

**ASSESSMENT OF TRAINING PROGRAMS OF SKILL
DEVELOPMENT INSTITUTES (SDIs) UNDER THE SKILL INDIA
MISSION OF THE GOVERNMENT OF INDIA WITH SPECIAL
REFERENCE TO THE HYDROCARBON SECTOR**

**A THESIS SUBMITTED
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY**

**IN
MANAGEMENT**

**BY
BISWABHUSHAN BEHERA
REGD. NO. – 19GSOB3010004**

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**GALGOTIAS UNIVERSITY
UTTAR PRADESH**

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8. The thesis has not been submitted elsewhere for a degree.

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APPROVAL SHEET

This thesis/dissertation/report entitled **Assessment of Training Programs of Skill Development Institutes (SDIs) under the Skill India Mission of the Government of India with Special Reference to the Hydrocarbon Sector** by **Biswabhusan Behera** is approved for the degree of **Doctor of Philosophy**.

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CANDIDATE’S DECLARATION

I hereby certify that the work which is being presented in the thesis, entitled **“Assessment of Training Programs of Skill Development Institutes (SDIs) under the Skill India Mission of the Government of India with Special Reference to the Hydrocarbon Sector”** in fulfillment of the requirements for the award of the degree of Doctor of Philosophy in **School of Business** and submitted in Galgotias University, Greater Noida is an authentic record of my own work carried out during a period from **September 2019 to June 2022** under the supervision of **Prof. (Dr.) Mamta Gaur**.

The matter embodied in this thesis has not been submitted by me for the award of any other degree of this or any other University/Institute.

(Biswabhusan Behera)

This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

(Prof. (Dr.) Mamta Gaur)

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Sign. of Supervisor

Sign. of External Examiner

STATEMENT OF ORIGINAL AUTHORSHIP

The work contained in this thesis has not been previously submitted for a degree or diploma at any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

(Biswabhusan Behera)

Date: 30.07.2022

ABSTRACT

A nation's economic and social progress is significantly influenced by the workforce's abilities and expertise. The ability to handle internal and international challenges and opportunities is a competitive advantage for countries with higher levels and better standards of skilled labour. The Ministry of Skills Development & Entrepreneurship was founded by the Government of India with a defined goal for skill development (MSDE). The government's efforts to help aspirant youth build their skills through a variety of programmes under the Skill India Mission are admirable and deserving of praise. The incremental skill requirement and training need from 2017 to 2022 across 34 major sectors is estimated to be roughly 128.21 million, according to the NSDC's Skill Action Plan. The hydrocarbon industry is one of these crucial industries. To help with the skill development needs in the hydrocarbon sector, the Hydrocarbon Sector Skill Council (HSSC) was founded on April 26, 2016, in compliance with India's National Skill Development Mission. The skill set required in the hydrocarbon business is radically different from any other sector because this industry involves handling volatile goods and working in a combustible and hazardous environment. Six state-of-the-art Skill Development Institutes (SDIs) located in Ahmedabad, Bhubaneswar, Guwahati, Raebareli, Kochi, and Vizag provide for the country's sectoral needs. These SDIs provide skill development in the petroleum industry and its sub-industries. The researcher has chosen the hydrocarbon industry to investigate how skill development institutes operating in this industry rate their training programmes.

By critically analysing the policy framework and initiatives, evaluating the results and challenges, and considering opportunities and future directions for the success of the Skill Development Initiative and closing the skill gaps, literature on a variety of key topics was reviewed with the primary goal of understanding the current position of India's skill development landscape. It was discovered that research at the macro level had been conducted and an overall perspective had been adopted. The Government of India's Skill India Mission developed Skill Development Institutes (SDIs) in the hydrocarbon sector, but no micro-level research has been done to evaluate training programmes there in terms of validity, flexibility, fairness, or evaluation satisfaction. In order to evaluate the training programmes being offered at SDIs managed by

significant Public Sector Undertakings (PSUs) in the hydrocarbon sector, this research has been taken to have the micro analysis.

The data were gathered by the researcher using the questionnaire approach from respondents who are former students and trainers from the several SDI campuses spread throughout different regions of India, including Bhubaneswar, Ahmedabad, Kochi, Guwahati, Visakhapatnam, and Raebareli. The onus of defining the study objectives has fallen entirely on the researcher. The research process and the research strategy were included in the researcher's further explanation of the research design. The researcher has put out a conceptual model. The sampling strategy has been established. Procedures for data collecting and analysis have been incorporated by the researcher.

The researcher has made every effort to ascertain trainees' perceptions of the assessment procedures used by Skill Development Programs and their contribution to students' empowerment. These trainees are receiving training at several SDI campuses. Due to this, the researcher chose to utilise the Likert scale and used the primary data collected from the employees enrolled in SDI campuses around the country. Responses from In-charges, Trainers, and Trainees of 6 SDIs were collected in the process of collecting the results for the objectives adopted by the researcher. To clarify his goals, the researcher employed the Likert's five-scale approach. Regression and correlation techniques were applied in this study.

It has been shown that the curriculum of the Skill Development Program considerably upskills students in preparation for careers in the hydrocarbon sector. The curriculum is significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector. The evaluation performed in the SDIs is largely valid to satisfy the needs of the hydrocarbon sector as of the present. The Skill Development Programs vary in how fairly they evaluate the programmes based on factors including age, education, gender, employment history, location of the institution, and demographics of the trainees. The flexibility of the curriculum delivery approach and the application of fairness in the assessment of applicants' grasp of the subjects taught have a strong link in the Skill Development Programme.

The findings of the study indicates:

- (i) 470 questionnaires were distributed spreading over diverse demography out of

which 386 i.e. 82.1% of respondents responded. In the demography variable Years of Employment, it is observed that highest was the group having 0-1.0 years of employment, with 157 respondents and lowest was 2.1 -3.0 years, with 105 respondents constituting 27.20 %.

- (ii) In the demography variable Gender, out of 386 respondents 225 are the males constituting 58% and rest 161 respondents were females constituting 42 %.
- (iii) In the demography variable Age, the highest responses were in of 18-22 years with 156 respondents & 40.41 %. Second was 23-27 years with 125 respondents & 32.38 %. Last was 28-32 years with 105 respondents & 27.20%.
- (iv) In the demography variable Qualification, the highest was 8th-12th with 143 respondents that constitutes 37.05% of total responses received. Followed by ITI qualification with 125 responses and constituting 32.38% . Last were Diploma qualification with 118 responses, it constitutes 30.57%.
- (v) In the demography variable income, the highest number of responses were in the income level of Rs. 100001 – Rs. 150000 per annum with 101 responses constituting 26 %. Followed by Rs. 150001 – Rs. 200000 per annum with 92 responses constituting 24 %, Last in the category were income level of more than Rs. 300000 per annum constituting only 6%.
- (vi) In the demography variable location of SDI, 89 respondents belonged to SDI Raebareli Campus that counts 23% highest amongst all. Followed by SDI Guwahati Campus with 74 responses i.e. 19%. Last were from SDI Kochi with 52 responses constituting only 13 % of the total responses.
- (vii) In the demography variable skill category, highest was 147 respondents who were semi-skilled, followed by 132 respondents who were skilled and last were 107 respondents of highly-skilled category. They constitute 38.08%, 34.20% and 27.72% respectively.

The findings indicate that the curriculum of the Skill Development Program considerably upskills students in preparation for careers in the hydrocarbon sector. The curriculum is substantially reliable for boosting the competency levels in the students that help them to pursue their professions in Hydrocarbon Sector. The evaluation performed in the SDIs is largely valid to satisfy the needs of the hydrocarbon sector as

of the present. The Skill Development Programs vary in how fairly they evaluate the programmes based on factors including age, education, gender, employment history, location of the institution, and demographics of the trainees. The flexibility of the curriculum delivery approach and the application of fairness in the assessment of applicants' grasp of the subjects taught have a strong link in the Skill Development Programme. The training and skill-development programmes vary in fairness in the evaluation of the programmes depending on the demographic details of the students, such as age, education, gender, employment history, and institution location. The training at SDI has greatly satiated the students, and the improvement in their skill set has made it easier for them to find employment once their programme is complete.

To cross check the in-charges of SDIs were interacted. During the interview and discussion with them, they shared a better vision on what more can be done so that in future the skill development trainings can actually achieve the real goal of Skill India Mission. The question is not about the present jobs available generally in the market but the future jobs of the 21st Century specific to the requirement of Hydrocarbon Sector not only domestic but even global. To stretch for that ambitious goal the following suggestions evolved out from the research.

- a) **Redesigning of the Curriculum :** The social perception and acceptability of Skill Development Training is way behind compared to Technical academic education. The skill training programs of SDIs need to be reformed / redesigned with support of Industry and also ensured that it is recognized by AICTE. The Theory Curriculum should be specifically designed with help of Industry Experts and OEM (Original Equipment Manufacturer) consultants to suit the current & future need of the Hydrocarbon Industry so that they are relevant, contemporary and future focused.
- b) **Employment / Entrepreneurship Support :** Currently all the six SDIs are providing placement assistance to the trainees passing out of the SDI after completing the Training program. However, it is felt that mere placement assistance to the trainees is not enough as some trainees after they were placed have become jobless. Taking into practical aspects of the situation, the following options for employment / entrepreneurship support are suggested:

- (i) **Probation & absorption by promoting Industry:** The PSUs of the Hydrocarbon Sector may engage the passed out trainees on probation for at least 1 year after the training completion and absorb some of them who are best suitable.
- (ii) **Employment through Contractors:** PSUs of the Hydrocarbon Sector and Private Corporates of the Hydrocarbon Sector may advise/instruct the contractors in their organisation to engage or give preference to the passed-out trainees from these SDIs, while engaging contract workers in their premises.
- (iii) **Entrepreneurship Development:** More and more trainees should be encouraged to go for entrepreneurship. The Promoting PSUs of the Hydrocarbon Sector can provide them the initial help by providing them the required machinery, and technical support.
- (iv) **Cooperative Societies** The promoting PSUs of the Hydrocarbon Sector can encourage the passed-out trainees to form Cooperative Societies to whom certain operation & maintenance activities can be outsourced. Initial hand-holding may be provided to these cooperative societies to register their business for ensuring all statutory compliances.

