

Summer Training Report
On
“EVALUATION OF TRAINING EFFECTIVENESS IN
BHEL”



Summer Training Project Report Submitted Towards The Partial
Fulfillment For Award Of The Degree Of Master of business
Administration (2009-2011)



College of science & Engineering, Jhansi (U.P)

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DECLARATION

This is my original work, This project work has been conducted for partial fulfillment of the degree of MASTER OF BUSSINESS ADMNISTRATION (MBA) in COLLEGE OF SCIENCE & ENGINEERING, AMBABAI JHANSI. (U. P).which is completed with the help of Managing Staff of the BHARAT HEAVY ELECTRICALS LIMITED (B.H.E.L.), JHANSI.

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I am extremely thankful & indebted to the numerous **BHEL Executives** and **Managerial Staff** who provided vital information about the functioning of their respective departments thus helping me to gain an over all idea about the working of organization. I am highly thankful for the support & guidance of each of them.

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PREFACE

The summer training is an integral part of the MBA course. As a matter of fact every management students, has to undergo practical training in an approved business or organization, under the guidance of professional managers, as to become aware of the real life, business situation and the environment.

During the course of training, the trainees are expected to use and apply there academic knowledge and again valuable insight into corporate cultures with all its environment operational complexity the said training offers, a valuable of the trainings to meet their academic knowledge with the real world situation.

I undertook my training in BHEL (Jhansi unit), which is one of the “NAVRATANS” of India. ISO-9001, ISO-14001 and OHSAS-18001 Company. During the training period as a project trainee, I visited various departments of the organization and did empirical analysis of their inter-relationship. After the analytical study reticulated sections of the organization emphasized towards affair concerning HR.

During the course of training, the trainees are expected to use and apply there academic knowledge of and again valuable insight into corporate cultures with all its environment operational complexity the said training offers, a valuable of the trainings to meet their academic knowledge with the real world situation.

And I visited to various department of BHEL Jhansi, to study their working for training and development programmes.

In this report I have put my best efforts to compile the data, to the highest level of accuracy.

LITERATURE REVIEW

The present report describes a program of research whose goal is the development and eventual validation of a method for predicting training device effectiveness. As the lead publication in the series, this report presents a preliminary model for the prediction of one of the most important aspects of training effectiveness--transfer of training. In developing the preliminary model, every attempt has been made to examine and, if possible, to build upon previous efforts. Toward this end, several different kinds of literature potentially bearing on the prediction of device effectiveness have been exhaustively reviewed, reduced, and analyzed. Previous methods and models dealing with the design or evaluation of training programs were examined. General theories of transfer were studied as were the specific constructs believed to mediate transfer. Finally, a host of substantive issues were examined, particularly in terms of empirical data on specific variables and their impact on transfer. The report describes and discusses this information and, when appropriate, indicates its incorporation into the model. In the following four sections of the report the results of the literature survey are described together with implications for a preliminary model for use in predicting training effectiveness.

Corporate Profile

Bharat Heavy Electrical Ltd. (BHEL) is the largest engineering and manufacturing enterprise of its kind in India. The first plant of BHEL, set up at Jhansi in 1956, Signaled the dawn of the Heavy Electrical Industry in India. The Company has 14 manufacturing units, 4 power sector regions, 8 service centers and regional offices, besides Project sites spread all over India and abroad. BHEL Manufactures over 180 Products under 30 Major Product groups and caters to core sectors of the Indian economy.

Historically Training Often Is

- Measured from the perspective of the participants
- Not required to demonstrate an effective transfer of learning to the work setting & the impact on key measures
- The sole responsibility of line-management Costs accounted for in ways that contribute to indifference from management (true costs or of the HR/training department are often unknown)
- Managed by staff who themselves believe that the business effects of training cannot be measured credible.

Generally Accepted Best Practices

- The overall training program must have goals aligned with the organizations business goals.
- Individual training modules must have goals and objects aligned with those of the overall program.
- Training goals must meet the stakeholders needs .
- Baseline or control data is needed to create the most valuable measurements.
- The difficulty of measuring increases with the increased value of the measure.

Objective of the study

- To gauge the training effectiveness in the organization.
- To critically review how effective is the training functions,
- To review how employees perceive the training.

•To measure about the adequacy of the training for improving skill competency of employees

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CHAPTER 1

INTRODUCTION

INTRODUCTION OF TRAINING

The term “**Training and Development**” are closely related and are often used as synonymous concepts, there are some important distinctions in their meanings in the context.

The term training may be defined as “A process by means of which the aptitude, skills & capacities of individual employees to perform specific jobs are increased.” Thus training is concerned with imparting specific skills or increasing specific qualification of particular employees for particular purposes.

As emphasized by **Dale Yoder**, the use of the term ‘Training and development’ in today’s employment setting is far more appropriate than training. The training along since “Human resource can exert their full potential only when the learning process goes far beyond simple route or routine.” & According to **J. P. Camphell** “Training courses are typically designed for a short term and stated set purposes, such as the operation of some piece of machinery, while development involves a broader education for long term purposes.

As put by **Dale Yoder**, “Training is a means of preparing rank and file workers for promotion to supervisory position and for improving their competence and capability while they hold such leadership assignments. Human resource at all levels need frequent refresher training.

In word of **Michael J. Jucious**, “Positively the value of Training are- Training Serves to Improve Employee’s Skill which in terms increases the quantity and quality of output. The relative amount of equipment and material required to produce a unit of output is decreased.

Executive effort will trend to shift from the disagreeable need of the correcting mistakes to the more pleasant tasks of planning work and of encouraging expert employees. The increases in productivity should find reflection in increased returns to both employer and employees.”

The training is used for Employees development and for maintaining the environment of company. Employees training are distinct from Management Development. Training is short term process utilizing a systematic and organized Procedure by which non-managerial personnel learn technical knowledge and skills for a definite purpose. It is for a short duration and for a specific job related purpose. Since the objective of training effort in an organization may be varied such as to eliminate obsolescence through preventive analysis and careful training intended to prepare individuals for shifting or modified jobs to achieve greater company continuing self improvement and opportunities for promotion with in the organization. As put by **R.S.Davar**, “Training’s main goal is to induce a suitable change in the individual concerned. The objective of training is thus to bridge the gap between existing performance ability and desired performance.”

A number of factors have contributed to the importance and wider adoption of a proper training and development policy and its effective implementation by management in modern organization managers now increasingly realize that they must plan intensive and extensive training and development opportunities for various types of employees at all levels.

CHAPTER 1.1

HISTORY OF BHEL

HISTORY OF BHEL JHANSI

Anticipating the country's requirement, BHEL decided to set up a new plant, which would manufacture power other type of transformers in addition to the capacity available at BHEL BHOPAL and JHANSI units will concentrate on power transformers up to 50 MVA,132 MVA class and other transformers like instrument transformers ,traction transformers for Railways etc.

The unit of Jhansi was established at 14 km far from the city on the NH-26 on Jhansi-Lalitpur road. It is called the second generation plant of BHEL ,set up in 1974 at an estimated cost of 16.22 crores inclusive of rupees 2.1 crores of township Lt. Mrs. INDIRA GANDHI laid its foundation on 9th Jan ,1974.the commercial production of unit began in 1976-77 with the output of 53 Lakhs.

The plant of BHEL is equipped with most modern manufacturing and testing facilities for the manufacturing of power and special transformers , diesel electrical shunting locomotives AC and AC/DC locos.

CHAPTER 1.3
INTRODUCTION OF
BHEL

INTRODUCTION OF BHARAT HEAVY ELECTRICALS

LIMITED, JHANSI.

In the post independence era when India was moving towards industrialization, the thrust by the government was in the core sector. With this objective BHARAT HEAVY ELECTRICALS LIMITED was setup in **Bhopal in August 1956**, with a view to reach self sufficiency in industrial products and power equipments. This plan was setup under collaboration of M/s. AEJ, U.K.

Now more plants were setup at Trichy, **Hyderabad and Hardwar with Czechoslovakian and Soviet Union assistance in May 1956, Dec. 1965, Jan. 1967 respectively**. Today Bharat Heavy Electricals Limited has become the largest engineering plant employing managing approximately 72000 employees. Its headquarters are located at Delhi.

B.H.E.L. is the largest engineering and manufacturing enterprise in India in the energy/infrastructure sector, today. B.H.E.L. was established more than forty years ago ushering in the indigenous heavy electrical equipments industry in India a dream that has been more than realized with a well-recognized track record of performance. It has been earning profits since 1971-72 and paying dividends since 1976-77.

B.H.E.L. manufactures over 180 products under thirty major product groups and caters to core sectors of the Indian Economy viz., Power Generation and Transmission, Industry, Transportation, Telecommunication, Renewable Energy, etc. The wide network of B.H.E.L. fourteen manufacturing divisions, four power sector regional centers, over hundred project sites, eight service centers and eighteen regional offices, enables the company to promptly

serve its customers and provide them with suitable products efficiently and at competitive prices.

The quality and reliability of its products is due to the emphasis on design, engineering and manufacturing to international standards by acquiring and adapting some of the best technologies from leading companies in the world, together with technologies developed in its own R&D centers.

B.H.E.L. has acquired certifications to Quality Management Systems- ISO 9001, Environmental Management Systems-ISO 14001 and Occupational Health and Safety Management Systems-OHSAS 18001 and has also adopted the concepts of Total Quality Management.

B.H.E.L. has installed equipment for over 90,000 MW of power generation- for Utilities, Captive, and Industrial users. It supplied over 2,25,000 MVA transformer capacity and sustained equipment operating in transmission and distribution network up to 400 KV- AC & DC.

It supplied over 25,000 motors with Drive Control System to power projects, petrochemicals, refineries, steel, aluminum, fertilizer, cement plants, etc. It also supplied traction electrics and AC/DC locos to power over 12,000 Km railway network. Supplied over one million valves to power plants and other industries.

B.H.E.L. operations are organized around three business sectors, namely Power Industry including Transmission, Transportation, Telecommunication and Renewable Energy and

Overseas Business. This enables B.H.E.L. to have a strong customer orientation, to be sensitive to his needs and respond quickly to the changes in the market.

B.H.E.L. vision is to become a world class engineering enterprise, committed to enhance stakeholder value. The company is striving to give shape to its aspirations and fulfill the expectations as a Navratna Company.

The greatest strength of B.H.E.L. is its highly skilled and committed 44,000 employees. Every employee is given an equal opportunity to develop himself and improve his position. Continuous training and retaining, career planning, a positive work culture and participative style of management have engendered development of a committed and motivated work force leading to enhanced productivity and higher levels of quality.

By the end of five year plan it was envisaged by the Planning Commission that the demand for Power Transformer would raise in the coming years. Anticipating the country's requirement B.H.E.L. decided to set up a plant which would manufacture power and other type of transformer in addition to his capacity available at B.H.E.L. Bhopal. The Bhopal plant was engaged in manufacturing of transformer of large rating and Jhansi unit would concentrate on Power Transformer like instrument transformer, traction transformer for railway etc.

This unit of Jhansi was established around 14 Km from the city on the NHNO 26 on Jhansi Lalitpur Road. It was called second generation plant of B.H.E.L. set up in 1974 at an estimated cost of Rs. 16.22 Crores inclusive of Rs. 2.1 Crores for township. Its foundation was laid by Late MRS. INDIRA GANDHI, the Prime Minister on 9th Jan. 1974. The

Commercial production of the unit began in 1976-77 with an output of Rs. 53.00 Lacks since then there has been no looking back for B.H.E.L. Jhansi.

This plant of BHEL is equipped with the most modern manufacturing processing and testing facilities for the manufacture of power, special transformer and instrument transformers.

Diesel Shunting Locomotive and AC/DC Locomotive. The layout of the plant is such that it is well streamlined to enable smooth material flow from the raw material stages to finished goods. All the feeders Bays have been laid perpendicular to main assembly bay and in each feeder bay raw material smoothly gets converted to subassemblies, which after inspection are sent to main assembly bay.

The material that is needed for maintenance is used only after through material testing in the testing lab and with strict quality checks at various stages of productions. This unit Bharat Heavy Electricals Limited is basically engaged in the production and manufacture of Transformer of various type and capacities. With the growing competition in the transformer section in 1985-88 it under took the re powering of DSNL.

Objectives of B.H.E.L

Business mission To be a leading engineering enterprises providing quality product, systems and services in the field of energy, transportation, industry, infrastructure, and their potential areas

Growth To ensure steady growth by enhancing the competitive edge of BHEL in existing, new areas and international operations so as to fulfill national expectation for BHEL.

Image To fulfill the expectations which stakeholders like government as owner, employees, customers and the country at large have from Bharat Heavy Electricals Limited.

Profitability To provide a reasonable and adequate return on capital employed, primarily through improvement in operational efficiency, capacity utilization and productivity and generate adequate internal resources to finance the company's growth.

Customer Focus To build a high degree of customer confidence by providing increased value for his money through international standards of product performance superior customer service.

People Orientation To enable each employee to achieve his potential, improve his capabilities, perceive his role and responsibilities and participate and contribute to the growth and success of the company, to invest in human resources continuously and be alive to their needs.

Technology To achieve technological excellence in operations by development of indigenous technologies and efficient absorption and provide competitive advantage to the company.

POWER GENERATION

Power generation sector comprises thermal, gas, hydro, and nuclear power plant business. As on 31.3.2002, BHEL supplied sets account for nearly 67,232 MW or 64 % of the total installed capacity of 1,04,917 MW in the country, as against Nil till 1969-70.

INDUSTRIES

BHEL is a major contributor of equipment and systems to industries, cement, sugar, fertilizer, process industries. The range of systems & equipment supplied includes: captive power plants, co-generation plants, DG power plants, industrial steam turbines, industrial boilers and auxiliaries, waste heat recovery boilers, gas turbines, heat exchangers and pressure vessels, centrifugal compressors, electrical machines, pumps, valves, seamless steel tubes,

electrostatic precipitators, fabric filters, reactors, fluidized bed combustion boilers, chemical recovery boilers and process controls refineries, petrochemicals, paper, oil and gas, metallurgical and other.

TELECOMMUNICATION

BHEL also caters to Telecommunication Sector by way of small, medium and large switching systems.

RENEWABLE ENERGY

Technologies that can be offered by BHEL for exploiting non-conventional and renewable sources of energy include: wind electric generators, solar photovoltaic systems, solar heating systems, solar lanterns and battery-powered road vehicles.

OIL AND GAS

BHEL's products range includes Deep Drilling Oil Rigs, Mobile Rigs, Work Over Rigs, Well Heads and X-Mas Trees, Choke and Kill Manifolds, Full Bore Gate Valves, Mud line Suspension System, Casing Support system Sub-Sea Well Heads, Block valves, Seamless pipes, Motors, Compressor, Heat Exchangers etc.

INTERNATIONAL OPERATIONS

BHEL is one of the largest exporters of engineering products & services from India, ranking among the major power plant equipment suppliers in the world.

VISION, MISSION AND VALUES OF BHEL

VISION

A World-Class Engineering Enterprise Committed to Enhancing Stakeholder Value.

MISSION

To be an Indian Multinational Engineering Enterprise providing Total Business Solutions through Quality Products, Systems and Services in the fields of Energy, Industry, Transportation, Infrastructure and other potential areas.

VALUES

Zeal to Excel and Zest for Change.

Integrity and Fairness in all Matters.

Respect for Dignity and Potential of Individuals.

Strict Adherence to Commitments.

Ensure Speed of Response.

Foster Learning, Creativity and Teamwork.

Loyalty and Pride in the Company

TYPES OF GENERATION UNITS

FIRST GENERATION UNITS

Bhopal : Heavy Electrical Plant.

Haridwar : Heavy Electrical Equipment Plant.

Hyderabad : Heavy Electrical Power Equipment Plant.

SECOND GENERATION UNITS

Tiruchy : High Pressure Boiler Plant.

Jhansi : Transformer and Locomotive Plant.

Haridwar : Central Foundry and Forge Plant.

Tiruchy : Seamless Steel Tube Plant.

UNITS THROUGH ACQUISITION & MERGER

Bangalore : Electronics Division

Electro Porcelain Division.

NEW MANUFACTURING UNITS

Ranipet : Boiler Auxiliaries Plant.

Jagdish : Insulator Plant.

Govindwal : Industrial Valve Plant.

Rudrapur : Component and Fabrication Plant.

Bangalore : Energy Systems Division

BHEL is growing concern to meet the changing needs of the nation has taken it beyond power into the total gamut of energy, industry and transportation BHEL is able to offer a service in each of this fields. Its manufacturing capability is supported by a corporate R&D division at Hyderabad works closely with the research and development cells at various units and Welding Research Institute at Tiruchinapalli.

