management and analysis of ongoing subtle assessments are difficult, and virtually impossible without a well-designed system from the beginning.

Evaluation of implementation and application is an extremely important assessment – there is little point in a good reaction and good increase in capability if nothing changes back in the job, therefore evaluation in this area is vital, albeit challenging.
Chapter 3 – Theoretical Frame work

| 4. Results | Results evaluation is the effect on the business or environment resulting from the improved performance of the trainee - it is the acid test. Measures would typically be business or organisational key performance indicators, such as: Volumes, values, percentages, timescales, return on investment, and other quantifiable aspects of organisational performance, for instance; numbers of complaints, staff turnover, attrition, failures, wastage, non-compliance, quality ratings, achievement of standards and It is possible that many of these measures are already in place via normal management systems and reporting. The challenge is to identify which and how relate to the trainee’s input and influence. Therefore it is important to identify and agree accountability and relevance with the trainee at the start of the training, so they understand what is to be individually, results evaluation is not particularly difficult; across an entire organisation it becomes very much more challenging, not least because of the reliance on line-management, and the frequency and scale of changing structures, responsibilities and roles, which complicates the process of attributing clear accountability. Also, external factors greatly affect organisational | be used before training, because respondents can make a judgement as to change after training, and this can be analysed for groups of respondents and trainees. Assessments can be designed around relevant performance scenarios, and specific key performance indicators or criteria. Online and electronic assessments are more difficult to incorporate - assessments tend to be more successful when integrated within existing management and coaching protocols. Self-assessment can be useful, using carefully designed criteria and measurements. Behaviour change evaluation is possible given good support and involvement from line managers or trainees, so it is helpful to involve them from the start, and to identify benefits for them, which links to the level 4 evaluation below. |
accreditations, growth, retention, etc. measured. This process overlays normal good management practice - it simply needs linking to the training input. Failure to link to training input type and timing will greatly reduce the ease by which results can be attributed to the training. For senior people particularly, annual appraisals and ongoing agreement of key business objectives are integral to measuring business results derived from training.

and business performance, which cloud the true cause of good or poor results.

| Figure 26 Kirkpatrick's four Levels of Training Evaluation in Detail |
3.8 Jack Phillips Five Level Evaluation

**Level 1: Reaction, satisfaction and planned action** measures the extent to which the participants enjoyed the learning experience and establishes how they plan to apply their learning.

**Level 2: Learning** measures the extent to which the participants have increased their knowledge and improved their skill levels.

**Level 3: Application and implementation** measures the extent to which the participants have applied to their working practice what they learned from the Jack Phillips’ Five Level Evaluation Framework builds on the work of Donald Kirkpatrick provides a brief overview of all five levels of Jack Phillips’

Jack Phillips’ approach to the evaluation of learning activities builds on the work of Donald Kirkpatrick. He openly credits Kirkpatrick with developing the first four levels of his own framework for evaluation. While he has renamed the levels slightly, they are the same for all intents and purposes. The significant difference is that Phillips has added a fifth level to capture return on investment.[1]

**Level 4: Business impact** measures the results that the participants have achieved as a result of applying what they learned from the learning event. This would include measures such as output, quality, cost, time, customer satisfaction and employee satisfaction.

**Level 5: Return on investment** measures the level of monetary benefit and the overall cost of the learning event and then compares the two. Usually expressed as a percentage or cost benefit ratio.
<table>
<thead>
<tr>
<th>Aspect of evaluation</th>
<th>Type of decision</th>
<th>Kind of question answered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context evaluation</td>
<td>Planning decisions</td>
<td>What should we do?</td>
</tr>
<tr>
<td>Input evaluation</td>
<td>Structuring decisions</td>
<td>How should we do it?</td>
</tr>
<tr>
<td>Process evaluation</td>
<td>Implementing decisions</td>
<td>Are we doing it as planned? And if not, why not?</td>
</tr>
<tr>
<td>Product evaluation</td>
<td>Recycling decisions</td>
<td>Did it work?</td>
</tr>
</tbody>
</table>