The government already considers the SDI's of Hydrocarbon Sector as 'Centre of Excellence', it should also recognize the Training / Skill Development Program of these SDIs equivalent to ITI / Diploma academic qualifications. Accordingly, a model has been framed which can take the Training / Skill Development at SDIs to the next level where the trainees would be hot cakes in the world of work domestically as well as globally. The Trainees will benefit with from it with better career prospects, the Hydrocarbon Sector would benefit by getting the talent they want and even the country would benefit. The goal of enhancing the employability would be achieved in real sense. Accordingly, a model has been suggested to make the training program at SDI better to suit future employment opportunity.

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LIST OF PUBLICATIONS

S.No.	School	Authors	Title of Paper	Name of Journal / Conference
1	SOB	Biswabhushan Behera & Dr. Mamta Gaur	Skill Development in India – A Literature Review	GIS SCIENCE JOURNAL
2	SOB	Biswabhushan Behera & Dr. Mamta Gaur	Skill Development Training Fueling Employability in India	Journal of Xidian University
3	SOB	Biswabhushan Behera & Dr. Mamta Gaur	Skill Development a Preferred CSR Initiative: A Comparative study of select Oil & Gas Central Public Sector Enterprises	NVEO – Natural Volatiles & Essential Oils
4	SOB	Biswabhushan Behera & Dr. Mamta Gaur	Impact of covid19 on the skill development movement in India	TIPSCON-2020, 10th National Conference on “Society 4.0 –A Futuristic Perspective On Future Of Work, Jobs And Skills-Post Covid-19”
5	SOB	Biswabhushan Behera & Dr. Mamta Gaur	Skill Development of Women for Atmanirbhar Bharat	3-Day International Conference On Glass Ceiling: Issues and Challenges on Women Career Development in Educational Institutions
6	SOB	Biswabhushan Behera & Dr. Mamta Gaur	Emergence of India as the Skill Capital of World - Possibilities & Path Ahead	International Conference IMCIAC Virtual 2022
7	SOB	Biswabhushan Behera & Dr. Mamta Gaur	Emergence of India as the Skill Capital of World - Possibilities & Path Ahead	International Journal of of Innovations & Research Analysis (IJIRA)

ABBREVIATIONS AND ACRONYMS

AICTE	All-India Council of Technical Education
AIED	Artificial Intelligence in Education
AQF	Australian Qualification Framework
BCPL	Brahmaputra Cracker and Polymer Ltd.
BPCL	Bharat Petroleum Corporation of India
CAL	Computer Aided Learning
CEDEFOP	European Centre for the Development of Vocational Training
CGD	City Gas Distribution
CIPET	Central Institute of Petrochemicals Engineering & Technology
COE	Centres of Excellence
CTE	Career and Technical Education
CPSE	Central Public Sector Enterprise
DGT	Director-General of Training
DLLS	Digital Literacy as Life Skill'
EIL	Engineers India Limited
GAIL	GAIL (India) Limited
G2G	Government to Government
HPCL	Hindustan Petroleum Corporation Limited
HSSC	Hydrocarbon Sector Skill Council
IOCL	Indian Oil Corporation Limited
ILO	International Labor Organization
IIT	Indian Institute of Technology
IIM	Indian Institute of Management
ISB	India School of Business
ITI	Industrial Training Institute
FMS	Faculty of Management Studies
LFP	Labor Force Participation
LMIS	Labor Market Information System
LHC	Liquid Hydrocarbon
LPG	Liquefied Petroleum Gas
MSDE	Ministry of Skill Development & Entrepreneurship
MoPNG	Ministry of Petroleum & Natural Gas
MHRD	Ministry of Human Resource Development
MoE	Ministry of Education
MRPL	Mangalore Refinery and Petrochemicals Limited
NAPS	National Apprenticeship Promotion Scheme
NCVT	National Council for Vocational Training
NIT	National Institute of Technology
NRL	Numaligarh Refinery Ltd.
NSDA	National Skills Development Agency
NSDC	National Skill Development Corporation
NSDF	National Skill Development Fund
NSDM	National Skill Development Mission

NSTI	National Skill Training Institutes
NSQC	National Skills Qualifications Council
NSQF	National Skills Qualifications Framework
NTTF	Nettur Technical Training Foundation
NOS	National Occupational Standards
NQF	National Qualification Framework
ONGC	Oil & Natural Gas Corporation
OIL	Oil India Limited
OECD	Organisation for Economic Co-operation and Development
OVL	ONGC Videsh Limited
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
PMKK	Prime Minister Kaushal Kendra
PPP	Public Private Partnership
PSU	Public Sector Undertakings
RDAT	Regional Directorates of Apprenticeship Trainings
RDSDE	Regional Directorate of Skill Development and Entrepreneurship
RPL	Recognition or Prior Learning
RTO	Registered Training Organizations
SPJIMR	S. P. Jain Institute of Management & Research
SANKALP	Skills Acquisition and Knowledge Awareness for Livelihood Promotion
SCVT	State Council for Vocational Training
SD	Sustainable Development
SDI	Skill Development Institute
SSC	Sector Skill Council
STRIVE	Skills Strengthening for Industrial Value Enhancement
TOT	Training of Trainer
TVET	Technical and Vocational Education and Training
VET	Vocational Education and Training
VTE	Vocational and technical education

CHAPTER - 1
INTRODUCTION

CHAPTER - 1

INTRODUCTION

1.0 Background

Economic growth & social development of a country is largely driven by skills and knowledge of the workforce. Nations with higher levels & better standards of the skilled workforce have an edge in dealing with domestic and global challenges & opportunities.

30% of the Indian youth are 'not in employment as per the report of the Organisation of Economic Cooperation and Development (OECD). Casual workers, constituting about 90% of the workforce, are poorly skilled. Most of the educated workforce is unemployable, possessing little or no job skills. The youth finds it difficult to adapt to the dynamic demands & technologies of the marketplace due to a lack of vocational or professional skills. Unemployment is mainly because India faces an acute shortage of well-trained, skilled workers. The youth fail in getting jobs due to lack of skill & training.

Skills and knowledge drive the economic growth & social development of a country. Nations with higher levels & better standards of the skilled workforce have an edge in dealing with domestic and global challenges & opportunities.

As per a report of the Organisation of Economic Cooperation and Development (OECD), 30% of the Indian youth are 'not in employment. Casual workers, constituting about 90% of the workforce, are poorly skilled. Most of the educated workforce is unemployable, possessing little or no job skills. The youth finds it difficult to adapt to the dynamic demands & technologies of the marketplace in the absence of vocational or professional skills. Unemployment in India is due to an acute shortage of well-trained, skilled workers. The youth fail to get jobs due to a lack of skill & training.

On an average 2.3 % of the workforce in India has undergone formal training on skills as compared to 96% in South Korea, 80% in Japan, 68% in the UK, 75% in Germany, and 52% in the USA. As per a study made by the Skill Development Council (NSDC),

around 12 crores of skilled workforce is required by 2022 across critical sectors. Hence, India has to scale up its skill training efforts to meet the demands of employers and drive economic growth. India's annual skilling capacity during 2013-2014 was only 7 million approx. And it grew exponentially over the years. With this rising skilling capacity and skilled workforce, experts say, India can meet its domestic demand and potentially fill the expected gap in the ageing developed economies.

With a 62 percent working-age population, India has a sizable youth labour force (i.e. 15-59 years). According to analysts' predictions, the population pyramid of the nation will bulge throughout the 15–59 age group during the following ten years, although this demographic advantage will only endure through 2040. India has a limited amount of time to take advantage of its demographic dividend and address its talent shortages.

To achieve the goal of skilling in India, the skill training efforts span several industries and demand the participation & alignment of its diverse stakeholders, including numerous central & state level government departments, private training providers, educational & training institutions, employers, industry associations, assessment & certification bodies, and trainees. In order to unify, scale up, and accelerate the current skill training initiatives and skilling activities, the Government of India established a distinct dedicated Ministry, i.e., the Ministry of Skill Development & Entrepreneurship (MSDE), in November 2014.

The Government of India's ambitious program, Skill India, was introduced on July 16, 2015, by the Honorable Prime Minister Shri Narendra Modi. The National Policy for Skill Development and Entrepreneurship 2015, the Pradhan Mantri Kaushal Vikas Yojana, and the Skill Loan scheme are among the measures. The ambitious aim under Skill India is to train 40 crore people by 2022 in different skills by creating a convergence of all skill training activities across various sectors & States, consolidating & coordinating skilling efforts, and expediting decision-making for skilling with the desired scale, speed & standards. A streamlined institutional mechanism driven by MSDE implements the Skill India Mission. The three-tier mechanism for achieving the objectives of the Mission includes a Governing Council, a Steering Committee, and a Mission Directorate. The National Skill Development Agency (NSDA), National Skill

Development Corporation (NSDC), and Directorate General of Training (DGT) support the Mission Directorate in the skilling endeavour. Institutional Training, Infrastructure, Convergence, Trainers, Overseas Employment, Sustainable Livelihoods, and Leveraging Public Infrastructure are the sub-missions that serve as the foundation for fulfilling the mission's overarching goals. To help India meet its skilling goals, this framework creates a clear course of action and offers strategic direction.