ACTIVITY PROFILE OF BHEL

POWER SECTOR PROJECTS

Thermal sets and Auxiliaries.

Steam generators and Auxiliaries.

Industrial fans.

Electrostatic precipitators.

Air pre heaters.

Nuclear power equipments.

Hydro sets and Auxiliaries.

Motors.

Transformers.

Rectifiers.

Pumps.

Heat Exchangers.

Capacitors.

Porcelain/Ceramics insulators.

Seamless steel tubes.

Casting and forging.

2. SYSTEMS/SERVICES

Turnkey power station.

Data acquisition Systems.

Power systems.

HVDC Commissioning systems.

Modernization and Rehabilitation.

3. TRANSPORTATION SECTOR

Diesel Electric generators.

AC/DC locomotives.

DC locomotives and loco shunters.

Traction system for railways.

Electric trolley buses.

4. INDUSTRY SECTOR

Boilers.

Valves.

T.G. sets.

Power devices.

Solar Cells.

Photo Voltaic cells.

Gas Turbines.

Compressors.

Drive Turbines.

Oil rigs.

Blow out preventers.

Wind mills.

Control systems for electric devices.

MANUFACTURING UNITS OF BHARAT-HEAVY- ELECTRICALS-LIMITED

FIRST GENERATION UNITS

BHOPAL	Heavy Electrical Plant
HARDWAR	Heavy Electrical Equipment Plant
HYDERABAD	Heavy Electrical Power Equipment Plant
TIRUCHY	High Pressure Boiler Plant

SECOND GENERATION UNITS

JHANSI	Transformer and Locomotive Plant
HARDWAR	Central Foundry and Forge Plant
TIRUCHY	Seamless Steel Tube Plant

UNIT THROUGH ACQUISITION AND MERGER

BANGALORE	Electronic Electro Porcelain Division
-----------	---------------------------------------

NEW MANUFACTURING UNITS

RANIPAT	Boiler Auxiliaries Plant
JAGDISHPUR	Insulator Plant
RUDRAPUR	Component and Fabrication Plant
BANGALORE	Industrial System Group

BHARAT HEAVY ELECTRICALS LIMITED JHANSI (UNIT)

SECTIONS OF BHEL JHANSI UNIT

BHEL has many departments, while production and administrative departments are separate.

Broadly speaking BHEL has two-production categories-

Transformer section.

Loco section.

THE PRODUCT PROFILE OF BHEL JHANSI UNIT

PRODUCTS	RATINGS
1. Power transformer	up to 220 KV class 250 MVA.
2. Special transformer	up to 180 KA.
3. ESP transformer	95 KVp, 1400 mA.
4. Freight Loco transformer	3900 to 5400 KVA & 7475 KVA for 3 phase.
5. ACEMU transformer	up to 1000 KVA (1-phase) . 1385 KVA (3 phase).
6. Dry type transformer	up to 6300 KVA 33 KV class
7. Instrument transformer	VT & CT up to 220 KV class.
8. Diesel electric locomotives	up to 2600 HP.
9. AC/DC locomotives	5000 HP.
10. Over Head Equipment cum Test Car	
11. Well wagon	200 tone.
12. Rail cum road vehicle	
13. Dynamic track stabilizer	

GROWTH OF PRODUCTIONS AND MILESTONES

YEAR	OUTPUT	MILESTONES
Rs. (crores)		
1976-77	0.53	Start of Instrument Transformer
1977-78	3.49	Start of traction transformer and power transformer (up to 132 KV).
1978-7	7.56	Start of HFTT type freight loco transformer.
1979-80	7.02	Commissioning of 2,500 KV DG set (due to server power cuts).
1980-81	15.74	Start of ESP transformer.
1981-82	19.78	Start of 220 KV power transformer.
1982-83	28.54	ACHIEVED BREAK EVEN.
1983-84	37.42	Start of Bus-Duct.
1984-85	38.61	Start of dry type transformer.
1985-86	43.67	Empowering of DESL loco started.
1986-87	51.87	Start of new DESL loco manufacturing.
1987-88	65.29	Manufacturing facilities of AC loco.
1988-89	109.41	Crossed 100 corer target.
1990-91	128.10	Successful design and manufacturing 450 HP 3 axel DESL CCL.
1991-92	155.82	Manufacturing of first 2600 HP DESL for NTPC.

1992-93	215.61	Successful Design and development of 5000HP Thirstier control locomotive.
1993-94	225.05	Unit has been awarded ISO 9001 certificate fir quality Schemes
1994-95	215.0	240 MVA power transformer produced first time.
1995-96	238.	AC/DC locomotive first time in India.
1996-97	328.43	100 th loco manufactured.
1997-98	435.60	250 MVA transformer produced first time.
1998-99	287.0	Developed over head equipment cum test Car. Exported one DESL loco to Malaysia.
1999-00	218.96	Diesel hydraulic shunting.

ROTATION REPORT

TRANSFORMER COMMERCIAL (TRC):

The objective of the department is interaction with the customers. It brings out tenders and notices and also responds to them. It is this department that bags contracts of building transformers. After delivery regarding faults, this department does failures and maintenance. All such snags are reported to them and they forward the information to the concerning department.

One of the major task of this department is to earn decent profits over all negotiations. Transformer industry has become very competitive. The company offering the lowest price gets the contract but this process may continue does the work on very low profits. To avoid

such a situation, a body by the name of India Electrical and Electronics Manufacturers Association (IEEMA) was set up. This association helps to maintain a healthy competitive atmosphere in the manufacturing of electrical appliances.

The main work of the TRC is classified as: -

Tenders and notices.

Interaction with design department.

Place of the work.

Approximate cost of the work.

Earnest money.

The place and time where contract documents can be seen.

The place and time where tender documents can be obtained.

The time up to which the tender documents will be sold.

The amount if any to be paid for such documents.

The place and the date and the time when tenders are to be submitted and are to be opened.

TRANSFORMER ENGINEERING (TRE):

The transformer manufactured in BHEL Jhansi range from 10 MVA to 250 MVA and up to 220 KV. The various transformer manufactured in this unit are:-

Power transformer

- a) Generator transformer
- b) System transformer.
- c) Auto transformer.

Special transformer.

- a) Freight loco transformer.
- b) ESP transformer.

c) Instrument transformer.

d) Dry type transformer.

All above types are oil cooled except dry type, which are air-cooled.

The generated voltages at the power station are 6.9 KV, 11 KV and 13.8 KV but due to certain advantages like economical generation 11 KV is the most widely used. For this voltage needs to be stepped up. Transmission at high voltage is desirable because it results in lesser losses, needs thinner wire and hence is economical. If the current is kept high the copper losses become very high but iron losses are practically constant.

In certain cases the required voltage may be less than the output voltage, so in order to obtain it we require a tapping circuit. The output voltage may have a certain percentage variation, which may be tapped in 4 or 6 equal steps.

The type of tap changer depends on the application of the transformer. Where a continuous power supply is not required an Off Circuit Tap Changer (OCTC) may be used. Where a continuous power supply is a must e.g. at a sub station in cities etc. On Load Tap Changer (OLTC) is used.

FABRICATION:

Fabrication is nothing but production. It comprises of 03 bays i.e., Bay0, Bay1 & Bay 2.

BAY-0:

It is the preparation shop while the other two bays form the assembly shop.

This section has the following machines :

Planner machine – To reduce thickness

Shearing machine

CNC / ANC Flame Cutting machine – To cut Complicated shaft items using Oxy-Acetylene flame

Bending machine

Rolling machine

Flattening machine

Drilling machine

Nibbling machine

Pantograph flame cutting machine

BAY-1:

It is an assembly shop where different parts of tank come from bay 0. Here welding processes are used for assembly, after which a rough surface is obtained. Grinder operating at 1200 rpm is used to eliminate the roughness.

BAY-2:

It is an assembly shop dealing with making different objects mentioned below.

1-Tank assembly

5-cross feed assembly

2-Tank cover assembly

6-core clamp assembly

3-End Frame assembly

7-pin and pad assembly

4-foot assembly

Before assembly, shot blasting (firing of small materials i.e., acid picketing) is done on different parts of jobs to clean the surface before painting.

After assembly some tests are done known as *NON DESTRUCTIVE TEST*

Ultrasonic test: to detect the welding fault on the CRO at the fault place high amplitude waves are obtained.

Die Penetration test: Red solution is put at the welding and then cleaned. After some time white solution is put. Appearance of a red spot indicates a fault at the welding.

Magnetic crack detection: Magnetic field is created and then iron powder is put at the welding. Sticking of the iron powder in the welding indicated a fault.

X-Ray Test: It is same as human testing and the fault is seen in X-ray film.

BAY-3:

Here are basically three sections in the bay:

Machine section

Copper section

Tooling section

MACHINE SECTION :

The operations to form small components of power and traction transformer are done in this section. The shop consist of following machines:

CENTRAL LATHE: it consist one tailstock, headstock, lower part of tailstock is fixed and tail stock spindle is moving. On this machine facing, turning and threading is done

TURRET LATHE: its function is same as central lathe but it is used for mass production.

Here turret head is used in presence of tailstock because turret head contains many tailstocks around six.

CAPSTAN LATHE: It is belt drive.

RADIAL ARM DRILLING MACHINE: It is used for drilling and boring.

HORIZONTAL BORING MACHINE: It is computerized and used for making bore, facing etc.

MILLING MACHINE:

Horizontal milling machine: It is used for making gear and cutting operations.

Vertical milling machine: By the machine facing cutting and T-slot cutting is done

COPPER SECTION:

All the processes related to copper are done here.

TUBE SLITTING MACHINE: This machine is developed here and is used for cutting the tube along its length and across its diameter. Its blade thickness is 3mm.

SHEARING MACHINE: It is operated hydraulically and its blade has V-shape and a thickness of 15mm

DIE AND PUNCHING MACHINE: It is also hydraulically operated and has a die and punch for making holes.

HYDRAULIC BENDING MACHINE: It is used for bending the job up to 90°.

SHEARING MACHINE: It is fully mechanical and is used to cut the job along its width.

FLY PRESS MACHINE: It is used to press the job. It is operated mechanically by a wheel, which is on the top of the machine.

BEND SAW MACHINE: This machine is used for cutting job having small thickness. It has a circularly operated blade, around 5.1 meter long.

WATER COOLED BRAZING MACHINE: It contains two carbon brushes. The sheet is put along with a sulfas sheet and the carbon brushes are heated. A Lap Joint is formed between the sheets as the sulfas sheet melts.

LINCING BELT MACHINE: It creates a smooth surface.

HYDRAULIC PRESS MACHINE: To press the job.

SOLDER POT MACHINE: It has a pot that contains solder. Solder has a composition of 60% Zn and 40% Pb.

TOOLING SECTION:

In this section the servicing of tools is done.

BLADE SHARP MACHINE: It sharpens the blade using a circular diamond cutter.

Blade of CNC cropping line machine is sharpened here.

MINI SURFACE GRINDER MACHINE: It serves grinding purposes. It has a grinding wheel made of "Aluminum Oxide".

TOOL & SURFACE GRINDING MACHINE: This is specially used to grind the tools used in Bay 7.

DRILL GRINDING MACHINE :-To grind the drills.

BAY 4:

It is the winding section.

TYPES OF WINDING :

1. Reverse section winding.
2. Helical winding
3. Spiral winding
4. Interleaved winding
5. Half sectional winding

There are four TYPES OF COIL fixed in a transformer, they are :

Low voltage coil (LV)

High voltage coil (HV)

Tertiary coil

Tap coil

The type of winding depends upon job requirement. Also, the width and thickness of the conductors are designed particulars and are decided by design department. Conductors used for winding is in the form of very long strips wound on a spool, the conductor is covered by cellulose paper for insulation.

For winding first the mould of diameter equal to inner diameter of required coil is made .The specification of coil are given in drawing. The diameter of mould is adjustable as its body is made up of wooden sections that interlock with each other. This interlocking can be increased or decreased to adjust the inner diameter of coil.

The moulds are of following types:-

1. Belly types

2. Link types

3. Cone type

BAY-5:

It is core and punch section. The lamination used in power, dry, ESP transformer etc for making core is cut in this section.

CRGO(cold rolled grain oriented) silicon steel is used for lamination, which is imported in India from Japan ,U.K. Germany. It is available in 0.27 and 0.28 mm thick sheets, 1mt wide and measured in Kg.The sheet s are coated with very thin layer of insulating material called “carlites”.

For the purpose of cutting and punching the core three machines are installed in shop

1. SLITTING MACHINE: It is used to cut CRGO sheets in different width. It has a circular cutter whose position can be changed as per the requirement.

2. CNC CROPPING LINE PNEUMATIC: It contains only one blade, which can rotate 90° about the sheet .It is operated pneumatically.

3. CNC CROPPING LINE HYDRAULIC: It is also used to cut the CRGO sheet. It contains two blades, one is fixed and the other rotates 90° above the sheet. It is operated hydraulically .M4 quality sheet 0.23-0.33 mm thickness is used

BAY-6:

Single-phase traction transformer for AC locomotives is assembled in this section. These Freight locomotive transformers are used where there is frequent change in speed. In this bay core winding and all the assembly and testing of traction transformer is done.

Three-phase transformers for ACEMU are also manufactured in this section. The supply lines for this transformer is of 25 KV and power of the transformer is6500 KVA.

The tap changer of rectifier transformer is also assembled in this bay. Rectified transformer is used in big furnace like the thermal power stations / plants (TPP).

BAY-7:

This is the insulation shop. Various types of insulations are

1-AWWW: All Wood Water Washed press paper.

The paper is 0.2-0.5mm thick cellulose paper and is wound on the conductors for insulation.

2-PRE-COMPRESSED BOARD: This is widely used for general insulation & separation of conductors in the forms of blocks.

3-PRESS BOARD: This is used for separation of coils e.g. L.V. from H.V. It is up to 38 mm thick.

4-UDEL: Indemnified Electrical Laminated wood or Perm wood

This is special type of plywood made for insulation purposes.

5-FIBRE GLASS: This is a resin material and is used in fire porn areas.

6-BAKELLITE

7-GASKET-It is used for protection against leakage.

8-SILICON RUBBER SHEET-It is used for dry type transformer.

The machines used for shaping the insulation material are:-

1-Cylindrical machines

2-Circle cutting machine

3 Scaring machines

4-Punching press machine

5-Drilling machine

6-Guilletin machines

7-Bench saw (spl for OD)

8-Jig saw (spl for ID)

9-Circular saw

10-Linesin machine

BAY 8:

It is the instrument transformer and ESP transformer manufacturing section.

INSTRUMENT TRANSFORMER -

These are used for measurement. Actual measurement is done by measuring instruments but these transformers serve the purpose of stepping down the voltage to protect the measuring instrument. They are used in AC system for measurement of current voltage and energy and can also be used for measuring power factor, frequency and for indication of synchronism. They find application in protection of power system and for the operation of over voltage, over current, earth fault and various other types of relays.

They are of two types.

1-Current transformer (CT)

2-Voltage transformer (VT)

CURRENT TRANSFORMER-

It is a step down transformer. High current is not directly measured by the CT but is stepped down to lower measurable voltages.

BODY:

The main body is a bushing, which houses the winding and also acts as an insulator.

The CT has a bottom and top chamber.

The top chamber is a cylindrical tank of mild steel. It has terminals for connection of HV coils. It also has a glass window to indicate the oil level.

Below the top chamber is the bushing made of porcelain. It has several folds or “rain sheds” to provide a specific electric field distribution and long leakage path. Some bushings are

cylindrical while modern ones are conical as amount of oil porcelain used is reduced without any undesirable defect.

Bottom chamber houses the secondary winding. There is also connection box to which the connection of the low voltage (LV) coil is made.

WINDINGS:

The primary winding consist of hollow copper/aluminum pipe bent in form of a 'U' aluminum is used for low rating. For higher rating a set of wires is passed through the pipe. For still higher ratings, a copper pipe is used and for highest rating copper pipe with copper wires passing through it is used. This arrangement depends on the current carrying capacity.

The bent portion of primary as in the bottom chamber where as the free end is the top chamber. The straight portion lies inside the bushing.

The primary is wound with crepe paper insulation. The thickness of the insulation goes in increasing as we go downwards in the bottom chamber. The free ends are provided with 'ferrules', which are, small hollow cylinders through which wires can pass connection to the primary are made through these ferrules.

The secondary is divided in a number of coils for different set of tapings. Connections are different tapings are made in connection box. Each coil has an annular core of CRGO (silicon steel). The wire use is insulated copper wire. The winding may be done both manually and by machine. After winding the coils are covered with paper tape insulation. The coils are then slipped into both the legs of the primary winding and connections are made in connection box for different tapping.