Figure 27 Daniel Stufflebeam's CIPP Model
<table>
<thead>
<tr>
<th>Approach</th>
<th>Emphasis</th>
<th>Focusing issues</th>
<th>Evaluator’s role</th>
<th>Specific information needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Experimental</td>
<td>Research design</td>
<td>What effects result from programme activities and can they be generalized?</td>
<td>Expert/ scientist</td>
<td>Outcome measures. Learner characteristics. Variation in treatment. Other influences on learners. Availability of a control group.</td>
</tr>
<tr>
<td>2. Goal oriented</td>
<td>Goals and objectives</td>
<td>What are the programme’s goals and objectives, and how can they be measured?</td>
<td>Measurement specialist</td>
<td>Specific programme objectives. Criterion-referenced outcome measures.</td>
</tr>
<tr>
<td>3. Decision-focused</td>
<td>Decision making</td>
<td>Which decisions need to be made and what information will be relevant?</td>
<td>Decision support person, provider of information.</td>
<td>Stage of programme development. Cycle of decision-making. Data gathering and reporting.</td>
</tr>
<tr>
<td></td>
<td>[CIPP]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. User-oriented</td>
<td>Information users or clients</td>
<td>Who are the intended information users and what information will be most useful?</td>
<td>Collaborator</td>
<td>Personal and organizational dynamics. Group information needs. Programme history. Intended uses of information.</td>
</tr>
<tr>
<td>5. Responsive</td>
<td>Personal understanding</td>
<td>Which people have a stake in the programme and what are their points of view?</td>
<td>Counsellor/facilitator/collaborator</td>
<td>Variation in individual and group perspectives. Stakeholder concerns and participation in determining and framing the data. Programme history. Variation in measures and sites.</td>
</tr>
</tbody>
</table>

Figure 28 Five Approaches to Evaluation


3.9 Robert Stake (1975)

**EVALUATION MODELS AND APPROACHES**

The following models and approaches are frequently mentioned in the evaluation literature.

**Behavioral Objectives** Approach. This approach focuses on the degree to which the objectives of a program, product, or process have been achieved. The major question guiding this kind of evaluation is, “Is the program, product, or process achieving its objectives?”

**Four-Level Model.** This approach is most often used to evaluate training and development programs (Kirkpatrick, 1994). It focuses on four levels of training outcomes: reactions, learning, behavior, and results. The major question guiding this kind of evaluation is, “What impact did the training have on participants in terms of their reactions, learning, behavior, and organizational results?”

**Responsive Evaluation.** This approach calls for evaluators to be responsive to the information needs of various audiences or stakeholders. The major question guiding this kind of evaluation is, “What does the program look like to different people?”

**Goal-Free Evaluation.** This approach focuses on the actual outcomes rather than the intended outcomes of a program. Thus, the evaluator has minimal contact with the program managers and staff and is unaware of the program’s stated goals and objectives. The major question addressed in this kind of evaluation is, “What are all the effects of the program, including any side effects?”

**Adversary/Judicial Approaches.** These approaches adapt the legal paradigm to program evaluation. Thus, two teams of evaluators representing two views of the program’s effects argue their cases based on the evidence (data) collected. Then, a judge or a panel of judges decides which side has made a better case and makes a ruling. The question this type of evaluation addresses is, “What are the arguments for and against the program?”

**Consumer-Oriented Approaches.** The emphasis of this approach is to help consumers choose among competing programs or products. Consumer Reports provides an example of this type of evaluation. The major question addressed by this evaluation is, “Would an educated consumer choose this program or product?”
Expertise/Accreditation Approaches. The accreditation model relies on expert opinion to determine the quality of programs. The purpose is to provide professional judgments of quality. The question addressed in this kind of evaluation is, “How would professionals rate this program?”