Despite government efforts, unemployment is evolving into the new normal. Due to restrictions within the numerous government projects, the initiative Skill India, which aims to develop the skills of Indians, is producing very minor benefits. The societal acceptability of vocational education is another issue. The country's lack of skill standardisation, low trainer quality, and inadequate infrastructure in training facilities all worsen the skilling scenario. These problems must be solved if India is to grow into a \$5 trillion economy.

The government's endeavour toward skill development of aspiring youth through various schemes under the Skill India Mission is laudable and commendable. According to the Skill Action Plan of NSDC, the incremental skill requirement and training need is around 128.21 million from 2017-2022 across 34 key sectors.

One of these important sectors is the hydrocarbon industry. The Hydrocarbon Sector Skill Council (HSSC) was established on April 26, 2016, in accordance with India's National Skill Development Mission, to assist with the skill development requirements in the hydrocarbon sector. Because this industry entails handling volatile products and working in a flammable and dangerous environment, the skill set necessary in the hydrocarbon sector is completely different from any other sector. The country's sectoral needs are met by six cutting-edge Skill Development Institutes (SDIs) located in Ahmedabad, Bhubaneswar, Guwahati, Raebareli, Kochi, and Vizag. These SDIs offer skill training in the hydrocarbon sector and its sub-sector.

The researcher has selected this sector to study the assessment of training programs carried out by Skill Development Institutes falling under the Hydrocarbon Sector.

1.1 Training, Learning and Skill Development

The Skill India Mission aims to enhance the employability of the aspiring youth of the country. The government and the Private Sector are creating job opportunities, but aspiring youth are not suitable to take up those jobs due to a lack of required skills. They cannot be employable until they learn the necessary marketable skills. Skill development of these youth can only happen when they are provided with relevant training, allowing them to understand the required skills to match the requirement of the industries. When they are empowered with the needed skills, the aspiring youth will become more acceptable by the Industry for employment.

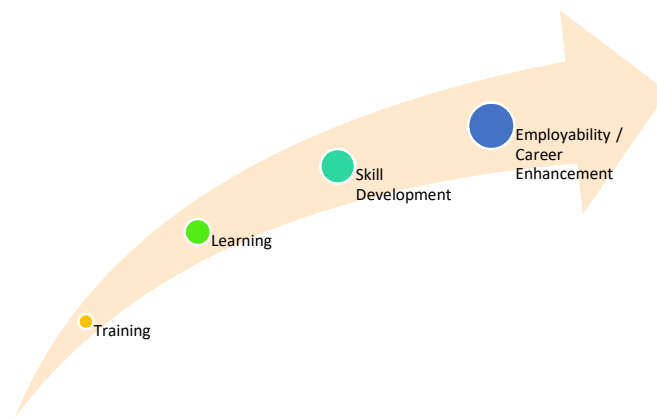


Figure 1.1: Training, Learning and Skill Development

1.1.1 Training

Training is the methodical process of giving a person the necessary abilities to perform their work in an effective, efficient, skilled, and high-quality manner. To improve employees' performance, it entails acquiring knowledge, honing abilities, concepts, and regulations, as well as changing attitudes and behaviours.

Enhancing individual competency and organisational performance is the goal of this activity, which produces skilled behaviour. Training is a systematic process through which individual employees gain the required knowledge and develop skills through instruction & practical activities.

It involves learning a series of predetermined behaviours. It entails putting information into practise and makes people aware of the norms and processes that should govern their behaviour. It aids in bringing about good change in the knowledge, abilities, and attitudes of employees.

It is an investment in your ability to produce more work of higher calibre. The goal is to equip employees with better skills and knowledge so they can perform their current duties or get ready for a job with more responsibility down the road. It fills the gap between what a person has and what a job requires. It is a quick, regular process that is given in a set amount of time. Typically, a specialist or professional in a related field or occupation provides training.

At every step of the job, every employee must complete training. It is essential for staying current with the rapidly evolving technologies, ideas, values, and environment. It often focuses on giving employee's specialised skills or aiding those in fixing performance flaws.

Training is a continuous learning process. New employees acquire basic skills to uplift their competency level to the next level, groom pre-requisite knowledge, understand conceptual issues, understand the process of human relations, improve human relations skills and improve job performance. It is a task-oriented process whose focus is only on job growth, and it is all about bridging the gap of performance between the actual and expected results.

After selecting employees, they are placed and introduced to an organization; they undergo training to increase their skills, knowledge, attitudes, and efficiency for performing their job efficiently and effectively.

1.1.1.1 Concept of Training

Training is to improve workers' abilities and confidence in both their professional and personal lives. It is a structured procedure for improving the employees' knowledge and skills. It is a process designed to alter behaviour such that the end result will be beneficial for the advancement of the organisation. The purpose of training, according to Wayne F. Cascio, is to increase performance at the individual, group, and organisational levels. Enhancing performance involves changing one's attitude, behaviour, skills, and knowledge.

Training as a tool for HRD has great potential in transferring & utilising the cutting technology, leadership, organisation & mobilisation of people, empowerment, and entrepreneurship development.

C. B. Memoria claims that training is the process of understanding the order of programmed behaviour. It is an application of knowledge that aims to enhance employee performance and get them ready for their desired careers. Non-managerial employees can learn technical knowledge and abilities for a specific purpose through training, which is a brief process utilising a systematic and organised technique.

Instructions in technical and mechanical tasks, such as how to use a machine or piece of equipment, are referred to as training. It is done specifically for work-related reasons. The learning process is at the heart of instruction, and there are many channels and chances for learning.

1.1.1.2 Models of Training

Because it is essential for the existence of the many departments, training is a subsystem of the organisation. It is a process of transformation that requires input and results in the production of information, skills, and attitudes (KSAs). The three training models are as follows:

a. **System Model**

The training should enable the personnel perform their jobs to the needed standard, according to the model's credo. The five phases of this generic process system model (ADDIE Model) are as follows:

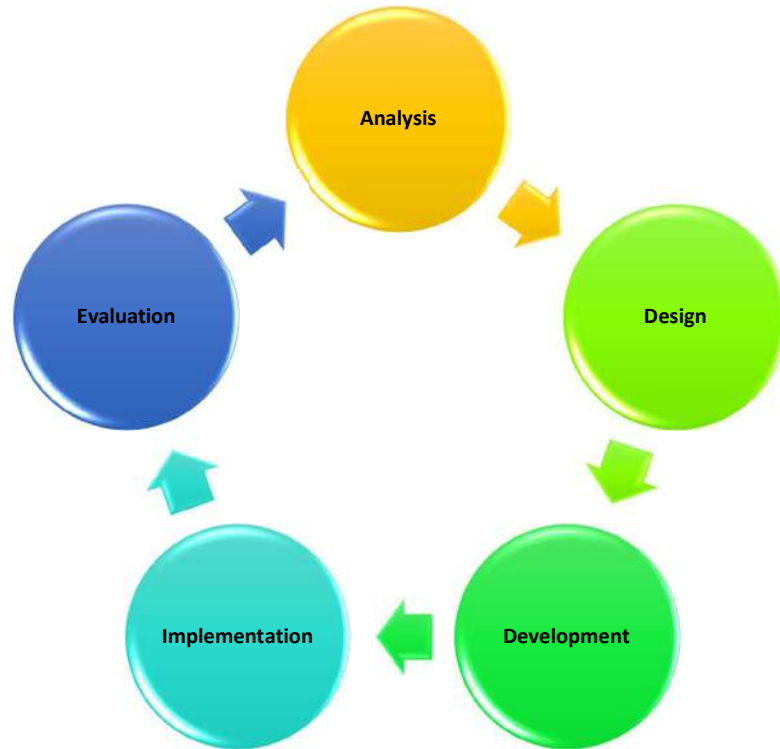


Figure 1:1 System Model (ADDIE Model)

a) **Transitional Model**

This concept focuses on the entire organisation. On the basis of the outer circle, which outlines the organization's vision, mission, and values, the training model, or inner loop, is carried out.

- (i) **Vision:** The organization's vision statement describes where it envisions itself in a few years. It can involve serving as an example, bringing about some internal change, or achieving other deadlines.

- (ii) **Mission:** The mission statement explains how the organisation wants to be seen by its stakeholders, including customers, employees, and partners.
- (iii) **Ideals:** It is independent of the business environment and reflects the organization's firmly held values.

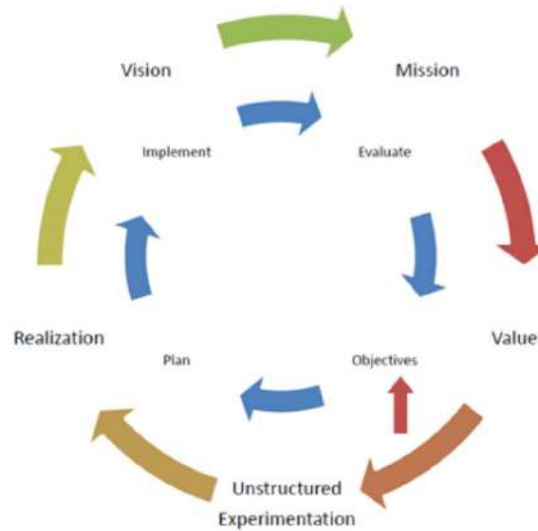


Figure 1:2 Transitional Model

b) Instructional System Development Model

The approach addresses training issues and focuses on the training requirements for workplace performance. Job duties and job descriptions are used to develop training objectives, and established goals are used to gauge each student's progress. The approach aids in choosing and creating effective methods for providing media, sequencing the course material, and determining the training objectives. The model is divided into five stages:



Figure 1:3 Instructional System Development Model

- (i) **Analysis:** This stage includes a job analysis, target audience analysis, and a training need assessment.
- (ii) **Planning:** This phase entails determining the desired training outcome, instructional objectives that gauge participant behaviour after training, different training materials, ways to assess the learner, the trainer, and the training programme, and methods to transfer knowledge, such as content selection and sequencing.
- (iii) **Development:** In this stage, course materials are created for both the trainer and the trainee, including summary handouts as well as handouts, workbooks, visual aids, and demonstration props. The design choices are reflected in the instructional materials.
- (iv) **Execution:** This stage focuses on making logistical arrangements, such as setting up trainers, tools, podiums, benches, and other seating areas as well as catering, cooling, lighting, and parking options.