VOLTAGE TRANSFORMERS:

This is also a stepped down transformer. The outer construction is same as that of the CT that is this also has a top chamber, bushing and a bottom chamber. The difference is only in the winding

WINDINGS:

The primary winding is of the thick wire having a few turns. The winding is heavily insulated with paper insulation. It has a hollow cylinder passing centrally through it, which houses the secondary winding. The clean and painted with either enamel or epoxy paint. The customer gives the choice of paint. Epoxy paint is generally used in chemical plants and seashore installation. Terminals are then mark and ratings and diagram plate is fixed.

The job is then sent to the shipping department, which takes care of its dispatch by packing it in the wooden boxes.

ESP TRANSFORMER:

The Electrostatic Precipitator transformer is used for environmental application. It is used to filter in a suspended charge particle in the waste gases of an industry. They are of particular use in thermal power stations and cement industry.

The ESP is a single-phase transformer. It has a primary and secondary. The core is laminated and is made up of CRGO. It is a step up transformer. An AC reactor is connected in series with primary coil. The output of the transformer must be DC the is obtained by rectifying AC using a bridge rectifier (bridge rectifier is a combination of several hundred diodes). A radio frequency choke (RF choke) is connected in series with the DC output for the protection of

the secondary circuit and filter circuit. The output is chosen negative because the particles are positively charged. The DC output from the secondary is given to a set of plates arranged one after the others. Impurity particles being positively charged stick to these plates, which can be jerked off. For this a network of plates has to be setup all across the plant. This is a very costly process in comparison with the transformer cost. A relief vent is also provided to prevent the transformer from bursting if higher pressure develops inside it. It is the weakest point in the transformer body. An oil temperature indicator and the secondary supply spark detector are also provided.

One side of the transformer output is taken and the other side has a 'marshalling box' which is the control box of the transformer.

BAY-9:

In this bay power transformers are assembled. After taking different inputs from different bays 0-9 assembly is done.

Power transformers are used to step up and step down voltages at generating and sub-stations.

There are various ratings – 11KV, 22KV, manufactured, they are

Generator transformer.

System &

Autotransformer.

A transformer in a process of assembly is called a job. The design of the transformer is done by the design dept. & is unique for each job; depends on the requirements of the customer.

The design department provides drawings to the assembly shop, which assembles it accordingly.

The steps involved in assembly are:

1. Core building
2. Core Lifting.
3. Unlacing.
4. Delacing and end-frame mounting.
5. High voltage terminal gear and low volt terminal gear mounting.
6. Vapor phasing and oil soaking
7. Final servicing and tanking.
8. Case fitting.

Core Building:

It is made of cold rolled grain oriented steel 'CRGO'. The punched core is sent to this shop from core punching shop. Here it is assembled with the help of drawing a set of 4 laminations is called a packet. The vertical portion of the core is called a 'leg' the horizontal one is called as 'yoke'. Packets of both are interlinked. It is undesirable to keep the X section of core circular to provide low reluctance part with out air space. A perfect circle can not be made so the core is stepped to achieve a near circle. Whatever spaces left are filled with thin wooden rod. After core building the end frames are bolted. The bolts are insulated from the core.

Core Lifting:

The core is lifted by a crane and is placed vertical. The rest of assembly is done on the core in this position.

Unlacing & Core Coil Assembly:

The yoke of the core is removed using crane. Bottom insulation in form of 50MM thick UDEL sheets is placed PCB and press board are also used for filling the gap and to provide a

good base for the coil to rest. The coil are then lowered primary, secondary, tertiary and tap in that sequences.

Relacing & End-frame Mounting :

After lowering a coil the top insulation similar to the bottom one is provided. The removed yoke is placed end-frame bolted back into its position.

The connections are then made as per drawings. All the conductors are insulated using crepe paper. Brazing copper makes the connections. For brazing silphos is used.

The following tests are done during re lacing:

Megger Test.

Ratio test.

Meg current / High Volt test.

Testing at this stage is called pre testing. This is essential because if false are seen at a later stage, whole of the transformer will have to be dissembled.

H.V.T.G & L.V.T.G. :

Terminals gears are accessories provided at high voltage and low voltage terminals. Main device used is tap changer. Tap changer can be on load or offload. In offload type the supply has to be tripped, then the tapings changes but in on load type the tapings can be changed while the supply is on. On load tap changer (OLTC) are used where the supply is desired to be continuous.

The upper portion of the OLTC contains mechanism by which tapping is changed. There is switch which changes tap in very small type (Micro-seconds). But there is a possibility of

sparkling. To get rid of it, OLTC is filled with oil. The bottom part houses the terminals and the mechanism, which makes automatic connections.

The terminals are made of thick aluminum strips.

Vapour Phasing & Oil Soaking:

It is well known fact that water (impure) is a conductor electricity. Therefore, moisture presence in transformer will effect insulation, the process of moisture removal from transformer is called vapor phasing.

The job is put in dummy type and place in a vacuum vessel. It is an airtight chamber with heating facilities. A solvent vessel is released is the chamber which enters all transformer parts and insulations. It absorbs water rapidly. The job is heated in vacuum. All the solvent vapors are sucked out with moisture. Metals contain no moisture but a lot of insulations is provided which contains this moisture and if not taken care of, may burst the job

After moisture removal tank is filled with transformer oil and soaked for at least three hours, so that every gets wet with oil. The job remains in vessel for three days during phasing. It is then taken out of the vessel and also out of the dummy time.

Final Servicing & Tanking :

After taking the job out of dummy time all the parts retightened any other defects are rectified and job is retimed in mild steel tank. After tanking oil is filled.

Case Fitting:

The accessories are fixed and final touches given to job. The accessories include tank cover, fixing bushing, fixing valves etc. The terminals are marked and R and D. (Rating and Diagram) plate is fixed. Bolting and not riveting because it may require maintenance and hence opening close the tank.

Bushings are hollow to provide a passage for conductor; oil is filled inside the hollow spaces for better insulation. Bushing is built on a mild steel base, which is bolted to bottom chamber with a cork gasket in vacuum.

The bottom chamber is mild steel tank with a steel frame attached to its base for earthing.

This chamber houses the secondary winding.

STORE:

There are three sections in store:

Control Receiving Section

Custody Section

Scrap Disposal Section

FUNCTIONS:

List of material coming in stores is prepared and Quality Control people are called for inspection. If material is found as per standard, SRV (Store Receipt Voucher) is issued for each material. A total of 08 SRV's are prepared. Some materials such as Silicon oil, Transformer oil, Insulating material etc are directly stored in the Bays.

LOCOMOTIVE PRODUCTION(LMP):

There are two products

Alternating Current Locomotive (ac Loco)

WAG-5H

AC./D.C. Loco

WCAM-2P

WCAM-3

W-broad gauge

A-running in AC mode

C-running in DC mode

G-hauling goods train

P-hauling passenger train

M-hauling passenger& goods train

Diesel Electric Locomotive Shunting (DESL)

350 HP

700 HP

Single Power Pack (SPP): One 700 HP m/c is made as a single unit. It is a meter gauge locomotive.

Twin Power Pack (TPP): 2 350HP m/cs are combined in 1 engine & can be operated individually or in combination depending on the load.

450 HP

1400 HP

1150 HP

1350 HP

2600 HP

1150 HP and 1350 HP DESL s are non-standard locomotives and are modified versions of 1400 HP DESL based on requirement of customer.

Under mention are the new non-conventional products designed and developed for Indian Railways based on their requirement.

OHE (Overhead electric) recording and testing cars

UTV(Utility vehicle)

RRV(Rail cum road vehicle)

DETV(Diesel electric tower car)

BPRV(Battery power road vehicle)

BCM(Blast cleaning machine)

200 T Well wagon for BHEL Haridwar

Metro Rake-Kolkata Metro Railways

LOCOMOTIVE MANUFACTURING (LMM):

This section deals with manufacturing of locomotives.

The main parts of the locomotive are

Under frame: The frame on which a locomotive is built

Super structure: The body of locomotive is called superstructure or Shell and is made of sheet of Mild steel

DC motor

Alternator

Compressor

Flower

Static Rectifier-MSR

Static Converter-SC

Exchanger

Bogie-The wheel arrangement of a loco is called a bogie. A bogie essentially contains

1-wheel axle arrangement

2-Suspension

3-Brake rigging

Traction transformer: It is fixed on under frame and gets supply from an overhead line by equipment called pantograph. The type of pantograph depends on supply. This transformer steps down voltage and is fitted with a tap changer. Different taps are taken from it for operating different equipment. One tap is taken and is rectified into DC using MSR and is fed to the DC motor.

Railways has two types of power supplies – 25 KV , 1 Phase ,50hz AC

-1500 V DC

An AC/DC loco is able to work on both of these supplies. For e.g. WCAM-3.

WORK ENGINEERING & SERVICES (WE&S)

This department looks after the commissioning and maintenance of all the machinery used in the factory. It also has 3 two-stage air compressors for supplying compressed air to the various bays.

The department has 03 different divisions :

Electrical Engg

Electronics Engg

Mechanical Engg

ELECTRICAL ENGINEERING: This division looks after all the electrical machinery and power distribution of the factory. Snags detected in the system are immediately reported to this dept by the concerning dept. WE&S takes prompt action to rectify it.

The factory has a feeder of 11KV .The total load sanctioned for the factory is 2500MVA

But the maximum demand reaches the range of 1700-2000 MVA.

here are various sub-station (SS) inside the factory, for distribution of power to different sections.

SS -1	Supplies	Bay-6 to Bay –9
SS -3	Supplies	Bay 1to Bay-4
SS -4	Supplies	Boiler and loco plant
SS -5	Supplies	Bay -5
SS -6	Supplies	Administrative building

TECHNOLOGY:

This department analyses the changes taking place in the world and suggest changes accordingly. This is very important because the products must not get obsolete in the market otherwise they will be rejected by the customer.

FUNCTIONS:

Technology functions can be classified as :

Processing Sequence: The sequence of process of manufacturing is decided for timely and economic completion of the job.

Operation time estimate : It includes incentive scheme management

Allowed operation time: It includes incentive amount

Facilities identification: It includes looking for new equipment or plant or tools to increase productivity

Special process certification: Special processes are the ones requiring expertise for example identifying errors, cracks, air bubbles in welding

Special tools requirement: Special tools are allotted, if possible, when required else the design has to be reconsidered.

Productivity projects compilation: It includes the initial analysis of the problem and their appropriate solution to enhance productivity.

The principle of working is that, **“IF YOU DO NOT MAKE THE CHANGES IN YOUR COMPANY, THE CUSTOMER WILL CHANGE YOU”**.

BUS DUCT:

Bus ducts are used as connections between generators and transformers. They are used in power connections over 150 MV. The question now arises why are bus ducts preferred over ordinary conductors, in such connections? In high power applications, insulation is the major problem and frequent insulation breakdown occurs. If this does happen then there is a possibility of shorting of conductors and hence serious damage may occur to both the transformer and generator.

Bus ducts are hollow pipes made of aluminum. The cross-section of these ducts depends on the requirement of the customer and is done by the design department. The cross-section may have different shapes circular, square, hexagonal, octagonal etc. the casing is also made of aluminum sheets. Although aluminum is not as good a conductor as copper still is preferred over it because it is lighter than copper. Moreover it is cheaper than copper.

Bus ducts are of two types: **-(i) Segregated bus ducts.**

(ii) Isolated bus duct

In **segregated bus ducts** one casing is divided into three separate chambers for three phases.

In the isolated bus duct each phase is provided with a separate casing. The conductor i.e. the duct is separated from the casing by porcelain or peroxide (chemical) insulators.

The bus duct assembly contains three cubicles: -

P.T and S.P cubicle.

N.G cubicle.

L.A.V.T cubicle.

These cubicles have the circuits and the controls of the bus duct assembly. The connections may be star or delta. The line enters from the top of the top of the top chamber. The top chamber has the neutral side and the line side. On each side there are three terminals of aluminum to provide connections. The bottom chamber lies below the top chamber. These chambers are provided just below the generator.

CENTRAL QUALITY SERVICE:

First we get acquainted with a few terms concerning this department.

QUALITY

It is the extent to which products and services satisfy the customer needs.

QUALITY ASSURANCE

All those plans and systematic action necessary to provide adequate confidence that a product or service will satisfy the given requirement is called quality assurance.

QUALITY CONTROL

The operational technique and activities that are used to fulfill requirement for quality are quality control.

QUALITY INSPECTION

Activities such as measuring, testing, gauging one or more characteristics of a product or service and comparing these with specified requirement to determine conformity are termed quality inspection.

FUNCTIONAL ORGANISATION

1.0 HRD OBJECTIVES:

The objectives of HRD function in the unit will be as below:-

“All-round development of the employees in terms of their knowledge, skills and behavior for improvement in their work efficiency and effectiveness.”

2.0 ORGANISATION STRUCTURE:

The role and responsibility and authority of various levels are indicated below:-

2.1 L1: HEAD OF DEPARTMENT:

HRD head will work in line with the QAM and has organizational authority for HRD function.

2.2 L2: INCHARGE, HRD:

2.2.1 RESPONSIBILITY:

- He will have total responsibility of Planning, Designing, Organizing and Conducting the HRD programmes both In-plant and Out-plant. He will make budget provisions for the total HRD activities.
- Identification of Training needs.
- Monitoring the Training Budget.

AUTHORITY:

Approval of development purchasing /payment of faculty charges /Misc, expenditure etc, within the budget and planned figures.

Monitoring the overall HRD activities.

Issuing Part II Office order for out plant programmes.

L3: HRD CO-ORDINATOR

2.3.1 RESPONSIBILITY:

- He will be responsible for co-ordination the total HRD activities including implants and out plant training programmes.
- Monitoring of training reports.

AUTHORITY:

- Co-coordinating the overall activities of HRD.
- Issuing part II office order for in plant and out plant training programmes.

L4: PROGRAMME CO-ORDINATOR

RESPONSIBILITY:

- Maintenance of all HRD files, register and records.
- Maintenance of training needs and training records.
- Preparation of reports.
- All clerical activities.

AUTHORITY:

- Raising purchase indents.
- Issuing No Dues Certificate.

3.0 In the absence of any one level, the responsibilities of that level shall be discharged by the individual at next higher level.

RATIONALE OF THE STUDY

The Human Resources Development Department, BHEL conducts various training programmes throughout the year for development and growth of its employees. The training programmes to be conducted in a year are decided at the start of the year. Training need analysis is done by sending a "need analysis" form at the start of the year to the head of departments. The HODs of various departments then list the name of the employees that are in need of the training. These training programmes target behavioral as well as technical needs.

Training needs are then compiled and accordingly the programmes are designed- in plant as well as out plant. The evaluation of the training programmes serves as important a function as the proper conduction of programmes itself. But the nature of the programmes is many a times such that proper evaluation is not possible. The "reaction" of the employee is taken right after the training is completed. However, to know how effective has been the training programmes and to what extent is it fulfilling the purpose of increasing the efficiency of participant on the job evaluation is necessary.

HRD, Jhansi this year for the first time made an effort to check "on the job" effectiveness.

The present study was designed and conducted keeping in mind the above rationale.

UNIVERSE OF THE STUDY:

The sample of the present study consisted of employees of BHEL, Jhansi. Initially, the sample size of 88 was chosen out of all the people who have participated in the training programmes conducted by HRD throughout the year. Out of all the training programmes, five were randomly selected so that their effectiveness could be evaluated. These programmes are:

Worker Development Programme

Finance Management Programme

Supervisor Development Programme

MS Word

MS Excel

A total of 88 people were found to have received training under these programmes.

In order to gain an insight into how the employee is performing after the training is imparted, the controlling officer of the candidate was made to respond. The reason behind targeting the controlling officer is that the improvement in on the job performance could best be judged by the boss. However, only 54 out of 88 people responded to the questionnaire. Rest of them could not be tracked owing to their absence, leave, transfer and night shift.

BHARAT HEAVY ELECTRICAL LIMITED TRAINING SUBJECTS

ISO-9000.14000 AWARENES

JOB knowledge, job planning, job performance

Time management

Time work

Communication and co-operation

Transactional analysis

Leadership personality

Employees motivation.