3.10 Robert Stake's Congruence-Contingency Model

This model was created in 1967 by Robert E. Stake, for the Center for Instructional Research and Curriculum Evaluation at the University of Illinois. Stake notes that, "Formal evaluation of education is recognized by its dependence on checklists, structured visitation by peers, controlled comparisons, and standardized testing of students. Some of these techniques have long histories of successful use. Unfortunately, when planning an evaluation, few educators consider even these four. The more common notion is to evaluate informally: to ask the opinion of the instructor, to ponder the logic of the program, or to consider the reputation of the advocates." Stake notes educator's disdain for evaluation, due to sensitivity to criticism. He then proposed a model for carrying out curriculum evaluation that focuses on description and judgment. Stake wrote that greater emphasis should be placed on description, and that judgment was actually the collection of data. Stake wrote about connections in education between antecedents, transactions and contingencies (outcomes). He also noted connections between intentions and observations, which he called congruence. Stake developed matrices for the notation of data for the evaluation. Data is collected through these matrices.
3.11 Kaufman’s 5 Levels Of Evaluation

**Level 1: Resources and processes**

Level 1 is actually divided into two levels, 1a and 1b.

- Level 1a focuses the evaluation lens on inputs, e.g., such as the availability and quality of materials needed to support a learning effort.
- Level 1b considers processes. What’s their quality? Are they efficient? Are learners satisfied with them?

Compared to Kirkpatrick’s Level 1 (Reaction), Kaufman’s Level 1 focuses not only on learner satisfaction, but on the organizational factors that can impact learner satisfaction.

**Level 2: Acquisition**

This level is focused on individual and small group payoffs—what Kaufman calls “micro” benefits. Are the objectives or desired outcomes of the learning intervention met? It’s pretty analogous to Kirkpatrick’s Level 2 evaluation (Learning), but Kaufman notes that the learning intervention may not necessarily be training.

**Level 3: Application**

This is still a micro analysis, examining individual and small group impacts. The relevant inquiry here is whether newly acquired knowledge and skills are being applied on the job. Level 3 also is quite similar to Kirkpatrick’s Level 3 (Behavior/Performance).

**Level 4: Organizational payoffs**

Here, the analysis examines macro benefits. What are the benefits from an organizational standpoint? Level 4 is analogous to Kirkpatrick’s Level 4 (Results).
Level 5: Societal contributions

Kaufman considers this a mega analysis. How is the organization contributing to its clients and society? Is it responsive to client/societal needs?

Issues of health, continued profits, pollution, safety, and well-being are central [in this level]. The basis for mega-level concerns is an ideal vision, which is a measurable statement of the kind of world required for the health, safety, and well-being of tomorrow’s children.

Level 5 has no analog in Kirkpatrick’s Evaluation Model.

A better model?

The “Kirkpatrick Plus” framework doesn’t stray that far from Kirkpatrick’s Evaluation Model and so can be subject to many of the same criticisms. Notably, while measuring organizational payoff’s an important part of a meaningful evaluation, tearing apart the effects of a learning intervention from all the other variables that impact ROI is notoriously difficult. And if you think measuring organizational payoff is challenging, imagine how hard it is to measure societal impact. (This isn’t to say this evaluation aspiration isn’t a worthy one.)

Alkin, 1969

Logical Structure for Designing

- Focusing the Evaluation
- Collection of Information
- Organization of Information
- Analysis of Information
- Reporting of Information
- Administration of the Information

(Stufflebeam, 1973a)
Chapter 3 – Theoretical Framework

Focusing the Evaluation

- Identify the major level(s) of decision making to be served, for example local, state, or national.
- For each level of decision making, project the decision situations to be served and describe each one in terms of its locus, focus, criticality, timing, and composition of alternatives.
- Define criteria for each decision situation by specific variables for measurement and standards for use in judgment of alternatives.
- Define policies within which the evaluator must operate.

Collection of Information

- Specify the source of the information to be collected.
- Specify the instruments and methods for collecting the needed information.
- Specify the sampling procedure to be employed.
- Specify the conditions and schedule for information collection.
Organization of Information
- Provide a format for the information that is to be collected.
- Designate a means for performing the analysis.

Analysis of Information
- Select the analytical procedures to be employed.
- Designate a means of performing the analysis.
Reporting of Information
- Define the audiences for the evaluation reports.
- Specify means for providing information to the audience.
- Specify the format for evaluation reports and/or reporting sessions.
- Schedule the reporting of information.