The model is a continuous process that lasts the entire training course; the output of one phase is an input to the next.

1.1.1.3 Types of Training

The various types of training are as under:

(i) **Induction and Orientation**

These training courses are made to help new employees feel at home and work effectively. The initial stage in learning about the company's rules, regulations, processes, and policies is induction. The second step is orientation, during which a new employee learns about the culture, norms, values, ethics, and customs of the company. It aids in lowering anxiety and uncertainty in newcomers.

(ii) **Job Training**

The only purpose is to raise competency levels in order to perform better, which leads to successfully and efficiently achieving organisational goals.

(iii) **Safety Training**

By providing instructions on how to utilise tools and safety precautions for dangerous labour, it seeks to reduce the rate of accidents and damage to any machinery.

(iv) **Promotional Training**

By offering training prior to promotion, it aids in developing the workforce and elevating them to the next level.

(v) **Refresher training**

It is done to keep staff members abreast of new discoveries and acclimate them to new techniques, technologies, processes, and abilities.

(vi) **Remedial Training**

It is intended to change the way that the employees behave who have not carried out their responsibilities. It also entails unlearning some improper procedures and methodologies.

(vii) **Internship training**

It is carried out to provide the students with practical knowledge and lasts for at least a year. Additionally, it enables students to have a deeper understanding of how an organisation operates.

1.1.1.4 Methods of Training

The following are two methods of training:

I. On-the-job Training

- (i) **Coaching** – It is a One-to-One Training wherein the Superior gives instructions
- (ii) **Under Study** – Trainees work directly with seniors
- (iii) **Mentoring** – It is a Managerial level training in which the mentor gives one-to-one instructions to the mentee.
- (iv) **Job Rotation** – The employee is shifted to another related job to escape boredom and develop rapport.
- (v) **Committee Assignment** – The trainee is a committee member where they learn analytical thinking and decision-making skills.
- (vi) **Special Projects and task forces** – The employee is assigned a project related to jobs or made a task force member for executing a particular task.

- (vii) **Apprenticeship** – It is a combination of on-the-job and classroom training.
- (viii) **Job Instructional Training** –It is a step-by-step instruction for doing a job.

II. Off-the-job Training

- (i) **In-basket Training** – It involves solving problems with the help of memos, letters, and reports.
- (ii) **Conference & seminars** – In this, the employees/trainees pool their ideas
- (iii) **Case study** – Diagnose & solve written and description of organisation problem
- (iv) **Role-Playing** – The trainees are given a situation and are required to take part in that realistic management situation by acting.
- (v) **Management Games** – The trainees learn how to deal with various business issues.
- (vi) **Sensitive Training** – Employees are made aware of their behaviours towards others.
- (vii) **Simulation Training** – It is a duplication of a natural work environment.
- (viii) **Program Instructions** – It enables trainees to learn in their place.
- (ix) **Vestibule Training** – It is a duplication of the work environment given outside the workplace.

1.1.1.5 Phases of Training

- (i) **Identify the Training Need**

Determine whether training is necessary and, if so, offer the necessary data for creating the training programme are the main goals of the phase of training need assessment.

An organisation conducts training primarily for the following reasons:

- a) Legal/statutory requirement
- b) Improve job skills or acquire skills for a different job role,
- c) Ensure competitiveness and profitability.

If an employee's job performance is subpar, training is given to them to raise their standard, but this is a reactive strategy. To prevent issues or mishaps, employee training should be proactive and ongoing as part of quality control.

There are three layers of analysis in the Training Need Assessment:

- a) **Organisational Analysis:** It examines and locates the kinds of current Organisational problems.
- b) **Task/Operational Analysis:** It identifies the required skills and behaviours for a given job and performance standards.
- c) **Personnel Analysis:** It examines an individual's job performance.

The organisation should impart training to employees who need it and not just train all employees regardless of their skill levels. Otherwise, it would be entirely a waste of organisational resources.

(ii) **Determine the Type of Training required**

The employees know what they require to perform better at their jobs. We need to ask them, and they will give all information regarding the training they need. There may also be some mandatory legal & regulatory considerations to provide some specific training in certain industries. It is also important to ascertain the training that is not required. To prevent time wastage and suit the demands of the workforce, training should concentrate on techniques that improve performance on the job.

(iii) **Identify the Training Goals & Objectives**

Employers should get ready for the training after determining the demands of their workforce. Employers can explain to employees what training is necessary and what is not by setting up clear training objectives. Before beginning any training, the objectives must be carefully considered and made explicit in order for the endeavour to be successful.

(iv) **Implement the Training Program**

The training should only be delivered by instructors with topic knowledge and skill. As a result, either internal, skilled talent or outside experts may be selected as a trainer. Employee participation in the training process and active contribution of their knowledge and experience should be encouraged. The training plan that results from the TNA should directly address a challenge and need within the organisation. Location, presentation, and kind can all affect the training methods.

(v) **Evaluate the Training Program**

To make sure that the training programme is achieving its objectives, it is crucial for both learners and trainers to evaluate the training. Training evaluation helps in ascertaining the quantum of learning achieved and measures the change in employee's job performance consequent to training. The credibility of training is enhanced when the organisation's tangible benefits from it are mapped. Effectiveness is measured in both monetary and non-monetary terms.

The training is evaluated in the following ways:

- a) **Participants' Opinions:** It is a low-cost strategy that offers fast feedback and suggestions for enhancements. However, this kind of assessment is based on perception rather than reality. Although they may not have learned anything, the trainee may have.
- b) **The extent of Learning:** Pre-test and post-test may be administered to determine the learnings from a training program.
- c) **Behavioural Change:** Tests may accurately indicate the acquired learning but do not indicate the desired behavioural changes.
- d) **The accomplishment of Training Objectives:** This involves assessing how well the specified goals have been accomplished.
- e) **Benchmarking:** It makes use of the model procedures used by other organisations.
- f) **A Case for Simplicity:** The training's value is determined by its effects and the positive changes they produce.

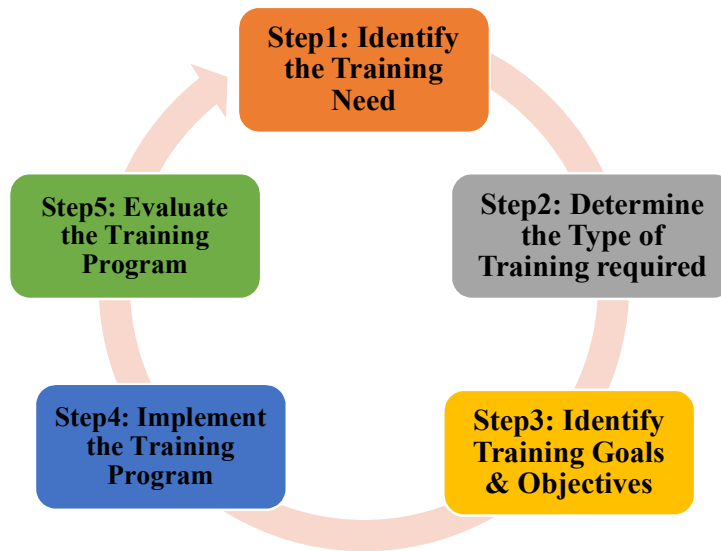


Figure 1:4 Phases of Training

1.1.1.6 Training Evaluation Models

The Training Evaluation Models are structured approaches for examining and evaluating the efficacy of training. They endeavour to ascertain if the training was successful, whether participants have learned if they put to use their learnings, the extent of the impact on the organization, whether the training was worth a good investment and value for money and if it can be improved. Each training assessment model has a unique methodology, and any or all of these questions may or may not be addressed.

a) The Kirkpatrick Model

It is the most often used model for evaluating training. In 1959, Don Kirkpatrick created and released it. This methodology gave any business a simple way to quickly assess any course or training programme. He noted that the training session's goal always begins with the end in mind. Annual/quarterly reviews, performance analyses, control groups, and other forms of observation are carried out.



Figure 1:5 Kirkpatrick Model

Level 1: Reaction

This level helps in determining participants' reactions/perceptions to the training. It helps in identifying if the training contained the conditions for learning. The doubts of the participants need to be clear through certain methodologies like interviews, questionnaires, evaluation sheets, and participants' comments. It helps participants in identifying their areas of improvement and taking a call on whether to hang on or leave a particular program.

Level 2: Learning

It helps in determining the learnings acquired from the training. This level's methods are pre-testing, post-testing, observations, interviews, and self-assessment: the pre-tests & post-tests help analyse the learning from the training sessions and gain knowledge.

Level 3: Behaviour

Effective learning makes a permanent change in behaviour. The analysis starts after the 3-6 months of training. Many factors used in the process of learning affect the outcome. Changes are noticeable by observing with the application of knowledge & skills learned during the training program. Observation & 1 interview are the two techniques generally used at this level.