Industrial safety

Discipline

Health awareness first aid

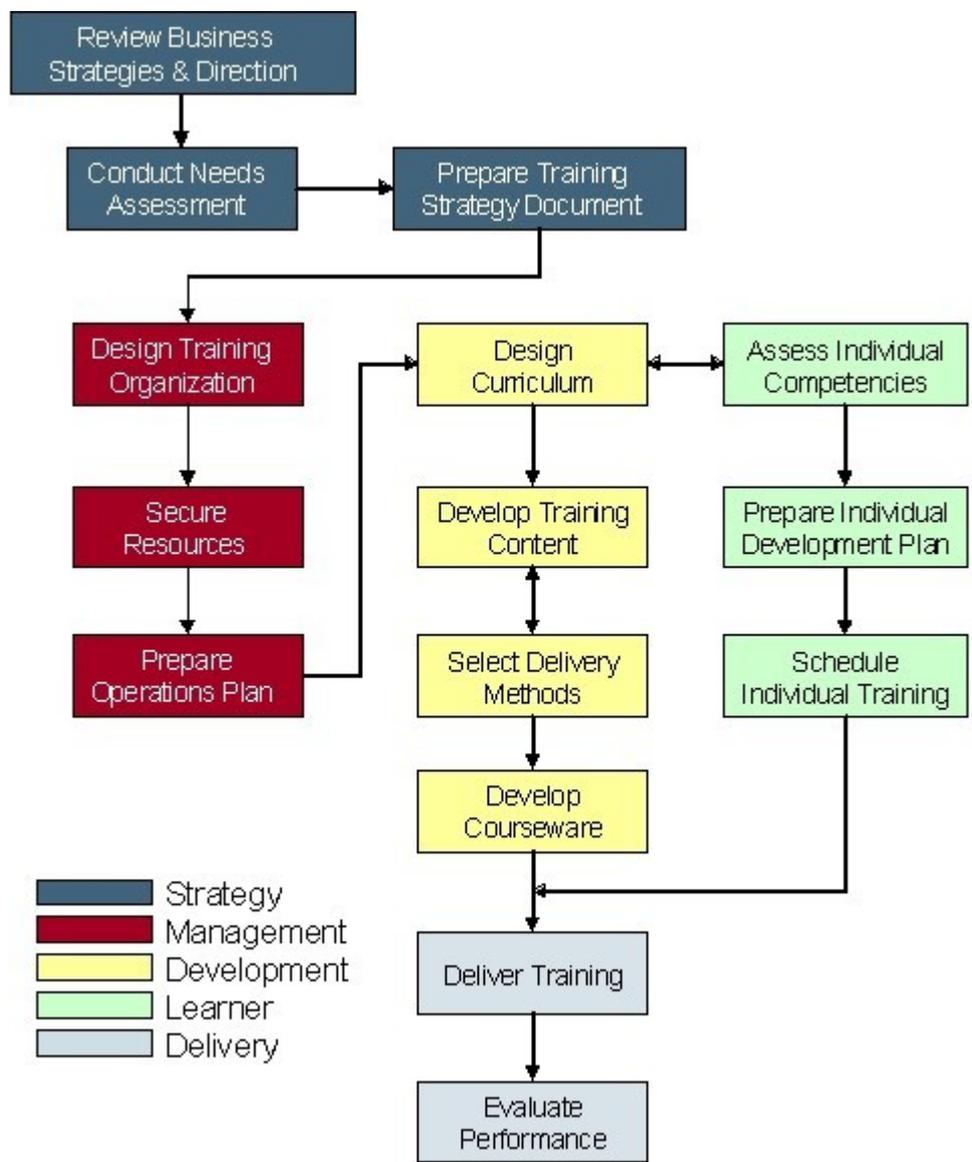
Total quality management

Behavior and skill development

Values engineering and cost consciousness

Productivity awareness programs

TRAINING PROGRAMME



TYPES OF TRAINING

TRAINING WITHIN INDUSTRY PROGRAMME- It calls for an initial prefatory phases in which the instructor should determine what should be taught in order to that the trainee may be able to perform his job efficiently, safely, economically, & intelligently.

ON THE JOB TRAINING- This training is carried out on the job for New employees.

VESTIBULE TRAINING- This is an approach which in a sense may be considered intermediate between on the job/off the job training and which utilizes the vestibule school where the trainees use equipment

APPRENTICE TRAINING- It offers an integration of on and off the job training, which may be extremely effective under ideal condition.

INTERNSHIP TRAINING- This training refers to a joint program of training in which vocational school/institute cooperate with industrial/business or trading organization.

VARIOUS TRAINING PROGRAMMES OF BHEL JHANSI

- **IN-PLANT TRAINING**
- **OUT-PLANT TRAINING**
- **ABROAD TRAINING**
- **COMMON INDUCTION TRAINING FOR EXECUTIVES/ENGINEERS**
- **COMMON INDUCTION TRAINING FOR SUPERVISORS**
- **COMMON INDUCTION TRAINING FOR D/R ARTISION**
- **CUSTOMER TRAINING**

- **VENDORS/SUPPLIERS TRAINING**
- **TRADE APPRENTICE TRAINING**
- **TECNICIAN APPRENTICE TRAINING**
- **VOCATIONAL TRAINING**

PROCEDURE IN-PLANT TRAINING & OUT-PLANT TRAINING

IN-PLANT TRAINING

INTRODUCTION-

All training programs that are conducted in HRD department of JHANSI come under the preview of in plant training. The kind of training cover programs of all levels of personnel viz executive, supervisors, and lab hours decided in advance according to availability of both the faculty and trainee. Trainee's calendar is intimated to all people concerned so that the program conducted smoothly and successfully.

PURPOSE-

The Primary purpose of in-plant training is to provide expertise and technical/practical/managerial knowledge to employees of the organization with campus. The Secondary purposes are to control the expenditure on training and, The Third purpose is to develop the employees of company. The aim is achieved because in-plant training the faculty is made from the internal sources, since the classroom training and on the job training is conducted inside the premises of the organization, transportation, lodging and boarding cost

are incurred. Hence the In-Plant Training programs are beneficial to the organization from the financial view point, moreover it get chance tap the untapped manpower resource, which has developed by internal faculty. Another benefits lies in the real of behavioral science. Since the trainers and trainees both are employees of the intrinsic problems of the organization, so they design their training program accordingly session as per the corporate norms.

The trainees are also exposed to the visual media during their training programs. There are video cassettes in HRD department, which cover different functional areas. Some of them have been specified below.

1). CATEGORY COMPUTERS

Introduction to computers duration (30 minutes).

Database & data management system duration (60 Minutes).

2). CATEGORY MANAGEMENT

Introduction to marketing duration (22 minutes)

Time management duration (25 minutes)

TRAINING PROCEDURE FOR CONDUCTING IN-PLANT TRAINING

PROGRAM:

Approval of in-plant training program calendar at beginning of every financial year, an annual program calendar of proposed in-plant training program is prepared, keeping in consideration the training need of various departments. The resources available and feedback received from earlier programs, level of participants, no. of participants & total expenditure is submitted for competent authority's approval.

On the approval, the date wise program calendar is chalked out & informed to the HRDI, New Delhi for printing in the HRDI's annual calendar.

The design of programs, level of participants, methodology & internal external faculty etc is finalized by HRD department.

The internal/external faculty is invited for conducting the program. The head of departments are requested to nominate the participants by issuing a circular. Participants are than informed about the dates, time & place of the program. The classroom arrangements, audio visual aids, guesthouse, transport facilities for the external faculty is made by HRDC as the requirements.

At the end of the program the trainees are required to fulfill a feedback form.

The internal faculty is paid an honorarium of Rs.100/- per session as per corporate norms.

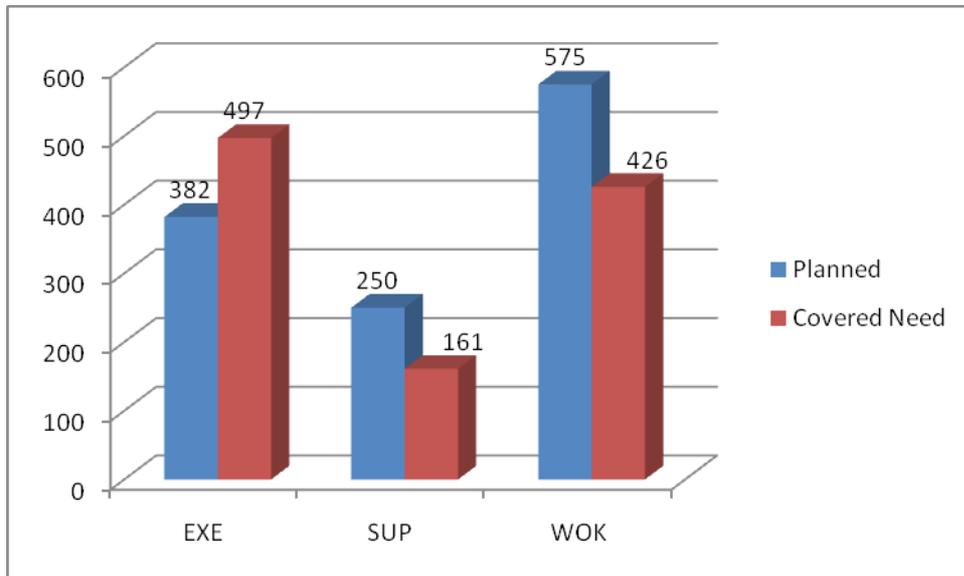
The payment to the external faculty is made as per the terms & conditions decided earlier.

HRD department maintain the training record for all the in-plant training programs during the year. The specimen of the training record is enclosed in the annexure.

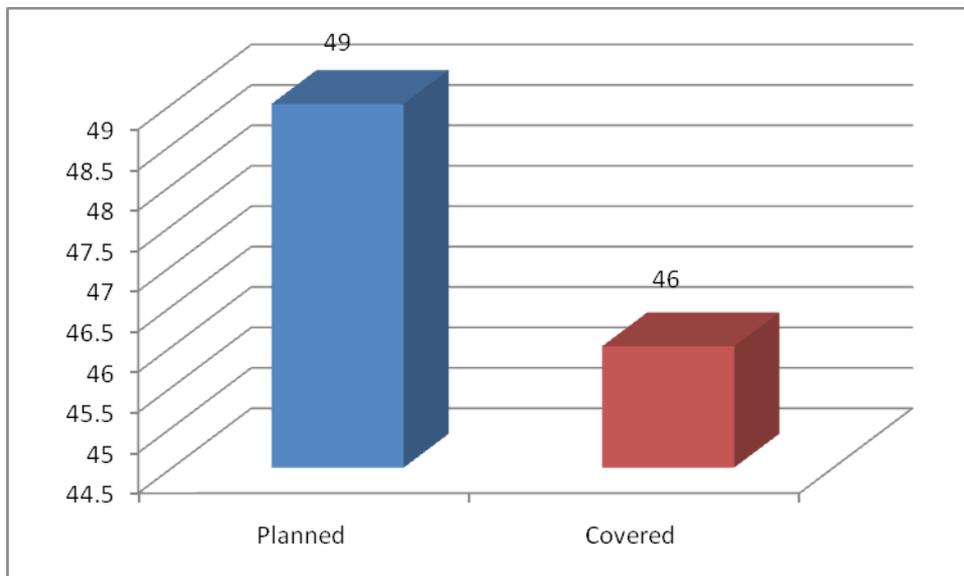
Annexure HRD (WI-0004). This deals with the circular for nominating.

Annexure II (Deals with training record)

In Plant Training programme participants Covered (01.4.09 to 31.03.10)



Status of Inplant Training Programme from 1st April 2009 to 31st March 2010



PROCEDURES FOR CONDUCTING IN COMPANY PROGRAMMES:-

FORM NO HRD002A

ANNEX 0004/A1

NO:- HRD IT :006

DATED:-

SUB:- PROGRAMME ON

FROM TO

It is proposed to organise a _____ day programme on _____ for _____ (level)
from _____ to _____ at HRD centre from _____ AM to _____ PM with the faculty assistance
from

The programme will aim at

It is therefore requested to kindly nominate _____ nos. of _____ from your department. In the
tear –off-slip as given below:-

Nominations should reach the undersigned latest by

HRD INCHARGE

SHRI

TEAR OFF SLIP

SUB PROGRAMME ON

FROM _____ TO

The following persons are nominated for the above programme.

S.NO	NAME	DESIGNATION	DEPARTMENT	PHONE
-------------	-------------	--------------------	-------------------	--------------

NO

01

02

TO,

INCHARGE (HRD)

HRDC BHEL JHANSI

Signature

Name

Design

Department

**PROCEDURE FOR IDENTIFICATION & PROCESSING TRAINING
NEEDS**

ANNEX 003/A1

FORM NO JS-351/A4250

DEPARTMENT-----SECTION-----YEAR OF PLANNING-----

Name of employee	Clock No	Level SUP/WOR	Programmes Topics	Programme Code	Justification

TO,

SHRI

SIGN OF HOD/DGM

SEAL:

DATE:

OUT-PLANT TRAINING

INTRODUCTION

As the name suggests, out plant training included all the training and development programs which are held outside the factory premises. In this type of training, employees of the unit are sent to other sister unit of BHEL Jhansi, other institute and abroad from acquiring specific skill & knowledge, which cannot be imparted in the unit itself. After the training needs of the employees of the unit is identified a details.

The personnel department decides upon training calendar of in-plant training. But sometimes, few of employees have to be sent outside the unit to fulfill their training needs due to the some reasons stipulated below:

Non availability of faculty.

Absence of infra-structure faculty

The training program requiring an extra ordinary professional touch.

Through out-plant training program is expensive in comparison to in-plant training program, the unit has to be optional for it. If any of the above mentioned reasons are relevant to the problem in the hand.

PURPOSE

The main purpose of the out-plant training is the development of an employees through a program which cannot be conducted in the unit itself handicapped to meet the training of its employees. It is in this circumstance that the unit sends its employees for out-plant training program. Alternative, if the unit wants to its employees to some management institute like

IIMS or it sends to employees to sister unit of BHEL, where similar program is being conducted or is likely to be conducted.

CONTENT

In case of out-plant training programs, only the HRD department plans the budget for the training fees. The expenses towards TA/DA etc are born by the individual department. The 120 general management programs were organized by the HRDI New Delhi from 15 MAY-3 JUNE at New Delhi. The program was residential in nature and was meant for Sr. manager and above who had not yet attended HRD's general management program that had more than two years to superannuate. The program was supposed to cover economic and industrial scenario, business policy and strategy, marketing strategy, finance and control, organization and people and individual and group development.

Apart from this, the artisans of different grades are sent from time to time to WRI (Welding Research Institute), Tiruchirapali. This institute belongs to BHEL. Recently 3 artisans of grade were sent to institute to attend a program on welding and inspection, welding inspector's course and ultrasonic testing.

Out-plant training also includes workers education program. The regional directorate of lab our education, Kanpur is responsible for the education and training of workers/lab hours for the past three decades.

Out-plant training program also includes foreign training in its gamut. One executive of BHEL Jhansi was send to attend MBA program. The program was eleventh month duration and was scheduled from 26December 94. It was designed for middle level executives having the following requisites:

Possess a bachelor's

Minimum five year of work experience

Maximum age limit 43 years

Should have proficiency in English language

Should not have gone on any foreign training for a period not more than 15 days in last five years.

The expenses to be incurred during the program was born by international organization the fellowship included the costs for tuition, boarding, lodging and expenses such as initial setup, study material, text books insurance and local/international traveling costs.

PROCEDURE FOR CONDUCTING OUT-PLANT TRAINING:-

This procedure covers deputation of all regular employees a BHEL Jhansi for attending training courses, seminars, conferences etc outside BHEL Jhansi, i.e. organized by the HRI, other sister units or reputed institution in India.

The various department after identifying the training needs, submit the proposal to HRD giving details regarding the training programs, e.g. subject, name of organization institute, place date of programs fees per participant, whether residential or non residential.

HRDC processes the proposal of approval of competent authority.

After obtaining the approval, HRDC conformation regarding the allotment of required number of seats. After getting the conformation the participants are informed by HRDC through the part II office order. The specimen of part II office order is enclosed in the annexure.

Annexure (HRD/W-0005 01)

The employees are paid TA/DA attending the programs/courses as per the rules the training fees, if any is send by HRDC to the respective institutes. The budget for such courses is controlled by HRDC.

At the end of the year, an annual report on training activities is generated by the HRDC and submitted to HRDC, New Delhi.

PROCEDURE FOR EVALUATING EFFECTIVENESS

The effectiveness of program is measured with regards to conduction of program and with regards to on the job effectiveness of the program. The procedure for measuring effectiveness of conduction of program is as follows

At the end of each program, a brief feedback valediction session is conducted to get the views of the participants, so as to improve the future programs. For short duration program (less than two says), the feedback is taken orally and for long duration programs (more than two days) .

For all output training programs, the feedback is obtained from the participants on their return in the prescribed format.

Future programs are suitable modified based on feedback of earlier program of the same subject.

Procedure for measuring on the job effectiveness of the program is as follows:

This evaluation is measure the job effectiveness of the participants who have attended program.

The evaluation is conducted in the feedback in the prescribed format from to four months from the date of completion of the programmed. During this period, the controller officer observes that how much the program is affective in the performance of trainee's job.