Administration of the Information
- Summarize the evaluation schedule.
- Define staff and resource requirements and plans for meeting these requirements.
- Specify means for meeting policy requirements.
- Evaluate the potential of the evaluation design for providing information that is valid, reliable, credible, timely, and pervasive (i.e. will reach all relevant stakeholders).
- Specify and schedule means for periodic updating of the evaluation design.
- Provide a budget for the total evaluation program.
Chapter 3 – Theoretical Framework

(Stufflebeam & Shinkfield, 1985)

- Context Evaluation
- Input Evaluation
- Process Evaluation
- Product Evaluation

Ref: WSIS__Series_of_research_papers__Conceptual_Relationship_between_Information_Literacy_and_Media_Literacy
http://www.epa.gov/quality/qd-docs/g10-final.pdf

http://www.ask.com/question/what-is-the-meaning-of-training-and-development
http://www.businessballs.com/kirkpatricklearningevaluationmodel.htm
Goal Free Evaluation

3.12 (Michael Scriven 1972)

If you are interested in knowing the unintended as well as the intended outcomes of your project, the goal free evaluation model may be an appropriate way of capturing the results or outcomes of your work. Developed by Michael Scriven in the early seventies, this evaluation model intentionally seeks to be blind to the objectives or goals of project stakeholders. Scriven noticed that the common focus of evaluators on the achievement of results on pre-determined objectives sometimes missed the positive unintended outcomes that resulted. The organizing principle in this type of evaluation is the effects and not the goals. To conduct this type of evaluation two types of information are necessary. First, the evaluator needs to identify all the effects or outcomes that resulted from the project. Next the evaluator must construct a profile of the needs of the target population. If an effect has a positive impact on one or more of those needs, that part of the program that yielded that effect should be positively evaluated.

Evaluation Needs

1) Access to program/project participants
2) Access to all data
3) Time

Nature of Evaluation

A goal free evaluation tends to be qualitative in nature. That is, this evaluation is one of discovery. By interviewing participants in an unstructured interview, the evaluator begins to identify outcomes. Several interviews may be necessary. Participant observation may, if possible, be necessary.

Critical Elements

This type of evaluation demands that the evaluator have good knowledge of the subject of evaluation. Evaluator competence is a major issue. Included in this element is the requirement that the evaluator be free of bias. Project directors do not want to remove their
biases from consideration by providing for a goal free evaluation only to have the evaluator insert his or her own biases.

**Client Issues**

This type of evaluation requires that the evaluator be an intrusive presence in the sense that the evaluator must be free to interact with program participants. This type of evaluation also takes time and will be more expensive in terms of evaluator time.

**Products**

Evaluation products typically include a standard evaluation report that may be both a qualitative and quantitative. The client should have material that will serve promotional purposes as a consequence of this evaluation. Material to promote the project may in fact be one of the main values of Goal Free Evaluation. Conversely, goal free evaluation is candid and directly honest. It can be uncomfortable.

Management Oriented Evaluation

(Stuffle beam, 1969, 1971)

This model of evaluation is intended to help administrators make decisions. The organizing principle behind this approach is the decision need. Stufflebeam wrote that evaluation is the 'process of delineating, obtaining, and providing useful information for judging decision alternatives."

**Evaluation Needs**

The administrators need to help the evaluator determine the types of decisions that are necessary to each phase of a project: planning decisions, structuring decisions, implementing decisions, product evaluation decisions. This is referred to as the CIPP model meaning Context, Input, Process, and Product.

**Nature of Evaluation**

The CIPP model suggests the following evaluations steps: 1) Focus the goals of the evaluation; 2) Outline an information collection process; 3) Analyze information; 4) Report information. In addition, the CIPP model provides for a very detailed costing out of the administration of the evaluation.
Critical Elements

This evaluation is a client oriented evaluation. Its intention is to help clients make decisions. Bringing into awareness this ‘orientation’ of evaluation will help us stay focused on what we are seeking to find. We want to find those factors of training that will offer clients a wide list of alternative choices or solutions to issues and problems so the research will fructify into action by proposing actionable propositions to the decision makers and organizers of Training.

Client Issues

The CIPP is a very useful approach for a client that wants a rational analysis of needs. But, it tends to be an expensive process because of its quantitative nature, which often involves examining the relative benefits associated with different alternative choices.

The focus on clients who offer or organize training helps avoid an indiscriminate hunt for data. Also, it helps the researcher to construct a model that is both economical yet remain truly useful by leading to alternative choices.