Level 4: Results

This level evaluates training intervention's impact on the organization, measures results against stakeholders' expectations and determines the Return on Expectations (ROE).

b) The CIRO Model

The model of training evaluation was developed by Peter Warr, Michael Bird, and Neil Rackham in 1970. It offers a way of evaluating training needs and determining results. This model is specifically used for evaluating management training. The acronym CIRO stands for the four stages (Context, input, reaction, and output) that make up this method of evaluating learning. It is hierarchical, and practitioners must begin with the "Context" before moving on to the "Input," "Reaction," and "Output."

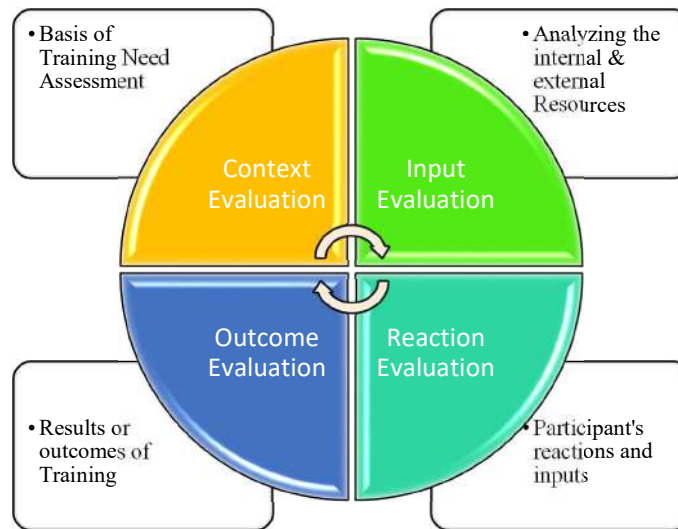


Figure 1:6 CIRO Model

Stage 1: Context Evaluation

In the CIRO Model, the performance-deficiency information should be first collected. The operational current is assessed in this stage.

Stage 2: Input Evaluation

The practitioners gather data on potential training strategies & procedures at this level.

Stage 3: Reaction Evaluation

It involves collating participant views and recording their suggestions on the attained training.

Stage 4: Outcome Evaluation

It involves presenting information about the results of the training. This widely accepted paradigm is a useful tool for assessing management training.

c) The Brinkerhoff Model

This model was introduced in 2003 by Robert O. Brinkerhoff. It is also called the Success Case Method (SCM). It helps the organisation to understand the working of a training or coaching program. It is not limited to only evaluating training but can be applied to many other events or activities. Unlike other training evaluation models, it is not concerned with ascertaining the performance of average training participants. Rather, it looks at the extreme cases, i.e. the most successful and the least successful participants. It has the following five different steps:

- (i) Prepare a Success Case study, first.
- (ii) Select a "Impact Model" and specify the desired outcome.
- (iii) Create a poll in which the worst and best case scenarios are listed.
- (iv) Record the success stories and conduct interviews
- (v) Come to some conclusions, make some notes, and inform the stakeholders of your findings.

A variety of circumstances and events can be applied to this model. Comparatively speaking, it is easier and less expensive to implement than other methods of training evaluation, such as the Kirkpatrick Model.

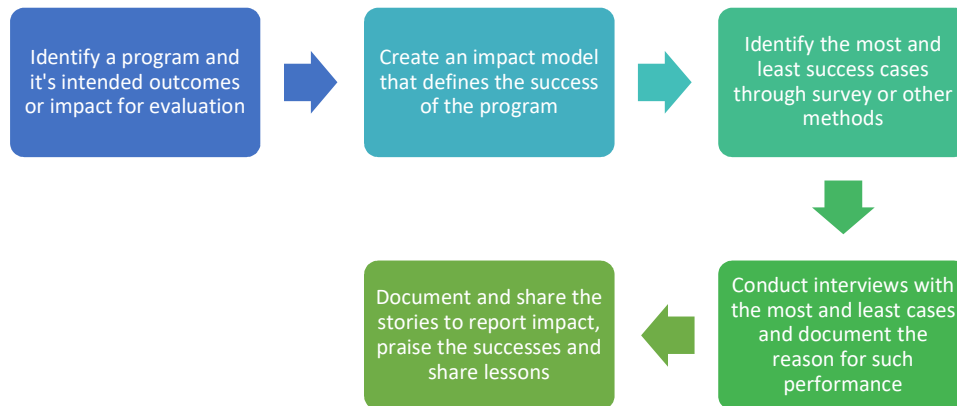


Figure 1:7 Brinkerhoff Model

d) Kaufman's Model

Roger Kaufman & John M. Keller introduced this Model in 1994 by incorporating the following changes & modifications in the Kirkpatrick Model:

- It split Level 1 (Reaction) by Kirkpatrick into two sections, 1a, "Input," and 1b, "Process."
- It introduced the fifth level to assess how the training affected society and the public.

It has the following Levels:

Level 1a: Input - It evaluates whether the training resources and materials are relevant and suitable.

Level 1b: Process - It evaluates how well the training was delivered.

Level 2: Acquisition - This level assesses the participants' level of new knowledge and skills.

Level 3: Application - This level examines how much knowledge or training participants have applied to their current jobs.

Level 4: Organizational Results - This level examines how training helped an organisation.

Level 5: Societal/Customer Consequences - This level examines how training has affected society and customers.

It separates "input" and "process," which aids in analysing the adequacy or appropriateness of the instructional design and delivery in determining if a training course is successful or unsuccessful. However, it is believed that it would be impossible to accomplish the fifth level of the model, which is the societal/customer consequence.



Figure 1:8 Kaufman's Model

e) Anderson Model

This concept, known as "Anderson's Value of Learning Model," was released in 2006. The two ways that it differs from previous training evaluation methods are as follows:

- (i) The Value of Learning Model places a strong emphasis on matching training initiatives with the strategic aims of the organisation. Other models place a strong emphasis on the participants and whether they benefited from the training. Nevertheless, this model, which applies to the entire organisation, is intended for implementation at the management level.
- (ii) This model does not concentrate on the results of specific projects. Instead, it focuses on the strategic objectives of the organisation and assesses whether the training initiatives are in line with them or require a change in direction.



Figure 1:9 Anderson Model

It has the following three-stage cycle to determine the best training strategy:

Stage 1: Check to see if the organization's strategic goals are being met by the training that is being provided.

Stage 2: Assess and evaluate the learning contribution using various techniques.

Stage 3: Decide which strategies are most appropriate for the organisation.

This model is harder to compare and contrast with other types of models. The cost and complexity of data collection are lower using this model. The second stage – evaluation of learning – requires care & expertise for effective implementation.

1.1.1.7 **Parameters of Training Evaluation**

The following are some of the parameters of training evaluation:

- (i) **Employee Satisfaction:** getting feedback from the employees about their work experience makes an effective way of evaluating the training. Feedback helps the corporate to know the lacunas and then serve their employees fine-tuned training for honing the skills.
- (ii) **Knowledge Transfer:** to evaluate the knowledge acquisition and retention of knowledge, the best way is to test their knowledge. Testing helps to organization know whether the knowledge given to the employees is worth it or not. Using scenario-based interactive assessments helps to ensure that the employee gets the most accurate evaluation of the training.
- (iii) **Skills Learned in Terms of Business Objective:** figuring out how the training given to the employees has been translated into real-world business goals. The ultimate goal of the business is to achieve the business goal and to be profit-centric.
- (iv) **Measure Returns on Investment:** It sums up all the expenditure incurred in providing the training and then measures the effectiveness of training that is being provided to the employees.
- (v) **Check Technical Functionalities:** this aspect directly translates into user experience and convenience, whether the employees can identify and tackle the technical problems, and compatibility with the different browsers, devices, and operating systems.

1.1.2 Learning

Learning is very important in a person's life for career making and career development. Learning can be acquired through personal experiences, observations, training etc. This is the reason that every training is followed by learning outcome.

Learning goes well beyond rote memorization and information recall. Understanding, linking concepts, and forging connections between prior and new knowledge, as well as independent & critical thinking and the capacity to apply knowledge to new and various situations, are all necessary for deep and lasting learning.

It is a procedure that results in transformation and is brought on by experience. It raises the possibility of improved performance and future learning (Ambrose et al., 2010). The learner may change in terms of knowledge, attitude, or behaviour. The concepts and ideas are viewed differently by the students. Students interpret and react to their experiences, rather than having it done to them.

In university courses, learning involves more than just absorbing material; students also need to have the chance to practise and develop the intellectual abilities, motor skills, and attitudes/values necessary for their particular fields of study. Additionally, students need chances to develop the social and interpersonal skills necessary for both their career and personal success.

1.1.2.1 Concept of Learning

It is the permanent change in behaviour emanating from experience & training. It is also essential for knowledge management and enhances an organization's capacity for acquiring, sharing and utilizing knowledge for success.

The following are the primary components of learning:

- (i) It involves change - for good or bad. It may not be evident until a situation arises where the new behaviour can occur, and it is often not reflected in performance.
- (ii) Not all changes reproduce learning; the change should be comparatively permanent. Temporary differences may only be reflective and fail to represent any learning.
- (iii) It is reflected in behaviour and needs to result in behaviour potentiality and not necessarily in the behaviour itself.
- (iv) The behaviour change should occur due to experience, practice or training.