ENGINEERS TRAINING PROGRAM

INTRODUCTION

The purpose of the training program is to acquaint the new engineers with the practices & process of the organization. They have the theoretical knowledge and the training provides the practical know how. Besides, the programs include job rotation. This enables the young engineers to visualize whole prospective of the job involved. Apart from technical aspects, the engineer trainees are also exposed to management development programs. This helps them to acquire managerial skills as after a few years of services, administration and management from a part of the engineer trainees.

CONTENTS

Last year like in 1994 the batch of engineer had undergone a training program at trichy unit. After that, engineer trainees were posted for their specialization training at various unit of BHEL organization.

The trainees were directed to report to the concerned training in charge at the respective place. The trainee was to report at the next place of training immediately after the release from the present place of the training after available minimum traveling time and following the shortest route.

The Trainees were also directed to submit their training report to the training in charge in each place s before leaving the place for next place for training.

All training in charge were requested to conduct test and interviews on the last day of each group's stay and send marks or perform detailed to the HRDI, new Delhi immediately after completion of training along with marks of training reports.

In the Jhansi unit, apart from general training programme the engineer trainees are also sent to management orientation programme. This is conducted by Sr. Manger HRDC, BHEL and Bhopal every year for engineer trainees.

TRADE APPRENTICE TRAINING

INTRODUCTION

Trade apprentice are those people who have done their ITI and later join BHEL for on e year training programme. It is mandatory for BHEL to provide one year training to the student who has done ITI courses. The training programme provides the requisites practical to the ITI student and these skills equip them to strive BHEL to provides training to the ITI student it is bound finally induct them all in the organization. Each unit of BHEL provide training to such number of ITI student who may be trained effectively, keeping in view the various constraints a unit faces in terms of infrastructural facilities. Availability of faculty, financial resources etc.

PURPOSES:

The primary purpose of trade apprentice training programs is to provide practical knowledge to the ITI student. The ITI student has theoretical knowledge after completion of various courses but they lack practical exposure. It is the training program which provides them the required exposure, in terms of practical skills, procedure and practices. The secondary purpose is to fulfill social obligation. An organization interacts with the society, which is an important component of the external environment. The organization has certain duties towards the society as a whole. By providing practical training to ITI student. BHEL renders invaluable services to the society and strives for the betterment of those students who have done technical course.

CONTENTS:

The Training is provided to the ITI student by conducting related instruction class for them. An All India trade test apprentices are conducted by Regional Directorate of Apprenticeship Training. This Directorate comes under the Jurisdiction of Ministry of Labor Government of India.

TECHNICIAN APPRENTICE TRAINING

INTRODUCTION

This program is concerned with the training of technician apprentices. Technician apprentices are those students who have done their diploma in various fields of engineering. This training program is only one aspect while the trade apprentices are exposed to related instruction classes, the technical apprentices are not. They in turn have more exposure as far as the practical experience is concerned.

PURPOSE:

The purpose of the training program is to follow the guidelines of the apprentices Act 1961.

The government of India desires that all the major public sector units should impart practical training to the diploma holders. In order to fulfill the social obligation, BHEL conducts training program for the technician apprentice every year.

CONTENT:

Every year, BHEL Jhansi unit recruited technician apprentices who have undergone their one year apprenticeship training in the unit. They join the unit; they are posted in the respective departments for on the job training inputs and have been given to them. It is proposed later on that they may be exposed to the various functions in the unit by giving rotation of about 2 weeks in different departments and organize classroom lectures for about six days in the HRD department company information, product knowledge, various function of unit, general management concept etc. before they are relieved.

COMMON INDUCTION TRAINING PROGRAMME

The Human Resources Development Department, BHEL conducts various training programmes throughout the year for development and growth of its employees. Common Induction Training programme is one of them. this programme is conducted in order to introduce the newly recruit executives and engineers with the organization, its policies, its product, working environment etc. in concise we can say it is aimed at making the newly executives familiar with the job they are supposed to do in future.

Hence in order to fulfill the above said objective CIT programme is conducted for 45 days.

The whole programme is divided into following modules and the days allotted for the various modules are given below:

Common induction training programme	duration: 45 days
basic human process laboratory	6 days
organizational effectiveness	6 days
functional management orientation	33 days
strategic management	2 days
HRM	3 days
HRD	1 day
financee management	3 days
project management	4 days
industrial Health safety environment	1 day
quality, TQM & business processes	4 days
work study and productivity	3 days
commercial management	4 days
production management	3 days

material management	3 days
information technology	2 days

Objectives of the Study

Objectives are the end goals and without choosing the clear object nothing can be done successfully, so objective should be very clear from the beginning of any work.

The main objectives of this project are:

- I.** To study the profile of BHEL as a whole and specifically BHEL Jhansi unit.
- II.** To study the various training programmes conducted at BHEL Jhansi unit with special reference to Common Induction Training (CIT) Programme for executives.
- III.** To know the objectives and procedure of nomination of these various training programmes.
- IV.** To obtain feedback of the CIT (Common Induction Training) programme for executives and to evaluate it.

Scope of the study

The project was undertaken to study various training programme and to obtain feedback of CIT programme. It will help the organization in evaluating the CIT programme, to chalk out the various shortcomings of the programme and to check them. It will also help the trainers to decide as to what tools should be used to give the right type of training. Therefore, it will help the organization in organizing the programme in a better way in future.

Training in Company Policy and Procedure:-

This is the part of the induction of new employee the objective is to oriented new employees with the set of rules procedure, management, organization structure , environment and products his which the firm has and /or deals with.

Orientation is a continuous process aimed at the adjustment of all employee to new and changing situations. It aim to impart the fact of company rules and policies, to create attitude of confidence in the company, pride in its products, respect for company personnel, and to provide information about needs of skills, development, quality of production and work organization

At no time does it allow for questioning or change of change of system it. Therefore in, no way contributes to individual growth, nor does it enhanced an employee's ability to contribute to the organization's growth. Induction programmes are also used for in-company promoters, who have to be oriented to the demands of their requirements.

Induction programmes are based on the 'philosophy' that the process of initial adjustment and entry to organization is a difficult process unless it is facilitates by a conducive and supported atmosphere, it would leave the new the entrant with several uncertainty in his mind and make his assimilation in organization life more complex and difficult, many organizational are conscious of this and devote considerable effective.

Induction training consist first of going around the various service departments, including the personnel department, to understanding the nature of the service provided, and also to understand to the individual's terms and condition of employment. The other

phase consists of spending sometime in various operating departments for a complete understanding of the nature of their activity. Such an elaborate programmes may not be planned for the lower-level categories of employees Such as worker but is generally planned for managerial personnel. Induction training consist first of going around the various service departments, including the personnel department, to understanding the nature of the service provided, and also to understand to the individual's terms and condition of employment. The other phase consists of spending sometime in various operating departments for a complete understanding of the nature of their activity. Such an elaborate programmes may not be planned for the lower-level categories of employees Such as worker but is generally planned for managerial personnel.

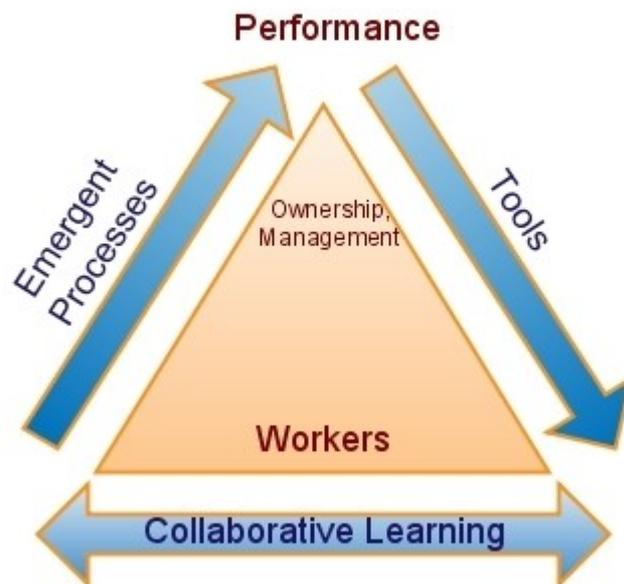
Procedure

The aim of the present study was to check effectiveness of the training programme. In order to evaluate the effectiveness of training programmes out of all the programmes conducted during the year, 5 programmes were randomly selected. 88 people were found to have received training under these programmes. This number was ascertained by checking their attendance record, which was maintained by HRD.

The questionnaire was then designed and made available to the HRD for its consent. After making the questionnaire, the controlling officers of all the participants of these 5 training programmes were personally approached. The design and purpose of the study was explained to them and the responses were taken on the questionnaire.

Out of 88, only 54 responded to the questionnaire. The reason was that a few of them could not be traced because of their transfer, leave, night shift and other reasons. The data obtained was then compiled programme wise.

TRAINING DIMENSION



CHAPTER 2
RESEARCH
METHODOLOGY

Research Methodology Adopted

The research methodology used to obtain the feedback of CIT programme is the survey of executive trainees. Since the numbers of trainees are very few (only 26) so survey of complete group is done in this project. The data was collected with the help of closed questionnaire which was distributed among the trainees in order to obtain feedback of various modules of CIT programme. In this project same questionnaire was used for each module.

Tool used:

A closed questionnaire was designed and used in order to obtain feedback of CIT for Executives. The responses were coded in a 5-point scale ranging from great extent, good extent, moderate extent, and little extent to not at all.

A total of 5 questions were included. These questions covered the following parameters:

Programme Design Level

Content Level

Presentation By Faculty

Increased Knowledge Level

Usefulness

And in last one more question "any suggestions" also included so that the opinion of various executive trainees could be known.

Since the time period for completion of the study was less, reliability and validity of this questionnaire could not be ascertained. However, the questions were made keeping in mind the objective of the study and were finalized only after the assent of the HRD officials.

A copy of the questionnaire is attached in annexure.

CHAPTER 2.1
OBJECTIVE OF THE
STUDY

OBJECTIVE OF THE RESEARCH

- I. To gauge the training effectiveness in the organization.
- II. To critically review how effective is the training functions.
- III. To review how employees perceive the training.
- IV. To measure about the adequacy of the training for improving skill competency of employees.
- V. To check out how it effects the employees in the organization.
- VI. To find out the correct measure for the increasing the effectiveness of the training.
- VII. To check our the performance of the employees.
- VIII. To make them more skilled for their work.
- IX. To give the employees the better training towards their job assigned.
- X. To check out effectiveness of the employees.

CHAPTER 2.2

LIMITATIONS

LIMITATIONS OF THE STUDY

1. The time was the major limiting factor.
2. The answers received from the respondents sometimes were unable to meet the enumerated expectations.
3. Any evaluation should be done on the basis of various parameters. But in this project, due to lack of time only 5 parameters are selected for study. So the scope of study is comparatively small.
4. Due to lack of communication there where no proper solution given to the employees.
5. It does work in the large organization.
6. It has limited working in some areas only.
7. It does give the fully satisfied solution due to small group.
8. Peoples don't show their interest.
9. Employees are not fully skilled so they are unable to perform their task properly.
10. It can be used for a short period of time.

CHAPTER 3

DATA ANALYSIS

DATA ANALYSIS

Parameter wise analysis of various modules for 26 executives

Module A: Basic Human Process Laboratory

Parameter	great	Good	Moderate	Little	all
programme design	3	11	5	5	2
Content	2	6	10	5	3
presentation by faculty	4	8	8	5	1
increased knowledge level	3	7	12	4	0
Usefulness	2	4	11	6	3

Table1

Programme Design

Out of 26 executives

Only 3 said that programme design was satisfactory up to a great extent

11 people were satisfied up to a good extent with the programme design

5 were satisfied up to a moderate extent

5 people were satisfied only to a little extent

While 2 people said that programme design was not satisfactory at all.

contents of programme

Out of 26 respondents

only 2 people satisfied up to a great extent with the contents of programme

6 people were satisfied up to a good extent

10 were satisfied up to a moderate extent

5 was satisfied only to a little extent

3 people found contents of programme satisfactory not at all

presentation by faculty

Out of 26 respondents

4 was satisfied up to a great extent with the faculty's presentation

8 were satisfied up to a good extent with the faculty's presentation

8 were satisfied up to a moderate extent with the faculty's presentation

5 was satisfied only to a little extent on faculty's presentation

Only one said that faculty's presentation was not satisfactory at all.

increased knowledge level

Out of 26 respondents

only 3 people said that knowledge level has increased up to a great extent

7 people realized that their knowledge level has increased up to a good extent

12 people said that knowledge level has increased up to a moderate extent

4 people said that knowledge level has increased only to a little extent

No one was there whose knowledge level is not increased after training

usefulness

Out of 26 respondents

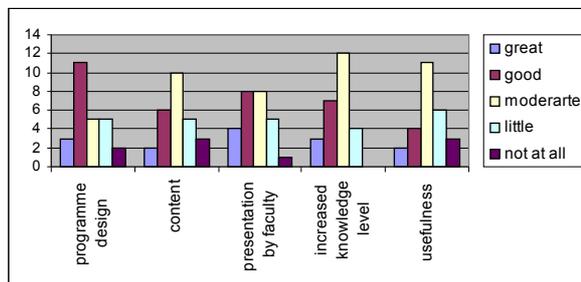
only 2 person said that it is useful up to a great extent

4 people said that it is useful up to a good extent

11 people said that it is useful up to a moderate extent

6 people said that it is useful only to a little extent

While 3 people said that it is of no use



Graph1 showing responses for basic human process laboratory module

Module B: Organizational Effectiveness

	great	good	moderate	little	not at all
Parameter					
programme design	1	8	10	5	2
Content	2	9	12	3	0
presentation by faculty	1	10	11	3	1
increased knowledge level	2	8	11	3	2
Usefulness	1	7	13	3	2

Table2

Programme Design

Out of 26 executives

Only one said that programme design was satisfactory up to a great extent

8 people were satisfied up to a good extent with the programme design

10 were satisfied up to a moderate extent

5 people were satisfied only to a little extent

While 2 people said that programme design was not satisfactory at all.

contents of programme

Out of 26 respondents

only 2 people satisfied up to a great extent with the contents of programme

9 people were satisfied up to a good extent

12 were satisfied up to a moderate extent

3 was satisfied only to a little extent

It is noteworthy that no one was there who found contents of programme unsatisfactory

presentation by faculty

Out of 26 respondents

only one was satisfied up to a great extent with the faculty's presentation

10 were satisfied up to a good extent with the faculty's presentation

11 were satisfied up to a moderate extent with the faculty's presentation

3 was satisfied only to a little extent on faculty's presentation

Only one said that faculty's presentation was not satisfactory at all.

increased knowledge level Out of 26 respondents

only 2 people said that knowledge level has increased up to a great extent

8 people realized that their knowledge level has increased up to a good extent

11 people said that knowledge level has increased up to a moderate extent

3 people said that knowledge level has increased only to a little extent

2 people said that there is no rise in their knowledge level after training

usefulness Out of 26 respondents

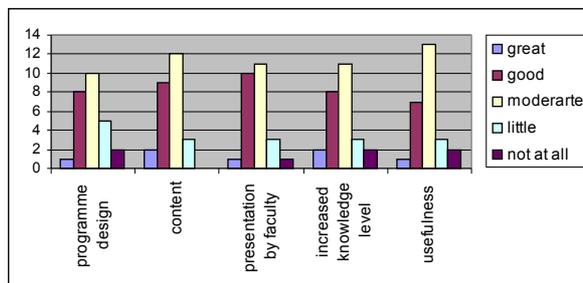
only one person said that it is useful up to a great extent

7 people said that it is useful up to a good extent

13 people said that it is useful up to a moderate extent

3 people said that it is useful only to a little extent

While 2 people said that it is of no use



Graph2 showing responses for organizational effectiveness module

Module C: Functional Management Orientation:-

Module C(a): Strategic Management:

Parameter	great	good	Moderate	little	all
					not at

programme design	0	11	9	5	1
Content	1	12	9	2	2
presentation by faculty	2	3	14	6	1
increased knowledge level	0	9	11	6	0
Usefulness	1	9	13	3	0

Table3

Programme Design

Out of 26 executives

no one said that programme design was satisfactory up to a great extent

11 people were satisfied up to a good extent with the programme design

9 were satisfied up to a moderate extent

5 people were satisfied only to a little extent

While one people said that programme design was not satisfactory at all.

contents of programme

Out of 26 respondents

only one people satisfied up to a great extent with the contents of programme

12 people were satisfied up to a good extent

9 were satisfied up to a moderate extent

2 was satisfied only to a little extent

2 found contents of programme totally unsatisfactory

presentation by faculty

Out of 26 respondents

only 2 was satisfied up to a great extent with the faculty's presentation

3 were satisfied up to a good extent with the faculty's presentation

14 were satisfied up to a moderate extent with the faculty's presentation

6 was satisfied only to a little extent on faculty's presentation

Only one said that faculty's presentation was not satisfactory at all.