Products

The major product that is produced is a recommendation about preferred decision choices with the attendant costs or potential gain/losses associated with different choices.

3.13 Tyler Model (Ralph Tyler, 1949)

Tyler's model of evaluation is about focus on objectives. Tyler said that evaluation needs to focus on the degree to which objectives are realized. If you see your goals and objectives as driving your program, then learning about the degree to which these goals and objectives have been attained is crucial to constructing a truly useful evaluation model.

The evaluation requires that the goals were first clearly articulated and expressed in ways that are measurable. The evaluator will need access to data and may need permission to gather new data. Additionally, program participants will need to be alerted to the presence of the evaluator seeking information about goal attainment.

Nature of Evaluation
This approach provides a clear and succinct description of the project and then delineates a process for measuring the degree to which goals are attained. The evaluator usually designs an instrument that will be given to participants in order to measure goal attainment. The data will be expressed in a non-judgmental manner and interpretation will be left up to the client. The evaluator not expected to render any judgments about the value of the program.

Critical Elements

Identifying goals is critical. Client / stakeholder have to be able to do this. To conduct these evaluations well, instruments need to be tested and piloted carefully. Consequently, a goal based evaluation takes time. One also needs to realize that the focus of the evaluation is only on the attainment of expressed goals. If the stakeholder seeks information about other aspects of the program, the goal based evaluation will need to be joined with other evaluation approaches.

Client Issues

The evaluator is an intrusive presence in the project. Consequently, care needs to be taken to make sure that the evaluation is not compromised because of his/her presence. Also, administrative support for carrying out the evaluation is very essential to make it a success.

Products

Research based, empirically driven reports result from this type of evaluation. A standard evaluation report that contains a description of the project, the project goals, the project processes and the outcomes will help see how best the objectives of the training were achieved.

3.14 Michael Scriven

Adding the logic of evaluation to the areas of study makes the study much richer, as it will bring in insights from earlier work in the fields of rhetoric, argumentation, communication, critical thinking, and informal logic.

The interest of this topic from the critical thinking/informal logic point of view is that it refers to the huge and important range of common and professional discourse aimed at supporting or contesting evaluative conclusions, and it raises the possibility of greatly improving the
quality of such discussions by means of an informal logic approach, an especially interesting challenge given the failure of deontic logic to achieve that end.

Section on the logic of Evaluation:

1. As a practical goal for work in this field, though this particular presentation is not long enough to justify its attainment, one might propose as an aim for work on this topic that is should try to ensure that every respectable text in critical thinking/informal logic (and why not every text in the philosophy of the social sciences and ethics) will include a Section on the logic of Evaluation

2. Evaluation is the process of determining merit, worth, or significance; an evaluation is a product of that process.

3. Professional evaluation is evaluation done in a systematic and objective way with a degree of expertise that requires extensive specific training or learning. The logic of evaluation is concerned with:
   a. How, if at all, professional evaluation is possible;
   b. Its nature and its location in the organization of knowledge, and
   c. The logical structure of its inferences


With that goal in mind, the author would greatly appreciate receiving comments, critical or amplificatory; they can be sent to mjscriv@gmail.com. This definition is a synthesis of the definitions in most dictionaries and the professional literature, with the unfortunate exception of the mother of them all, the Oxford English Dictionary, which seems unable to grasp the move beyond estate appraisal and mathematical formula calculation, despite many decades of prompting. (Recent editions of the single-volume Oxford dictionaries are somewhat less perverse.)
3.15 Training Evaluation and Training Effectiveness

In today’s environment of increased accountability, the training evaluation process is a critical component of an organization’s training program. Organizations administering the program not only are accountable for what employees learn, they also are accountable for assuring that employees transfer their knowledge to their study performance. While traditional training evaluation methods focus on utilizing the appraisal procedure to improve training delivery, information should also be amassed to see whether training is helping the governing body to improve its job operation.

3.15.1 Training Evaluation Approach

Evaluation methods should be defined based on the goals of the training and development process and should fulfill the needs of its diverse stakeholders. Every system has multiple stakeholders and not everyone within the governing body has the same information needs. Typically, organizational stakeholder groups include the training department, employees and business units. Their information requirements fall into two categories: whether the competencies have been established in trainees, and whether it has got carried toward to work place resulting in improved productivity.