1.1.2.2 Reinforcement Theory of Learning

B F Skinner proposed the reinforcement theory of learning. According to it, an individual's behaviour results from its consequences. According to the reinforcement theory of learning, when behaviour is frequently exhibited, it gets reinforced by the environment. The probability of repetition of behaviour increases when it brings in a positive outcome. The theory can be used, in an organisation, to modify/shape the behaviour of employees. Shaping behaviour in a focused, consistent, and organised way reinforces each successive step in moving an individual towards the desired behaviour. The behaviours can be shaped in the following four ways:

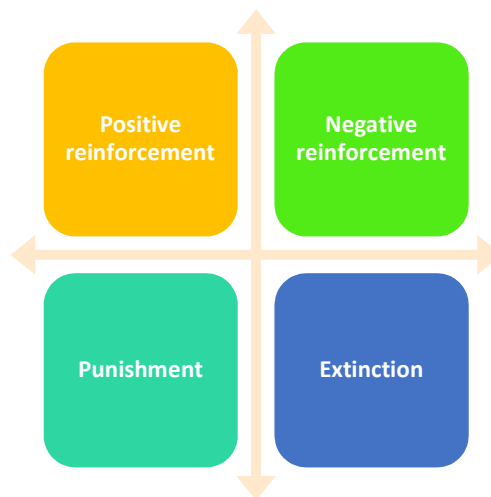


Figure 1:10 Types of Learning Reinforcement

- (i) **Positive reinforcement** - It is a technique for rewarding positive behaviour and reinforcing it. A company should make sure the outcome of a desired behaviour is something the employee enjoys if it wants that behaviour to be repeated. The employee is pleased when given a monetary incentive, promoted, or complimented for specific accomplishments. He or she frequently repeats the behaviour to achieve those favourable results.
- (ii) **Negative reinforcement** - In the instance of negative reinforcement, an employee's disliked behaviour results in the removal of that behaviour. Negative reinforcement is when something unpleasant is withheld after the response.
- (iii) **Punishment** - In this scenario, the employer attempts to curtail the employee's bad behaviour. The employee should receive a punishment for the behaviour, such as a warning, low performance rating, a negative note in his personal file, a fine, a promotion, etc. When a behaviour has such unfavourable effects, it is less likely to occur again in the future.
- (iv) **Extinction** - When the employee behaves badly, the employer in this instance withdraws the favourable result. The employee receives no compensation for his efforts, and this strategy unquestionably reduces the likelihood that the same behaviour will be repeated. A behaviour becomes extinct or is not reproduced when it regularly causes the withdrawal of enjoyable items.

1.1.2.3 Reinforcement Schedule

Schedules of reinforcement, or reinforcement schedules, are the plans for how often and when to reinforce a desired behaviour. Continuous reinforcement and intermittent reinforcement are the two different schedule kinds. Every beneficial behaviour is reinforced when it is part of a schedule, which means that continual reinforcement is given to the person who exhibits a desirable behaviour. An intermittent reinforcement schedule, however, does not reinforce every correct response; rather, it may or may not reinforce the desired behaviour for some of the correct responses. When the intervals between correct responses are taken into account for the intermittent reinforcing, the schedule is interval-based.

A ratio-based plan is used when the quantity of right responses is counted for reinforcement. The interval-based programme involves reinforcing the desired behaviours at regular intervals. It is a variable interval schedule when the desired behaviours are reinforced at various time intervals, i.e., there is no predetermined time period. When the behaviour is reinforced following a certain number of right responses, such as five or ten, the schedule becomes a fixed ratio schedule. A variable ratio schedule is one in which the minimum number of right responses required to receive reward varies each time.

1.1.2.4 Learning Models

Learning models are frameworks defining the mechanism of learning. A learning model is a form of learning new skills. These models have sub-categories divided into various learning styles.

The following seven different models define learning and explain the process and relevant learning styles from the model.

a) Kolb Model

The experiential learning theory is a name for this type of learning. This model was suggested by David A. Kolb. According to this approach, learning occurs in a series of stages:

Stage 1: Concrete learning - The learner experiences something new or goes through a variation of an old experience.

Stage 2: Reflective observation - The learner reflects on the said experience based on their interpretation.

Stage 3: Abstract conceptualization - The learner uses abstract conceptualization to form new ideas or modify the old ones.

Stage 4: Active experimentation - The learner experiments with new learnings in real life, leading to a new cycle.

In this model, the learning in a stage influences the subsequent stage.

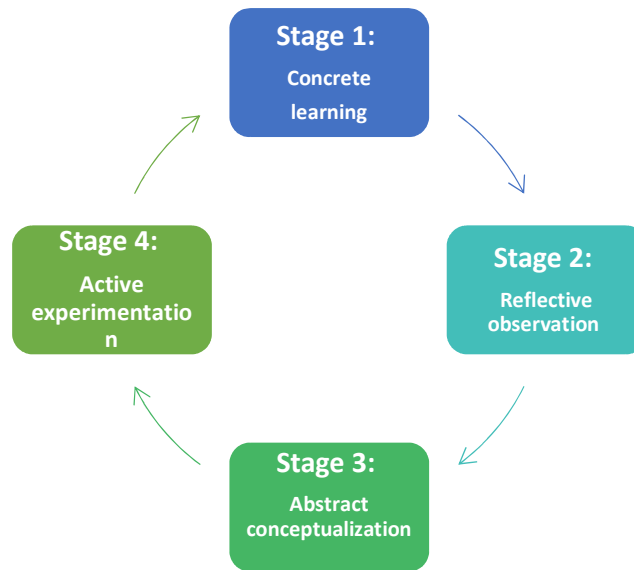


Figure 1:11 Kolb Model

On the basis of this cycle, there are following four types of learners:

- (i) **Convergers:** They love technical tasks and like to experiment practically applying their knowledge. They rely mainly on the third & fourth stages of the cycle.
- (ii) **Divergers:** They are creative, like to imagine and come up with unique ideas. They rely mostly on the first & second stages of the cycle.
- (iii) **Assimilators:** They like conceptualization & reflection for absorbing information more effectively and take on everything with the support of known information/facts.
- (iv) **Accommodators:** They are practical and approach new tasks welcomingly.

b) VARK Model

This learning style model states that every learner experiences learning through the following processes.

- (i) **Visual:** These learners can remember things they see, than what they hear.
- (ii) **Auditory:** These learners absorb information best through audio sources,
- (iii) **Reading and Writing:** These learners like to do either reading or writing
- (iv) **Kinaesthetic:** These learners learn by experience.



Figure 1:12 VARK Model

As per this model, learners are of the following two types:

Type -1: These learners can switch between the four learning styles based on the situation's needs.

Type2: These learners are slow learners because they only have one preference.

c) Gregorc Model

This model looks deep into the way the mind works and believes there is a dominant quadrant of the mind that overpowers mental activity. It determines the learning style of an individual. There are following four learning styles:

- (i) **Concrete Sequential Learning:** The Learner uses all the senses and learns via hands-on experience.
- (ii) **Concrete Random Learning:** The Learner can memorise knowledge quickly but interpret it based on prior knowledge.
- (iii) **Abstract Sequential Learning:** The learner require an organised learning environment with many learning tools, especially visuals, for a successful learning process.

- (iv) **Abstract Random Learning:** The learner works in what seems disorganised, and they have their way of organising information in their minds per their interpretation.

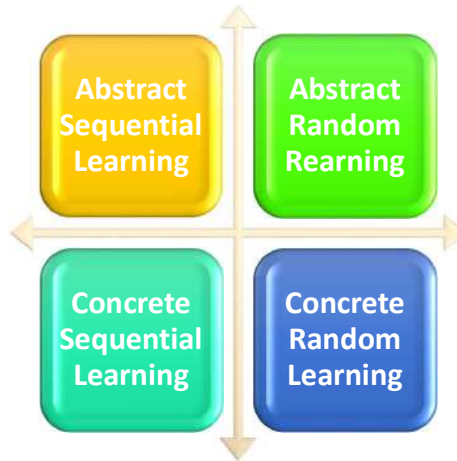


Figure1:13 Gregorc Model

d) Hermann Brain Dominance Instrument

The model introduced a mechanism for identifying the learning preferences of individuals. The model suggests that learners can be the following four types:

- (i) **Theorists** -Prefer sequential learning, so they are good at memorizing information.
- (ii) **Organizers** - These learners can only absorb new knowledge if all the information is systematically arranged.
- (iii) **Humanitarians** - These learners focus on interpersonal thinking, so their learning comprises emotions, feelings, and the expression of ideas. Group interactions are pretty typical for humanitarian learners
- (iv) **Innovators** - These learners use existing knowledge to build upon their creativity. They have Problem-solving and critical thinking traits.



Figure 1:14 Hermann Brain Dominance Instrument Model

e) 4MAT Model

This learning model is an extension of the Kolb model. It contains the following four different learning styles:

- (i) **Imaginative** - Learners conceptualise these experiences
- (ii) **Analytical** -Learners apply and refine the ideas besides conceptualising the experiences.
- (iii) **Dynamic** - Learners use all the steps but mainly base their learning on personal interpretation.
- (iv) **Common Sense** - Learners base their learning on experience

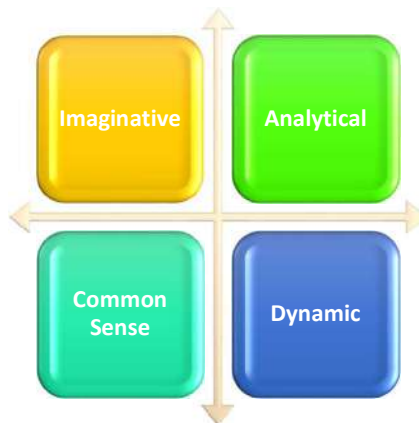


Figure 1:15 4MAT Model

f) Felder-Silverman Model

The model believes every individual has a preference for grasping new information. Some have multiple preferences, some shift from one to the other, and some have only one preference. According to this model, there are following four types of learning:

- (i) **Active & Reflective** - Learners are very hands-on. Active learning is their favourite method of learning.
- (ii) **Sensing & Intuitive** - Learners rely on written facts & concepts. They look for pre-existing ideas, and they easily memorize them.
- (iii) **Sequential & Global** - Learners prefer organized & systematic learning.
- (iv) **Visual & Verbal** - Learners prefer supporting tools such as words and graphics.