increased knowledge level

Out of 26 respondents

no one said that knowledge level has increased up to a great extent

9 people realized that their knowledge level has increased up to a good extent

11 people said that knowledge level has increased up to a moderate extent

6 people said that knowledge level has increased only to a little extent

No people said that there is no rise in their knowledge level after training

usefulness Out of 26 respondents

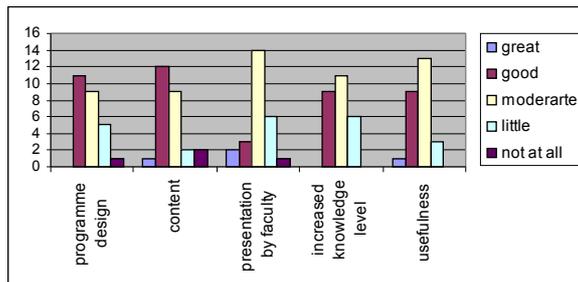
only one person realize that this module is useful up to a great extent

9 people said that it is useful up to a good extent

13 people said that it is useful up to a moderate extent

3 people said that it is useful only to a little extent

While there is no one who found it completely useless



Graph 3 showing responses for Strategic Management module

Module C(b): HRM

Parameter	great	good	moderate	little	all	not at
programme design	1	8	12	3	2	
Content	1	7	13	2	3	
presentation by faculty	4	7	10	4	1	
increased knowledge level	2	8	14	2	0	
Usefulness	3	4	15	3	1	

Table 4

Programme Design

Out of 26 executives

Only one said that programme design was satisfactory up to a great extent

8 people were satisfied up to a good extent with the programme design

12 were satisfied up to a moderate extent

3 people were satisfied only to a little extent

While 2 people said that programme design was not satisfactory at all.

contents of programme

Out of 26 respondents

only one people satisfied up to a great extent with the contents of programme

7 people were satisfied up to a good extent

13 were satisfied up to a moderate extent

2 was satisfied only to a little extent

3 was there who found contents of programme completely unsatisfactory

presentation by faculty

Out of 26 respondents

only 4 was satisfied up to a great extent with the faculty's presentation

7 were satisfied up to a good extent with the faculty's presentation

10 were satisfied up to a moderate extent with the faculty's presentation

4 was satisfied only to a little extent on faculty's presentation

Only one said that faculty's presentation was not satisfactory at all.

increased knowledge level

Out of 26 respondents

only 2 people said that knowledge level has increased up to a great extent

8 people realized that their knowledge level has increased up to a good extent

14 people said that knowledge level has increased up to a moderate extent

2 people said that knowledge level has increased only to a little extent

No one said that there is no rise in their knowledge level after training

usefulness

Out of 26 respondents

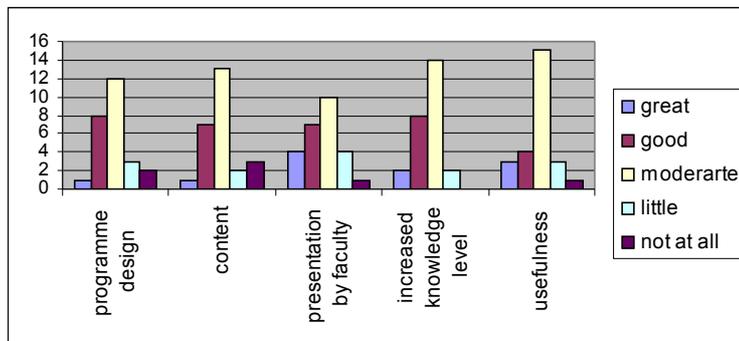
only 3 person found this module useful to his/her job up to a great extent

4 people said that it is useful up to a good extent

15 people said that it is useful up to a moderate extent

3 people said that it is useful only to a little extent

While 1 people found it of no use



Graph 4 showing responses for HRM module

Module C(c): HRD

Parameter	great	good	moderate	little	all	not at
programme design	2	12	8	3	1	
Content	2	8	11	2	3	
presentation by faculty	5	6	9	5	1	
increased knowledge level	2	15	7	2	0	
Usefulness	3	9	7	5	2	

Table 5

Programme Design

Out of 26 executives

Only 2 said that programme design was satisfactory up to a great extent

12 people were satisfied up to a good extent with the programme design

8 were satisfied up to a moderate extent

3 people were satisfied only to a little extent

While 1 people said that programme design was not satisfactory at all.

contents of programme Out of 26 respondents

only 2 people satisfied up to a great extent with the contents of programme

8 people were satisfied up to a good extent

11 were satisfied up to a moderate extent

2 was satisfied only to a little extent

3 was there who found contents of programme unsatisfactory

presentation by faculty Out of 26 respondents

only 5 was satisfied up to a great extent with the faculty's presentation

6 were satisfied up to a good extent with the faculty's presentation

9 were satisfied up to a moderate extent with the faculty's presentation

5 was satisfied only to a little extent on faculty's presentation

Only one said that faculty's presentation was not satisfactory at all.

increased knowledge level Out of 26 respondents

only 2 people said that knowledge level has increased up to a great extent

15 people realized that their knowledge level has increased up to a good extent

7 people said that knowledge level has increased up to a moderate extent

2 people said that knowledge level has increased only to a little extent

No people said that there is no rise in their knowledge level after training

usefulness Out of 26 respondents

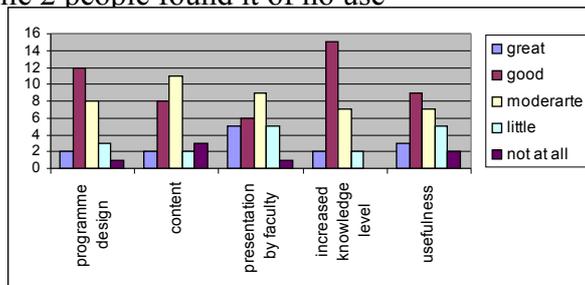
3 person found this module useful to his/her job up to a great extent

9 people said that it is useful up to a good extent

7 people said that it is useful up to a moderate extent

5 people said that it is useful only to a little extent

While 2 people found it of no use



Graph 5 showing responses for HRD module

Module C (d): Finance management

Parameter	great	Good	moderate	little	all
programme design	2	8	10	4	2
Content	2	12	8	3	1
presentation by faculty	4	7	10	3	2
increased knowledge level	3	8	7	5	3
Usefulness	4	10	7	3	2

Table6

Programme Design Out of 26 executives

2 said that programme design was satisfactory up to a great extent

8 people were satisfied up to a good extent with the programme design

10 were satisfied up to a moderate extent

4 people were satisfied only to a little extent

While 2 people said that programme design was not satisfactory at all.

contents of programme Out of 26 respondents

only 2 people satisfied up to a great extent with the contents of programme

12 people were satisfied up to a good extent

8 were satisfied up to a moderate extent

3 was satisfied only to a little extent

It is noteworthy that only one was there who found contents of programme satisfactory not at all

presentation by faculty Out of 26 respondents

4 was satisfied up to a great extent with the faculty's presentation

7 were satisfied up to a good extent with the faculty's presentation

10 were satisfied up to a moderate extent with the faculty's presentation

3 was satisfied only to a little extent on faculty's presentation

Only 2 said that faculty's presentation was not satisfactory at all.

increased knowledge level Out of 26 respondents

only 3 people said that knowledge level has increased up to a great extent

8 people realized that their knowledge level has increased up to a good extent

7 people said that knowledge level has increased up to a moderate extent

5 people said that knowledge level has increased only to a little extent

3 people said that there is no rise in their knowledge level after training

usefulness Out of 26 respondents

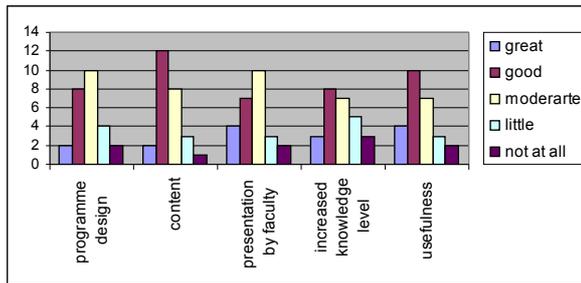
4 person found this module useful to his/her job up to a great extent

10 people said that it is useful up to a good extent

7 people said that it is useful up to a moderate extent

3 people said that it is useful only to a little extent

While 2 people found it of no use



Graph 6 showing responses Finance Management module

Module C (e): project management

parameter	great	good	moderate	little	not at all
programme design	2	9	10	4	1
content	3	10	8	3	2
presentation by faculty	4	7	10	2	3
increased knowledge level	3	12	7	4	0
Usefulness	1	12	8	4	1

Table7

Programme Design Out of 26 executives

Only 2 said that programme design was satisfactory up to a great extent

9 people were satisfied up to a good extent with the programme design

10 were satisfied up to a moderate extent

4 people were satisfied only to a little extent

While 1 people said that programme design was not satisfactory at all.

contents of programme Out of 26 respondents

only 3 people satisfied up to a great extent with the contents of programme

10 people were satisfied up to a good extent

8 were satisfied up to a moderate extent

3 was satisfied only to a little extent

2 was there who found contents of programme unsatisfactory

presentation by faculty

Out of 26 respondents

4 was satisfied up to a great extent with the faculty's presentation

7 were satisfied up to a good extent with the faculty's presentation

10 were satisfied up to a moderate extent with the faculty's presentation

2 was satisfied only to a little extent on faculty's presentation

3 said that faculty's presentation was not satisfactory at all.

increased knowledge level

Out of 26 respondents

3 people said that knowledge level has increased up to a great extent

12 people realized that their knowledge level has increased up to a good extent

7 people said that knowledge level has increased up to a moderate extent

4 people said that knowledge level has increased only to a little extent

No people said that there is no rise in their knowledge level after training

usefulness

Out of 26 respondents

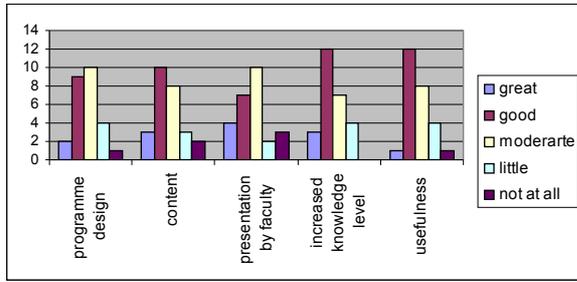
only one person found this module useful to his/her job up to a great extent

12 people said that it is useful up to a good extent

8 people said that it is useful up to a moderate extent

4 people said that it is useful only to a little extent

While only one person found it of no use



Graph 7 showing responses for Project Management module

Module C (f): Industrial Health Safety and Business Environment

parameter	great	good	moderate	Little	not at all
programme design	1	9	13	2	1
content	0	9	14	2	1
presentation by faculty	3	6	10	4	3
increased knowledge level	1	10	12	2	1
usefulness	0	12	12	2	0

Table 8

Programme Design

Out of 26 executives

Only one said that programme design was satisfactory up to a great extent

9 people were satisfied up to a good extent with the programme design

13 were satisfied up to a moderate extent

2 people were satisfied only to a little extent

While 1 people said that programme design was not satisfactory at all.

contents of programme

Out of 26 respondents

no one satisfied up to a great extent with the contents of programme

9 people were satisfied up to a good extent

14 were satisfied up to a moderate extent

2 was satisfied only to a little extent

It is noteworthy that only one was there who found contents of programme unsatisfactory

presentation by faculty

Out of 26 respondents

3 was satisfied up to a great extent with the faculty's presentation

6 were satisfied up to a good extent with the faculty's presentation

10 were satisfied up to a moderate extent with the faculty's presentation

4 was satisfied only to a little extent on faculty's presentation

3 said that faculty's presentation was not satisfactory at all.

increased knowledge level

Out of 26 respondents

only one people said that knowledge level has increased up to a great extent

10 people realized that their knowledge level has increased up to a good extent

12 people said that knowledge level has increased up to a moderate extent

2 people said that knowledge level has increased only to a little extent

1 people said that there is no rise in their knowledge level after training

usefulness

Out of 26 respondents

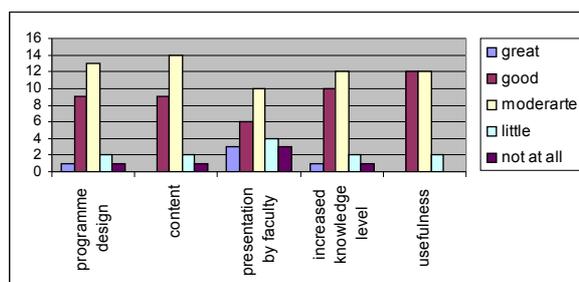
no one found this module useful to his/her job up to a great extent

12 people said that it is useful up to a good extent

12 people said that it is useful up to a moderate extent

2 people said that it is useful only to a little extent

While no people found it of no use



Graph 8 showing responses for Industrial Health Safety and Business Environment module

Module C (g): Quality and TQM & Business process

Parameter	great	good	moderate	little	not at all
programme design	2	15	5	3	1
Content	2	11	10	2	1
presentation by faculty	2	10	9	3	2
increased knowledge level	3	12	8	2	1
Usefulness	2	12	7	4	1

Table9

Programme Design

Out of 26 executives

2 people said that programme design was satisfactory up to a great extent

15 people were satisfied up to a good extent with the programme design

5 were satisfied up to a moderate extent

3 people were satisfied only to a little extent

While only one people said that programme design was not satisfactory at all.

contents of programme

Out of 26 respondents

only 2 people satisfied up to a great extent with the contents of programme

11 people were satisfied up to a good extent

10 were satisfied up to a moderate extent

2 was satisfied only to a little extent

It is noteworthy that only one was there who found contents of programme unsatisfactory

presentation by faculty

Out of 26 respondents

2 were satisfied up to a great extent with the faculty's presentation

10 were satisfied up to a good extent with the faculty's presentation

9 were satisfied up to a moderate extent with the faculty's presentation

3 was satisfied only to a little extent on faculty's presentation

2 were said that faculty's presentation was not satisfactory at all.

increased knowledge level

Out of 26 respondents

only 3 people said that knowledge level has increased up to a great extent

12 people realized that their knowledge level has increased up to a good extent

8 people said that knowledge level has increased up to a moderate extent

2 people said that knowledge level has increased only to a little extent

Only one people said that there is no rise in their knowledge level after training

usefulness

Out of 26 respondents

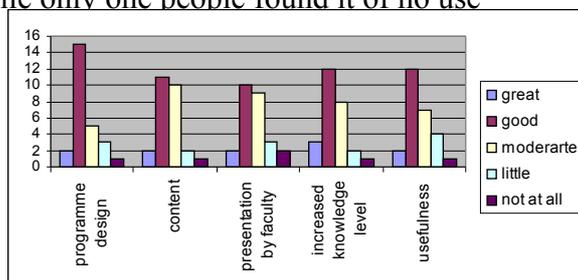
2 person found this module useful to his/her job up to a great extent

12 people said that it is useful up to a good extent

7 people said that it is useful up to a moderate extent

4 people said that it is useful only to a little extent

While only one people found it of no use



Graph 9 showing responses for Quality and TQM & Business processes module

Module C (h): Work Study & Productivity

Parameter	great	good	moderate	little	not at all
programme design	1	8	10	6	1
Content	0	8	12	5	1
presentation by faculty	0	7	13	4	2
increased knowledge					
level	1	10	10	3	2
usefulness	1	8	13	3	1

Table 10

Programme Design

Out of 26 executives

Only one said that programme design was satisfactory up to a great extent

8 people were satisfied up to a good extent with the programme design

10 were satisfied up to a moderate extent

6 people were satisfied only to a little extent

While only one said that programme design was not satisfactory at all.

contents of programme

Out of 26 respondents

no one was satisfied up to a great extent with the contents of programme

8 people were satisfied up to a good extent

12 were satisfied up to a moderate extent

5 was satisfied only to a little extent

It is noteworthy that only one was there who found contents of programme totally unsatisfactory

presentation by faculty

Out of 26 respondents

no one was satisfied up to a great extent with the faculty's presentation

7 were satisfied up to a good extent with the faculty's presentation

13 were satisfied up to a moderate extent with the faculty's presentation

4 was satisfied only to a little extent on faculty's presentation

2 people said that faculty's presentation was satisfactory not at all.