3.15.2 Assessment of Competency Learning in Effective Evaluation

It is at the individual level that organizations are able to assess employees’ reactions and increased understanding. Reactions are important because, if trainees react negatively to a course, they are less likely to transfer what they learned to their works. Increased understanding in terms of new or improved knowledge, sciences and abilities are the main objective of a training event. The training department needs information about competency learning to limit the effectiveness of training delivery and access. Information concerning the overall strength of training procedures, appropriateness of media and instruction methods and other issues relating to possible revisions in instructional design may turn out to be really valuable to the training department and will aid them in better serving the demands of the other stakeholders involved.
Questionnaires - Questionnaires offer a structured instrument that may provide both quantitative and qualitative data about employee reactions to the training issue. The questionnaire should focus on both training content and deliverance. The training content section should target questions to determine whether the preparation materials provide useful data that will help in performing work tasks and whether the employee is more versed about the subject matter following the training. The training delivery section should specify whether the data was delivered in coherent order, with appropriate details and in an appropriate formats. This information will assist the training department in determining how the Training material should be revised or supplemented and whether the training medium used is best suited to the training content. It will also allow the training department to maintain an internal inventory of training vendors or offerings that have been rated best or least effective.

Knowledge Review - Knowledge reviews offer an objective way of determining whether training content has been effectively delivered and assimilated. Knowledge reviews refer to a worldwide group of appraisal instruments in which employees respond in writing. The knowledge reviews may be meted out by delivering the instrument at the kickoff and end of the training. The instrument should be presented as a short answer or multiple-choice instrument. The knowledge review should adequately address the learning aims of the training. The effects of each knowledge review can be compared to measure knowledge transfer during the training event. This data will be useful in aiding the training section to amend the class material.

Observation - Observation is another evaluation. Training department personnel should observe employee interaction, level of engagement with training instructors and responses to course content. This evaluation technique may be loose or highly structured. Informal observation can be utilized to offer general data about the training structure. Instead, highly structured observation focuses on monitoring particular points in the training event using a checklist. Employees also need information about competency learning. Nevertheless, the information supplied to employees should be referred to their ability to perform their task better. These stakeholders will benefit from seeing their own strong points and weaknesses and how they have been addressed in the training.
Employee Portfolio: The employee portfolio is an efficacious means of offering data on employees’ particular knowledge, skills or abilities developed through training. The employee portfolio should be used for informational purposes only. The resolutions of the portfolio are not thought to be linked to employee performance evaluations. To enforce this concept, employees should be asked to distinguish the learning objectives of the training and within a 60-day time frame develop a work sample for critique by the manager that demonstrates the application of their erudition. The business unit manager should be asked to ensure that within that time frame employees are assigned activities that will permit them to grow the portfolio. After receiving the portfolio, the manager should review it and provide feedback to the employee on strengths and areas for improvement.

3.16 Factors Affecting Training Effectiveness

In this era of intense global competition and fast change, organizations of all shapes and size are more concerned to make the best use of Human Resource capital. Training has increased its importance in today's environment where tasks are complex and shifting. Therefore, to Human resource well, training must be provided to employees. Evaluating the impact of training on workplace performance and its contribution to organizational results is a matter of great concern for management in all types of systems. As a consequence of rising economic pressures, business leaders are becoming more cost conscious and they are more sensitive about the return on training investments. In the current economic downturn, such pressures have further increased. Human resource directors and training professionals have to justify training expenses by offering more or less evidence about the positive impact of training dollars upon business outcomes.

Therefore, the outcome of measuring training effectiveness has gained some importance over the last few years. During the past four decades, workplace learning and development professionals have practiced tons of work in the field of assessing training effectiveness.