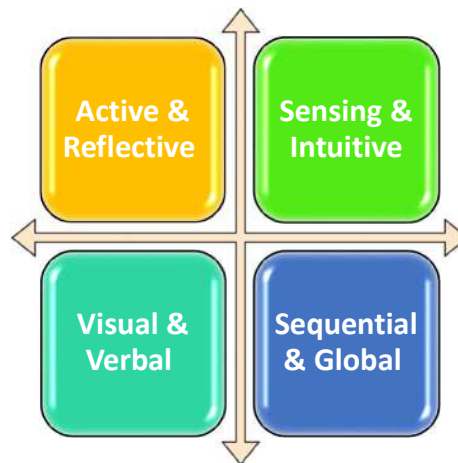


Figure 1:16 Felder-Silverman Model

g) Honey Mumford Model

The model is similar to that of the Kolb model. It introduces the following four learning styles:

- (i) **Activists**: Such learners do things practically to gain knowledge.
- (ii) **Theorists**: such learners prefer to learn from existing facts & figures.
- (iii) **Pragmatists**: Such learners conceptualize & experiment with ideas before learning from them.
- (iv) **Reflectors**: Such learners reflect on what they see and learn from it.



Figure 1:17 Honey Mumford Model

1.1.3 Skill Development

Identification of a person's skill gap and creation of scope and opportunities for the employee through the development of his or her talent and enhancement of their abilities and knowledge are both examples of skill development. The ability to carry out plans and accomplish goals is determined by one's skills. The main goal of skill development is to give employees the right training they need to assist and mentor them in their chosen careers. Training and skill development are essential components of an employee's life. Companies that promote skill development have a larger workforce, more engaged and motivated employees, and higher production.

Each individual has some skill or unique talent, and life is about discovering that one X factor within yourself. Skill is interrelated to a lot of things like aspirations, goals, and achievements. The right set of skills is mandatory to proceed in the right direction to accomplish your aim. Lack of skills brings frustration due to failure and unnecessary wastage of time. Mastery in a particular skill results from hard work of countless hours. It is the human mentality for paying attention to the accolades but ignoring countless efforts behind that accolades.

1.1.3.1 Concept of Skill

Skill generally signifies a person's ability, capability, competency, expertise, knowledge, proficiency and quality to perform a task/job in a particular domain/field or in general. It is construed as a unique form of capability or a specific capability for a specialised situation or relates to the utilisation of some specific asset (Sanchez et al., 1996). It is the ability to carry out some activity or take up some actions with firm goals within the given time frame and available energy/resources. It is the individual's talent to utilise his/her acquired knowledge, using the know-how while acting, executing plans for completing the undertaken/assigned tasks, solving problems and achieving desired results. He or she becomes skilled at completing a variety of activities/jobs/tasks involving philosophies (cognitive skills), possessions (technical skills), and people (interpersonal skills) in an easy and clear manner through purposeful, consistent, ongoing efforts. The proficiency gets bettered lifelong with practice, training and experience. Since Skill is the ability to perform specific productive tasks, it directly means it is associated with a particular tasks/jobs/work. It also means that a person who lacks those skills finds it challenging to perform this task or would be less productive than others who possess them. Skills can be inborn natural abilities or acquired through education, training and experience (Lex Borghans et al., 1997).

a) Domain-general and domain-specific Skills

In general, the ability to cooperate across domains is necessary. It comprises self-motivation, teamwork and leadership, and time management and timeliness. A position requires domain-specific abilities; for instance, working in Central Payroll requires knowledge of SAP HR, working in the Compliance Cell requires knowledge of labour law, and delivering pizza on a motorcycle requires riding a motorcycle. Assessing the level of demonstrated and used talents frequently depends on particular environmental cues and circumstances.

b) Soft Skills and Hard Skills

In the world of work, a person must possess both Soft Skills and Hard Skills. Soft Skills are a combination of one's habits (like hygiene, health, learning, punctuality

/procrastination, being organised), personality/character and personal attributes (like creativity, empathy, open-mindedness, integrity, team spirit), career attributes and emotional intelligence quotient (EQ). These skills impacts work as well as teamwork. It includes leadership skills, organisational skills, life skills, communications skills, and people skills / interpersonal skills. Such skills are inherited or developed through learning or experiences based on interest and effort /endeavour. No one can teach or influence someone, to tell the truth, eat healthy, exercise, be honest, and be kind to others until and unless not interested. The desire to master these habits, attributes or traits has to come from within and only can learn and acquire it.

The soft skills are learnable with the help of self-help books, audio/media, and the internet, but a better way of learning such soft skills is to learn from an expert. For this, one needs to first look for & find an expert in the field/area of interest for coaching/mentoring who has practical experience in that field and is willing to help/guide; after that, submit to him/her, take his/her perspective/guidance and learn from him /her.

Hard Skills refer to the technical knowledge on a subject/area/field that one gains through academia, training or experience at work. It can be quantified and verified from one's academic records and formal training certifications. The quality of such hard skills is directly related to the quality, stature, and reputation of the school /college /university from which one has graduated and the status of the organisation/establishment where he/she has worked. If someone has graduated from any Indian Institute of Technology (IIT), he would be considered to be better skilled and rated higher than someone graduating from any National Institute of Technology (NIT). The person graduating from an NIT is considered better skilled and rated higher than someone from an ordinary Engineering institute/College. An engineering graduate with B.E. /B. Tech. is considered better than any Diploma holder / non-engineering graduate / Industrial Training Institute (ITI) pass out. The Indian Institute of Management (IIM), India School of Business (ISB), Faculty of Management Studies (FMS) at Delhi University, S. P. Jain Institute of Management & Research (SPJIMR), Mumbai, and XLRI, Jamshedpur are among the top management schools, and their graduates are more respected in the workplace than graduates from less prestigious management schools.

Similarly, someone who has worked in any Multinational Company is perceived to possess better skills and would be rated higher than someone who has worked in a small private company.

While recruiting their employees, employers generally test their prior learning of hard skills and try to gauge/assess the required soft skills. They train their workforce/employees from time to time to refresh their hard skills for performing current jobs efficiently & effectively and also prepare them with the required hard skills to take up future jobs. Sometimes, training of soft skills is imparted in identified areas of improvement of the specific employee /worker.

Hard and soft skills are required in almost every job. The degree of the requirement of the type of Skill, i.e. hard or soft, may vary with the type of job and the level/position in the hierarchy. More hard skills are required in performing technical tasks/work, and more soft skills are required for teamwork and ensuring a pleasant work environment. Hard skills are more required at the operational level. However, as an employee /worker gradually makes career progression, he /she requires more soft skills like critical thinking, goal setting, strategy formulation, action planning, organising, collaborating, connecting, communicating, team management, problem-solving, execution, analysing information and reviewing, for continual improvement. Now a day, employers seek candidates with integrated /hybrid skills. In the case of a tie, the candidates with better soft skills have a higher chance of being selected if their technical skills are at par.

c) Personal Skills, Professional Skills and Practical Skills

Personal skills are intangible qualities or traits that enhance an individual's interactions with stakeholders/team. It refers to the way a person expresses himself /herself in the Workplace. It is tough & challenging to work with someone who has a deficiency in these skills. Such skills are generally expressed in adjectives like patient, empathetic, diplomatic, problematic, independent, and result-oriented.

Examples of personal skills are inter-personal skills (respectful, relationship building, collaborative), critical thinking (analytical, creative, innovative), goal setting (deciding on what is wanted and outlining the roadmap to achieve it), motivation (displaying the desire to succeed and improving), flexibility & dependability (displaying reliability,

responsibility, ownership, adaptability), independence (ability to complete the task with limited hand-holding), problem-solving (decision making, insightful, intuitive) & initiative (ability to locate the problem, its solution and influencing decisions).

Employees/candidates with better personal skills are valued more as they can communicate ideas, work well with others, make use of their excellent speaking & listening skills, meet the deadline, complete tasks with good standard, and are loyal, reliable & trustworthy. They tend to provide better outcomes for the company/establishment.

Everyone would love to work with someone honest & upfront (and not back-biter), someone who is consistent & reliable (not angry & unpredictable) and someone who values their contributions to a team (not grumbling). Work ethic, problem-solving, loyalty, openness to learning, and teamwork are the personal qualities that employers most frequently look for in candidates.

Professional skills, also known as 'functional skills' or 'transferable skills' or 'skills for life', are competencies that are transferable to different work settings. It refers to the actions required to perform a particular task. These skills are learned from one job and can be used for other jobs. Such skills are generally expressed in verbs like organise, promote, analyse, and write.

Examples of functional skills are communication (ability to convey, exchange and express ideas/thoughts/knowledge), information management (ability to arrange and retrieve data /ideas /knowledge), physical (ability to use hands and tools to construct / repair /invent), Organisation Management (ability to direct a team for solving the problem / completing tasks/ achieving goals), Human Service (ability to attend physical/ mental /social needs of people), Research (ability to look for specific knowledge), design & plan (ability to visualise, conceptualise and develop a process for achieving the goal) and technical skills (competencies in position based activities).

A learner-centred approach involving "build – practice – apply" is required to enable an individual to develop his/her ability to transfer the acquired/ built skills to solving problems in real-life contexts.

Practical Skills, also known as 'Knowledge-based skills', are familiarity & understanding of specific subjects, fields, areas, and procedures necessary to perform a particular task. These skills are specific to an occupation and are generally acquired through education, training and on-the-job experience. Developing such skills depends upon knowing 'what' and 'how' of certain things. It is generally expressed in nouns like Accounting, compliance, Personal Administration, and International Gas Marketing. The Skill can be acquired by doing and learning through trial & error. These skills are built upon knowledge by developing practical expertise in a specific area/field.