increased knowledge level Out of 26 respondents

3 people said that knowledge level has increased up to a great extent

12 people realized that their knowledge level has increased up to a good extent

8 people said that knowledge level has increased up to a moderate extent

2 people said that knowledge level has increased only to a little extent

Only one was there who said that there is no rise in his/hes knowledge level after training

usefulness Out of 26 respondents

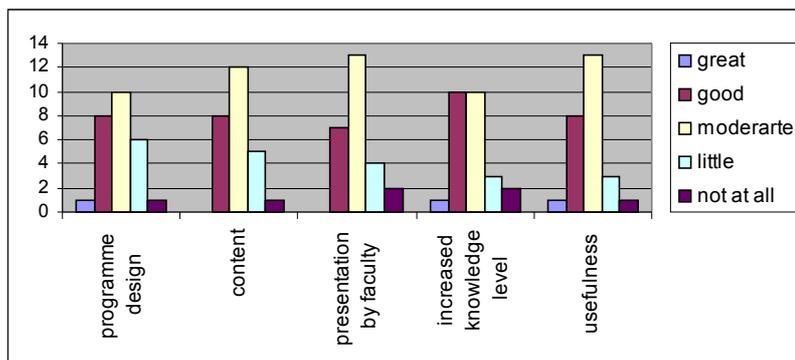
only one person found this module useful to his/her job up to a great extent

8 people said that it is useful up to a good extent

13 people said that it is useful up to a moderate extent

3 people said that it is useful only to a little extent

Only one people found it of no use



Graph 10 showing responses for Work Study and Productivity module

Module C(i): Commercial Management

Parameter	great	good	moderate	little	not at all
programme design	0	15	7	1	3

Content	1	13	9	1	2
presentation by faculty	3	11	9	3	0
increased knowledge	3	12	8	2	1
level					
usefulness	3	8	12	2	1

Table 11

Programme Design

Out of 26 executives

no one said that programme design was satisfactory up to a great extent

15 people were satisfied up to a good extent with the programme design

7 were satisfied up to a moderate extent

1 people were satisfied only to a little extent

While 3 people said that programme design was not satisfactory at all.

contents of programme

Out of 26 respondents

only one people satisfied up to a great extent with the contents of programme

13 people were satisfied up to a good extent

9 were satisfied up to a moderate extent

1 was satisfied only to a little extent

Only 2 were there who found contents of programme completely unsatisfactory

presentation by faculty

Out of 26 respondents

3 was satisfied up to a great extent with the faculty's presentation

11 were satisfied up to a good extent with the faculty's presentation

9 were satisfied up to a moderate extent with the faculty's presentation

3 was satisfied only to a little extent on faculty's presentation

No one said that faculty's presentation was not satisfactory at all.

increased knowledge level

Out of 26 respondents

only 3 people said that knowledge level has increased up to a great extent

12 people realized that their knowledge level has increased up to a good extent

8 people said that knowledge level has increased up to a moderate extent

2 people said that knowledge level has increased only to a little extent

Only one said that there is no rise in their knowledge level after training

usefulness Out of 26 respondents

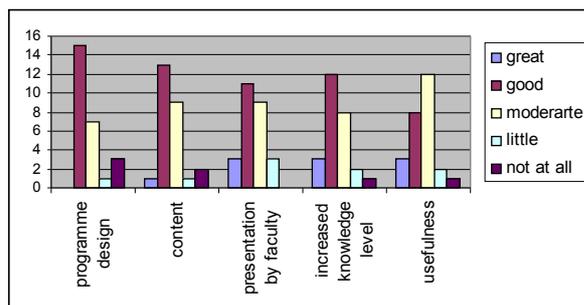
3 person found this module useful to his/her job up to a great extent

8 people said that it is useful up to a good extent

12 people said that it is useful up to a moderate extent

2 people said that it is useful only to a little extent

While one people found it of no use



Graph 11 showing responses for Commercial Management module

Module C(j): Production Management

Parameter	great	good	moderate	little	Not at all
programme design	2	9	11	3	1
Content	3	6	10	5	2
presentation by faculty	0	7	15	4	0
increased knowledge level	2	8	13	2	1
usefulness	2	8	13	2	1

Table12

Programme Design

Out of 26 executives

2 said that programme design was satisfactory up to a great extent

9 people were satisfied up to a good extent with the programme design

11 were satisfied up to a moderate extent

3 people were satisfied only to a little extent

While only one people said that programme design was not satisfactory at all.

contents of programme

Out of 26 respondents

only 3 people satisfied up to a great extent with the contents of programme

6 people were satisfied up to a good extent

10 were satisfied up to a moderate extent

5 was satisfied only to a little extent

It is noteworthy that only 2 was there who found contents of programme unsatisfactory

presentation by faculty

Out of 26 respondents

no one was satisfied up to a great extent with the faculty's presentation

7 were satisfied up to a good extent with the faculty's presentation

15 were satisfied up to a moderate extent with the faculty's presentation

4 was satisfied only to a little extent on faculty's presentation

No one said that faculty's presentation was not satisfactory at all.

increased knowledge level

Out of 26 respondents

only 2 people said that knowledge level has increased up to a great extent

8 people realized that their knowledge level has increased up to a good extent

13 people said that knowledge level has increased up to a moderate extent

2 people said that knowledge level has increased only to a little extent

1 person said that there is no rise in their knowledge level after training

usefulness Out of 26 respondents

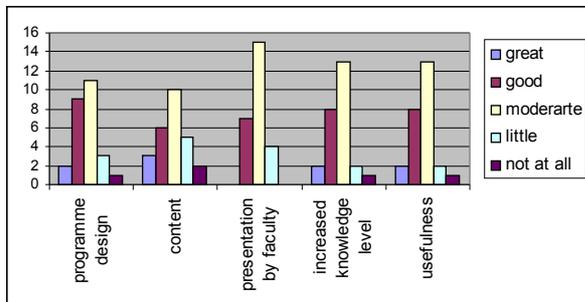
2 person found this module useful to his/her job up to a great extent

8 people said that it is useful up to a good extent

13 people said that it is useful up to a moderate extent

2 people said that it is useful only to a little extent

While only one people found it of no use



Graph 12 showing responses for Production Management module

Module C(k): Material Management

Parameter	great	good	moderate	little	not at all
programme design	0	6	14	4	2
Content	2	6	13	3	2
presentation by faculty	0	5	15	6	0
increased knowledge level	1	9	11	3	2
usefulness	3	8	12	3	0

Table 13

Programme Design

Out of 26 executives

No one said that programme design was satisfactory up to a great extent

6 people were satisfied up to a good extent with the programme design

14 were satisfied up to a moderate extent

4 people were satisfied only to a little extent

While 2 people said that programme design was not satisfactory at all.

contents of programme Out of 26 respondents

only 2 people satisfied up to a great extent with the contents of programme

6 people were satisfied up to a good extent

13 were satisfied up to a moderate extent

3 was satisfied only to a little extent

2 people one was there who found contents of programme unsatisfactory

presentation by faculty Out of 26 respondents

no one satisfied up to a great extent with the faculty's presentation

5 were satisfied up to a good extent with the faculty's presentation

15 were satisfied up to a moderate extent with the faculty's presentation

6 was satisfied only to a little extent on faculty's presentation

It is noteworthy that even a single person did not found faculty's presentation unsatisfactory

increased knowledge level Out of 26 respondents

only one people said that knowledge level has increased up to a great extent

9 people realized that their knowledge level has increased up to a good extent

11 people said that knowledge level has increased up to a moderate extent

3 people said that knowledge level has increased only to a little extent

2 people said that there is no rise in their knowledge level after training

usefulness Out of 26 respondents

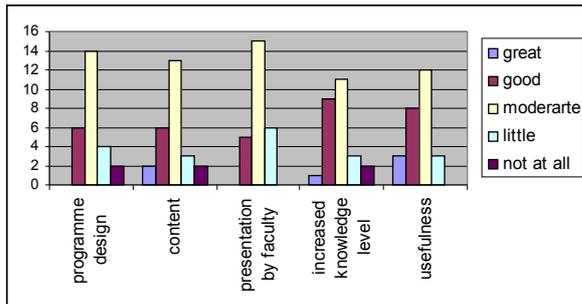
3 person found this module useful to his/her job up to a great extent

8 people said that it is useful up to a good extent

12 people said that it is useful up to a moderate extent

3 people said that it is useful only to a little extent

No one was there who found it useless



Graph 13 showing responses for Material Management Module

Module C(I): Information Technology, CAD, CAM

Parameter	great	good	moderate	Little	not at all
programme design	3	8	12	2	1
Content	2	7	9	6	2
presentation by faculty	4	6	10	5	1
increased knowledge level	3	8	11	3	1
usefulness	3	10	10	3	0

Table 14

Programme Design Out of 26 executives

3 that programme design was satisfactory up to a great extent

8 people were satisfied up to a good extent with the programme design

12 were satisfied up to a moderate extent

2 people were satisfied only to a little extent

Only one said that programme design was not satisfactory at all.

contents of programme Out of 26 respondents

only 2 people satisfied up to a great extent with the contents of programme

7 people were satisfied up to a good extent

9 were satisfied up to a moderate extent

6 was satisfied only to a little extent

2 people were there who found contents of programme unsatisfactory

presentation by faculty Out of 26 respondents

4 was satisfied up to a great extent with the faculty's presentation

6 were satisfied up to a good extent with the faculty's presentation

10 were satisfied up to a moderate extent with the faculty's presentation

5 was satisfied only to a little extent on faculty's presentation

Only one said that faculty's presentation was not satisfactory at all.

increased knowledge level Out of 26 respondents

3 people said that knowledge level has increased up to a great extent

8 people realized that their knowledge level has increased up to a good extent

11 people said that knowledge level has increased up to a moderate extent

3 people said that knowledge level has increased only to a little extent

Only one person said that there is no rise in their knowledge level after training

usefulness Out of 26 respondents

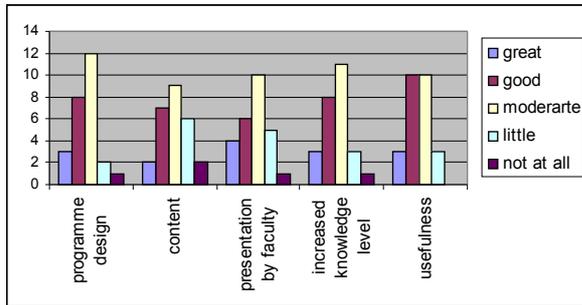
3 person found this module useful to his/her job up to a great extent

10 people said that it is useful up to a good extent

10 people said that it is useful up to a moderate extent

3 people said that it is useful only to a little extent

It is noteworthy that no one was there who found it completely useless



Graph 14 showing responses for Information Technology, CAD, CAM module

CHAPTER 4

FINDINGS & SOLUTIONS

FINDINGS & SOLUTIONS

The Human Resource Development Department for the first time made an effort for "on training feedback system at BHEL" in order to evaluate the effectiveness of Common Induction Training programme. For this purpose I select the following parameters and code the responses from great extent, good extent, moderate extent, and little extent to not at all for each and every module. Selected parameters are:

Programme Design

Content

Presentation by Faculty

Increased knowledge level

Usefulness

CHAPTER 4.1

CONCLUSION

CONCLUSION

Training & HRD activity are important function of the personnel Department. These activities are continuous process in integrating organization and individual needs for growth and development of the employees. The HRD efforts re oriented towards artisans, supervisors, apprentices, engineers, trainers and such other categories, of the employees.

Increase managerial effectiveness.

Development of skills and trust.

Nourishing a value system.

Co-ordination of training efforts.

CHAPTER 4.2

RECOMMENDATIONS & SUGGESTIONS

RECOMMENDATIONS & SUGGESTIONS

The Human Resource Development Department for the first time made an effort to check for "on the job" effectiveness of the training programmes which they conduct throughout the year. Evaluating effectiveness of training programmes, how effectively has it helped the trainees in various practical areas is as important an activity as conducting the programme itself.

In order to know how the employee has benefited over a period of time, their controlling officers were asked.

Also in order to make the present study useful for the future use of HRD in continuing with the practice of evaluating on the job effectiveness, following suggestions regarding the findings and conduction of the study are given:

While collecting the data it was observed that many people were enthusiastic about HRD conducting a survey. This shows that the employees were acknowledging the efforts made by the organization for growth of their employees. To keep building positive image of the organization in front of its employees HRD must take initiative of conducting surveys and taking an action on their results in other areas as well.

Any survey provides for indirect communication channel for employees to keep their words in front of the management. One such finding was from Finance Depts. that asked for advanced MS Excel programmes but due to certain limitations of the depts. was provided with basic Excel training Programmes. So that these issues find a way to the management more qualitative survey where people find source of expression should be thought over. The present study used the same criteria for judging all the programmes. However, technically, every programmes must have its own evaluation criteria depending on the contents of the programmes.

While compiling and analyzing the data, it was observed that most of the people have responded in a similar way to all the questions. Thus the error of central tendency was observed.

Despite of the fact that most people replied promptly to the questionnaire, a few filled it without actually meaning it. This has marred the credibility of the results considerably. So

that people take the questionnaire seriously, management must brief the people about the ongoing surveys officially.

Only the controlling officers judged the effectiveness of the training programmes, however in order to get a complete overview views of the co-workers and the person himself must be taken.

A few programmes in the present study were being evaluated after 11 months. Effort should be made while imparting the training programmes itself that people are informed of it effective evaluation scheme.

All the people who attended the programmes could not be tracked. While using the results it should be kept in mind that the sample does not adequately represent the population.

CHAPTER 4.3

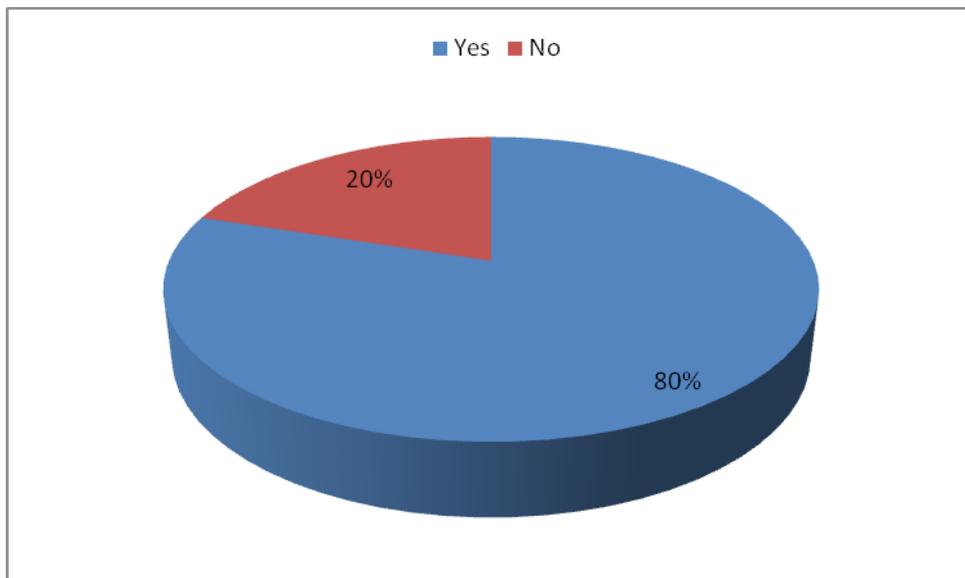
QUESTIONNAIRE

**RELATED QUESTIONNAIRE ABOUT TRAINING AND ITS
EFFECTIVENESS**



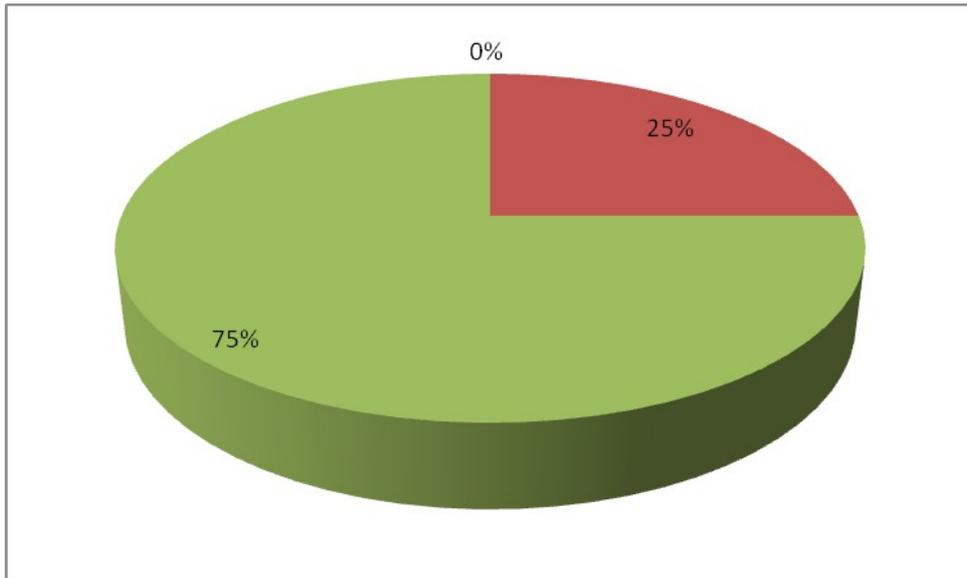
1. Your organization consider training is the part of organization strategy ?