3.17 Criticism on Training and Development

There is no consensus on the amount of money spent on or the incidence of training and development in organizations. Because surveys often present contradictory information, any numbers must be viewed with caution (Lynch and Black, 1996; Zemsky and Shapiro, 1996). However, figures on dollars being spent and amount of training and development from...
various sources indicate that employee training and development is big business – and growing. While the amount of money spent and the amount of training and development appear to be increasing, surveys and expert opinion suggest that spending for training and development is disproportionate across organizations and employee positions. Stone (1991) estimates that over half the money invested annually in training is spent by just 15,000 organizations, on merely 0.5 percent of all employers. Lynch and Black (1996) examined survey data and found the following about training and development opportunities for employees: Eighty-nine percent of U.S. employees had received no training. Small organizations – those with fewer than 100 employees – were much less likely to provide formal training than large employers (1000+ employees). Also, organizations using high performance work practices such as Total Quality Management and benchmarking are more likely to offer training to their employees. Better educated workers and managerial and professional employees are more likely to receive employer based training than other employees (Lynch and Black, 1996). Many analysts of training and development programs contend that much of the money being spent for training and development is not being well spent.

Indicators of Ineffective Training and Development Systems Concern for the lack of accountability of training and development systems has prompted growing discussion in recent training and development literature centering around what is wrong with training and development systems.

The following is a discussion of the most often cited indicators of ineffective training and development systems.

**Lack of top management support for the training and development system:**

Critics argue that one of the key ingredients of a successful training and development system is often missing: the support by top management of a training and development system that advances the achievement of the organization’s strategic plans (Brinkerhoff and Gill, 1994; Carnevale, 1990; Robinson and Robinson, 1990).
No clear link between training and organizational goals or plans. Another major problem with organizational training and development systems, some critics contend, is the lack of connection between training and the organization’s goals and mission (Brinkerhoff and Gill, 1994; Johnston and McClelland, 1994). In many organizations, training is viewed as a nice-to-have reward for well-behaved employees; or conversely, as a punishment for bad behavior.

No, inadequate, or incorrect accounting of the costs of training. Most organizations donot know how much their training costs, because they either do not calculate costs at all or use accounting models that count per trainee costs and fail to calculate trainees’ time off the job or cost per result of training (Brinkerhoff and Gill, 1994; Johnston and McClelland, 1994).

Limited or inadequate training needs assessment. Most organizations determine training and development needs reactively rather than proactively, usually around perceived immediate job-based deficiencies or short-term predicted knowledge and skill needs (Olian, Durham, Kristof, Brown, Pierce, and Kunder, In press).

Lack of support for applying skills and knowledge learned in training on the job. Broad and Newstrom (1992) contend that “...most training investments do not produce full and sustained transfer of new knowledge and skills to the job” (p. 7). Brinkerhoff (1997) cites studies that show that as little as 8 percent to 12 percent of what trainees learn translates into improved job performance.

Lack of meaningful evaluation of training. Many analysts criticize the lack of meaningful evaluation of training activities (Cascio, 1989; Boverie, Mulcahy, and Zondlo, 1995; Foxon, 1989; Hawthorne, 1987; Johnston and McClelland, 1994). Studying the results of a literature review of training evaluation practices, Foxon concluded that there is “... a widespread under-evaluation of training programs, and that what is being done is of uneven quality. ...The need for measurement of training effectiveness is often referred to, but there are few good examples of rigorous evaluation of training programs” (Foxon, 1989,p. 92-93).
Commitment of top management to training. The commitment of top management to the training and development system is critical to its success (Brinkerhoff and Gill, 1994; Fricker, 1994). As Fricker notes, “Chairmen and chief executives need to recognize the value of learning as the primary force to facilitate and achieve change in their organizations. Their leadership role requires them to match their conviction with consistent, demonstrable commitment. . . . Senior executives must also ensure that line managers share their commitment to learning and insist on quality in all aspects of training and development” (pp. 24-25).

Although some studies doubt the effectiveness of Training and Development various other theories have proved training and development is the most important and comprehensive strategy in organizational development.

3.18 Conclusion:

This Chapter has brought out the different theories on Training and Development and various measures used in scaling the Impact of Training in industries. It has given a comprehensive outlook on Training Life cycle and when Information Technological Training. This would help the research in the analysis on the impact of Training in Information Technology industry.
# Theoretical Frame work

## Ground Idea of the Proposal Model

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## Theories and Models of Training and Development

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## Model Focusing on Approaches

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