Answer - YES



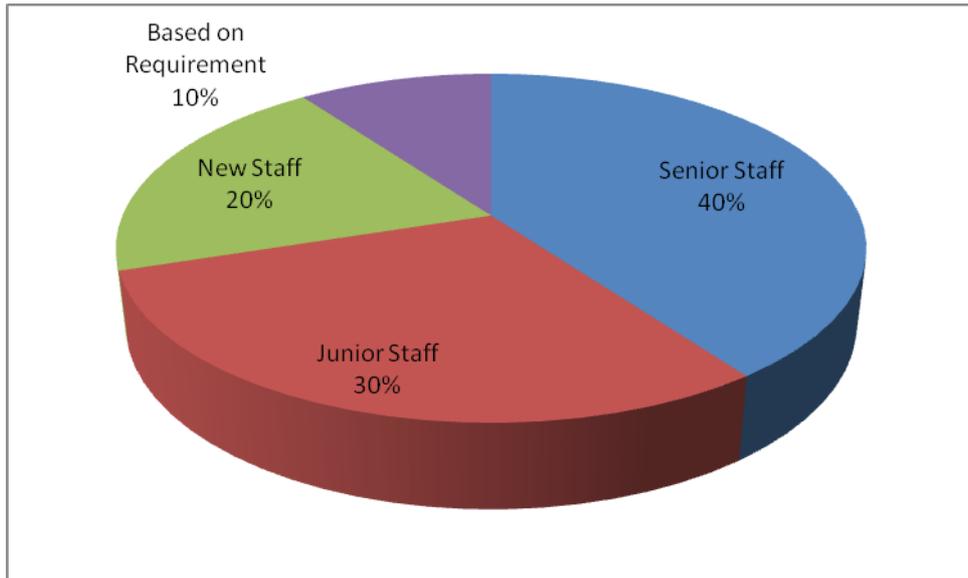
2. How many training programme will you attend in a year?

Answer - More than 40, 10, 30



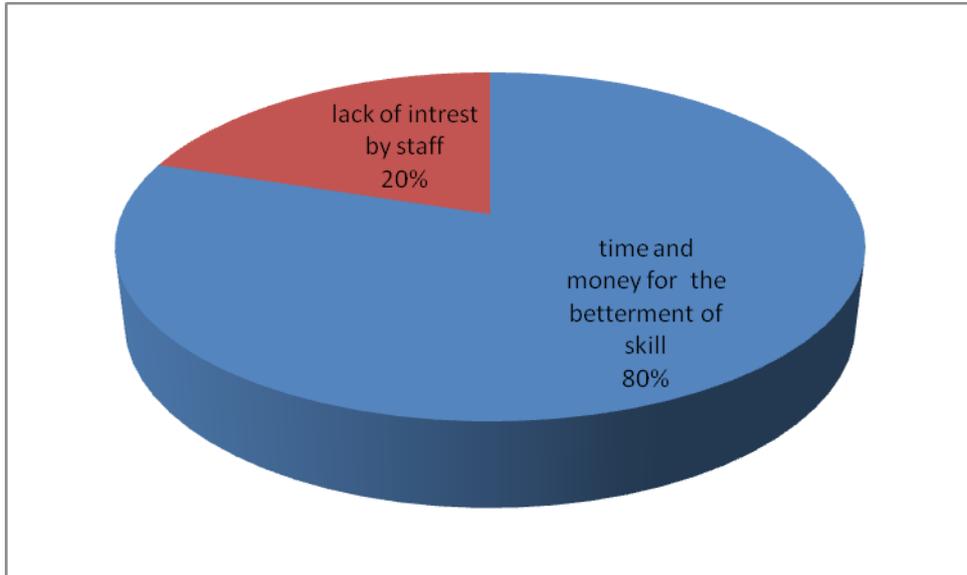
3. To whom the training is given to more in your organization?

Answer- a) Senior staff, b) Junior staff , c)New staff, d) based on requirement



4. **What are all the important barriers to the training and development in your organization a) time and money for the betterment of skill or b) lack of interest by staff ?**

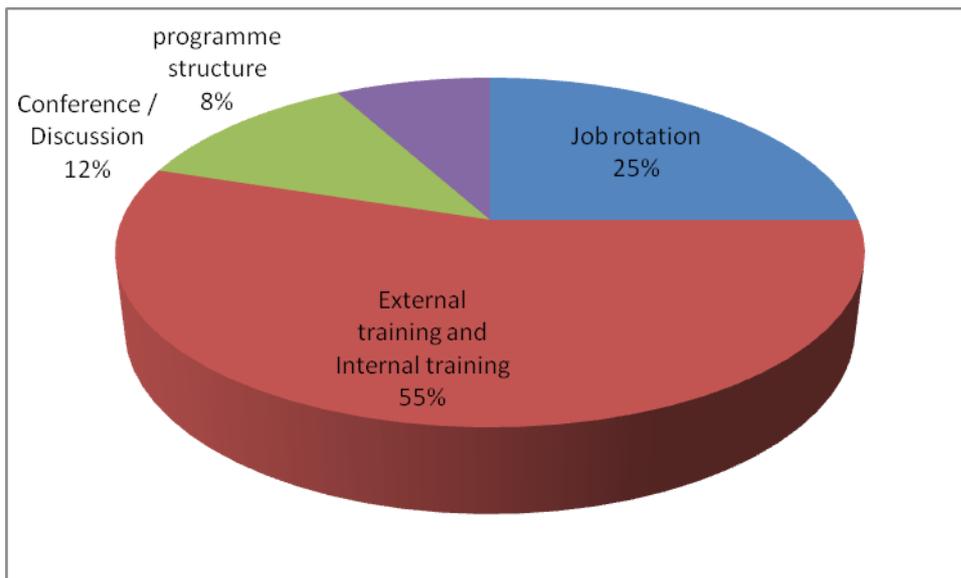
Answer- Time for betterment of skill



5. What mode of training method normally used in organization ?

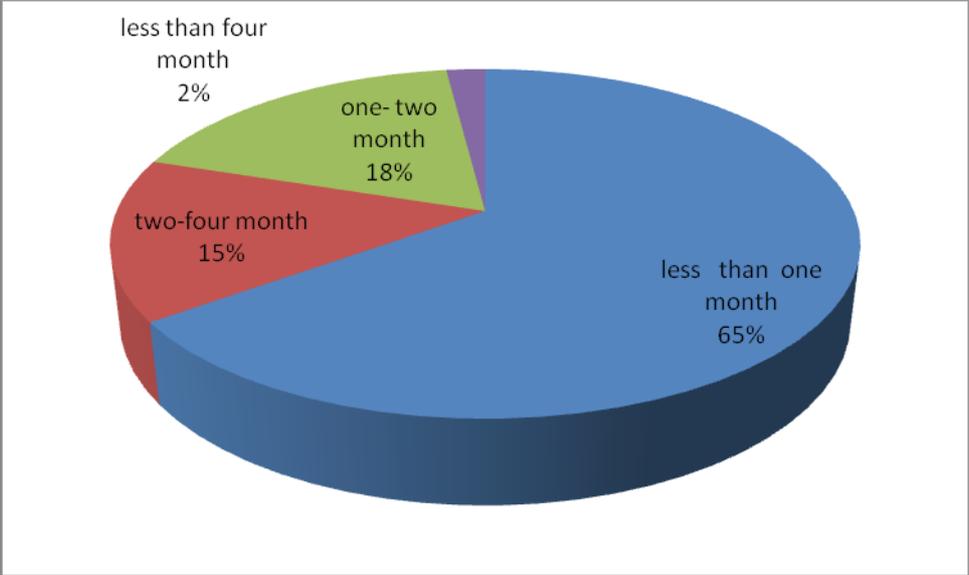
- a) Job rotation b) External training and Internal training c) Conference / Discussion d) programme structure..

Answer- External training and Internal training



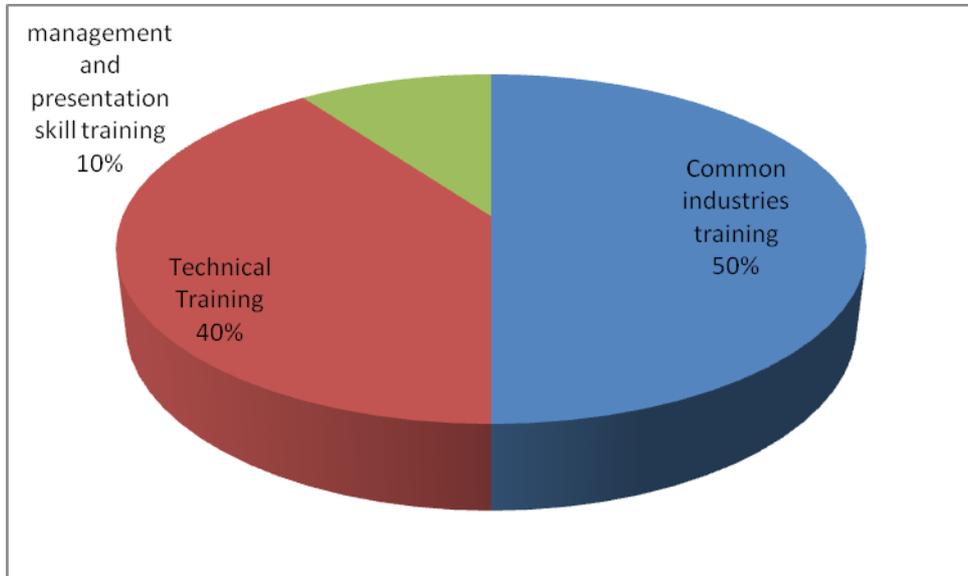
6. How long will it take to implement the trained process ?

Answer- less than one month, two-four month, one- two month, less than four month



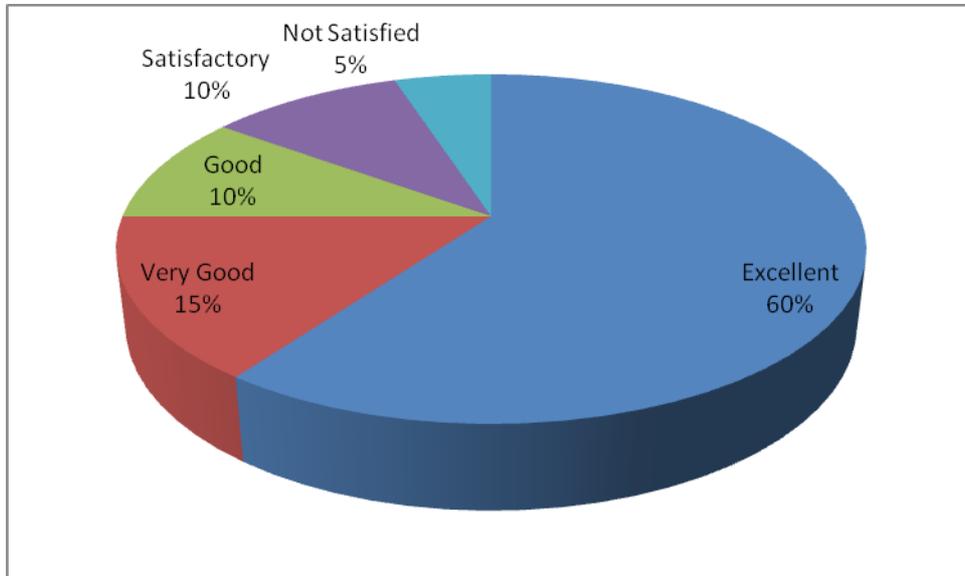
7) What type of training is being imported for recruitment in your organization?

Answer- Common industries training, technical, management and presentation skill training.



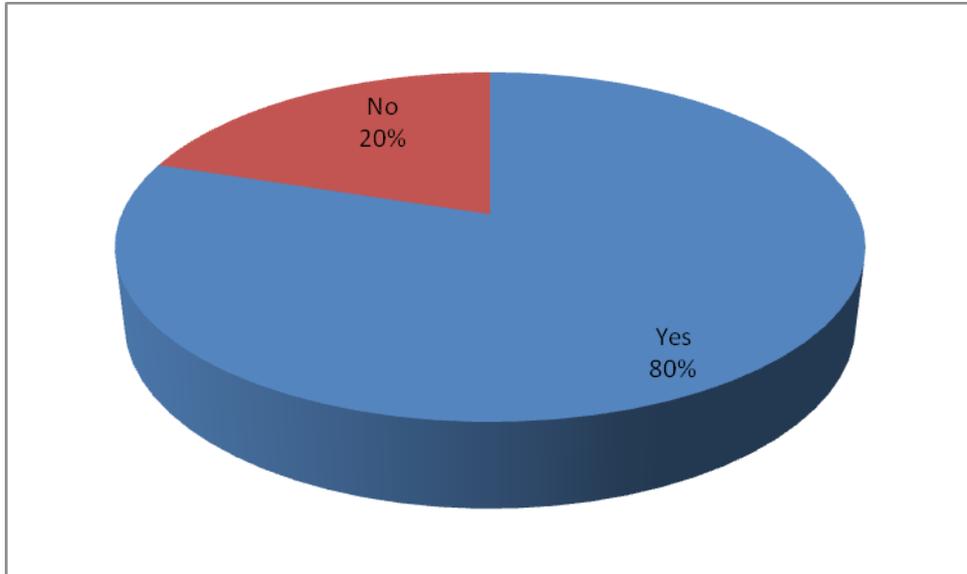
8) How will the work place of the training is physically organized?

Answer - Excellent



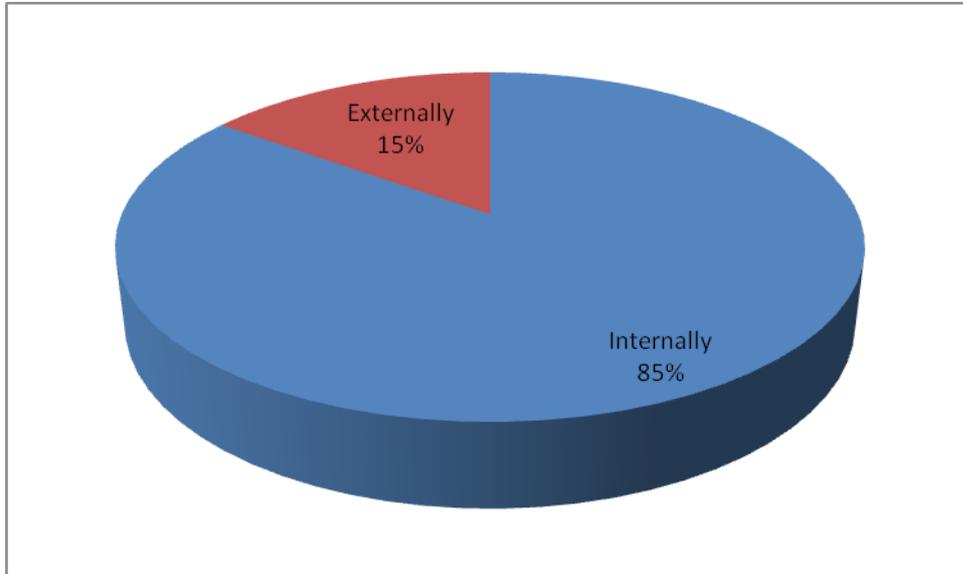
9) Do you agree organization measure return on investment in training

Answer- Yes



10) How are training resources identify ?

Answer- Internally..



CHAPTER 5

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BIBLIOGRAPHY

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CHAPTER 6

ANNEXURE

ANNEXURE

A. Training data - Employee - wise

Category of employees	No. of employees trained	Man days per employee
Executives	985	2.27
Supervisors	310	2.70
Artisans	380	1.48
Trainees		
- ETs	34	72
- Supervisory		
Trainees	31	38
- Other Trainees	-	-

B. No. of employees Trained for re-deployment including training for transferee employees

C. No. of employees Trained under Multi-skill training :

D. No. of employees trained under Skill Upgradation Training :

HRD highlights for the year 2008-09 including -

F. Readiness for future -expansion/modernization and achievement towards capability building.

G. Training of non-employees -

	No.	Prog.	
Non-employees	Trained	Days	Remarks
Customers	10	72	1) Electricity Generation Co. of Bangladesh
Act. Apprentices	256	77800	Trade App./ Tech. App/ Graduate App.
Vocational			
Trainees			
(Category wise)	750	13500	