Examples of practical skills /knowledge-based skills are delegating (ability to empower the team and abstain from micromanaging tasks and people around), prioritising tasks (ability to take up work in order of importance), mastering body language (ability to read gestures, expressions and emotions), initiating & carrying conversation (ability to connect and engage the other person in a healthy discussion), social influence (ability to impact & influence).

1.1.3.2 Organizational Training vs. Skill Development Training

Training generally refers to the organizational training conducted for the employees so that they are equipped with the required skills & knowledge for handling current jobs or prepare for the future assignments. Such trainings are arranged and funded by the organisation in its own interest. When the employees are identified for the training they have no choice or preference, they have to attend the training as a formality often with lack of interest to learn as it rarely impacts their current employment.

But, the Skill Development Trainings are generally conducted by the Government or its stakeholder partners for the unemployed youth. Awareness at the grassroots level is done to promote the said Skill Development Program to attract the target audience. The participants apply for the Skill Development Training after understanding its benefit. Hence, the willingness to learn is too high amongst the participants as they relate the need for learning with their employability.

The difference between Organisational Training vs. Skill Development Training is detailed in Table 1.1 below.

Table 1.1 Organisational Training Vs. Skill Development Training

Sl. No.	Particulars	Organizational Training	Skill Development Training
1	Target Group	Employees of an organization	Students / Youth (generally unemployed)
2	Promoted by	The organization i.e. Company	Government and its stakeholder partners
3	Intrinsic Motivators	Promotions and Salary Hike	Stipend, Scholarship, and Placement after the Training Course
4.	Goal	To create high-performing teams and identify the employees who need training, decide on what format the training should be, and schedule the staff.	To create employability of the youth by making them rightly skilled, identify the persons who need skill development training, decide on what format the skill development training should be, identify training partners, certifying & assessing agencies, identify funding partners and identify industries for placement of the trainees after completion of training.
5	Objective	Train the employees to perform better in their current job roles.	Prepare the trainees for future job roles.
6	Choice of Training	The management decides what training they will impart to which employees based on the Training Need	The youth decides on which skill development training program they want to enroll

		Assessment of individual employees.	in based on their assumption of job prospects.
7	Stake & seriousness of Trainees	The stake of employees undergoing the training is very low as it does not impact their current job. So, most of the time they are not very serious about the training they are undergoing.	The stake of the trainees undergoing the training is very high as they are generally unemployed and the skill development training has a strong relationship with their future job prospects. So, most of the time they are very serious about the skill development training they are pursuing.
8	Managing Funds	Managed with Training Budget	Managed with Government Funds or CSR funds of PSUs
9	Location of Training	Internal Training Institutes of the organization/ company or Venues fixed by external Training providers.	Skill Development Institutes set up by Government or partner PSUs
10	Adherence to guidelines	Training Policy of the organization.	Guidelines issued by Sector Skill Council and National Skill Development Corporation
11	Focus	It is short-term focused	It is long-term focused
12	Training Completion Certificate	No training completion certificate is issued to the employees after completing the internal training of the organization.	The learners who have been verified by their respective Sector Skill Council and National Skill Development Corporation are given certificates of training completion.

		The details are only entered in the training records of individual employees.	The certificate serves as documentation that the person has received training in a certain skill or trade.
13	Training Plan	The training plan is determined by the manager and supported by the employee.	The Skill Development training plan is determined by the individual and supported by Government / Agencies working on Skill Development Program.

This study examines how the Training / Skill Development Program being conducted at the Skill Development Institutes (SDIs) of the Hydrocarbon Sector meets the objectives of the Skill Development Mission. It focuses on the Skill Development Training provided to the nation's unemployed youth as part of the Government of India's Skill India Mission. Hence, the aim of the research is to make an assessment of the training programs being conducted at these SDIs.

1.1.3.3 Assessment Design of Skill Development Training

To quantify the learning and experience gained from the Skill Development Training, assessment is a performance technique used to evaluate the trainee's knowledge, abilities, and competencies.

To show the connection between knowledge, skills, competencies, and performance outcomes of the Skill Development Training Program, a framework using assessment design principles, tools, and technological platforms appropriate for assessments based on Reliability, Validity, and Fairness must be created.

- (i) **Reliability:** The degree to which assessment results for a specific candidate are consistent across diverse venues and scorers is referred to as the reliability principle.

- (ii) **Validity:** The degree to which the evaluation assesses what it is intended to measure is the principle of validity.
- (iii) **Fairness:** The degree to which the assessment does not make distinctions between various socio-political-economic groups based on race, gender, caste, religion, etc., is referred to as the principle of fairness.
- (iv) **Flexibility:** The flexibility principle refers to how much an evaluation can be flexible in its delivery and methodology without sacrificing its validity, fairness, and dependability.

1.1.3.4 Context of Assessments

Assessments can be carried out in a variety of ecosystem scenarios. The following are a few of the assessments used most frequently in the skill space:

- (i) **Diagnostic Assessment:** Pre-assessments, usually referred to as diagnostic assessments, frequently come before the actual learning programme. To create a suitable learning programme, they are used to determine a student's strengths and weaknesses, prior knowledge and ability levels, profile learner interests, and reveal learning style preferences. A diagnostic often records a variety of input data points, including:
 - a. Contextual data such as the user's current profile and important learning objectives for the user
 - b. The user's subject-specific knowledge, amount of hands-on experience, and readiness to embark on a particular learning journey.
 - c. Wherever possible, it is recommended that a profiling evaluation be incorporated into the procedure. The candidates should take a psychometric, aptitude, and profiling test to assist them choose the best careers for their interests and aptitude.
- (ii) **Formative Assessments:** Formal assessments are used to track trainees' progress over the course of a unit or course of study so that instructors can modify their teaching methods to suit the needs of their students. The training incorporates the formative evaluations. The Sector Skill Council may specify the stage at which the

assessments should be done and give the results of these assessments a specific weighting.

- (iii) **Benchmark Assessments:** In order to assess whether the students are doing as expected at a specific moment in time, assessments of student learning progress are used.
- (iv) **Summative Assessments:** At the conclusion of a predetermined time of instruction, formal assessments are performed to gauge the level of student learning.
- (v) **Learning Agility Assessment:** Assessments of learning agility are used to gauge a candidate's aptitude for picking up new information and abilities. Everybody has a unique learning curve. The speed and accuracy with which a candidate picks up new information, as well as the behavioural propensity of the candidate for learning, are two crucial components of the learning agility assessments..

1.1.3.5 Correlating Assessment Criteria with Bloom's Taxonomy

Brief Description of the Blueprint the many learning goals and skills that teachers establish for their students are categorised using Bloom's Taxonomy. Because of the hierarchy of this taxonomy, learning at the higher levels depends on having mastered the information and abilities at the lower levels. The taxonomy and NSQF benchmarking of a QP/NOS and difficulty matrices in an assessment have a high association. Currently, Bloom's Taxonomy describes six levels of learning that can be used to structure the learning objectives, lessons, and assessments of the certification. It is an essential tool to be used by people creating the assessment blueprint and designing assessment items.



Figure 1:18 Learning Outcomes

The same is shown in the following graphic, which shows the complexity of learning results from bottom to top:

- (i) One must remember a notion before they may understand it.
- (ii) One must comprehend a notion in order to apply it.
- (iii) One must understand how to use an idea in order to analyse it.
- (iv) A process must first be analysed before it can be evaluated.
- (v) A thorough evaluation must have been carried out in order to produce an accurate judgement.

Additionally, it is important to take the attached training program's instructional materials into account when creating the evaluation and choosing the best assessment methodology.

1.2 Skill Gap and Shortage in skills

The world of work is dynamic and evolving. The rate of change in the labour market being experienced today was never witnessed in history and is constantly impacted due to technological advancements and disruptions. The skills gap widens as the industries try to match the pace of economic growth & technological advancements. However, the workforce fails in its response to match these growth & disruptions and prepares itself to adopt the new technology with 21st-century skills through continuous education & training. They require constant updation, upskilling, and upgradation, failing which, they would soon become obsolete, obscure, and eventually omitted from the world of work. It emphasises the importance of Skill to remain employed at present and be employable in the future.

A paradoxical situation is ubiquitous with a rising number of unemployed /under-employed men & women looking for suitable jobs. At the same time, industries are facing a challenge in getting an adequate workforce with the right /appropriate skills to take up the current & future work. The situation worsens as the students graduating from academia are being found to be ill-equipped /unequipped with the right skills and failing to meet the Industry's expectations. To close the skill gap between intended and

actual levels, as well as to train the workforce and job seekers to be industry-ready, is urgently needed.

Academia provides the initial impetus for Skill. However, the workforce needs to understand their natural strengths, continuously upgrade with the change in technology and bridge the skill gap to keep themselves employable. The effort of both industries, and the workforce, is required, and it needs to be appreciated by both groups. If the industry/companies do not facilitate their workforce to update themselves with the required skills, it would soon hurt its productivity and profitability. At the same time, the workforce must understand that if they do not update themselves either with the company's training efforts or on their own, they will be replaced and lose their job.

Possessing employability skills, personality traits, personality development skills, management skills, ability to think positively, conflict resolution and critical thinking abilities, technical skills, ability to communicate, organise time, adapting skills and attitudes are critical skills that need focus to ensure the quality of the workforce. Investment is also required in behavioural readiness & development for achieving behavioural excellence besides technical expertise.

1.2.1 Global Shortage of Skills

Shortage of Skill is now a global phenomenon. According to the Organisation for Economic Co-operation and Development (OECD), there is a skill deficit in Japan of around 81 percent, in Brazil and Turkey of about 63 percent, and in Australia, Germany, and the United States of America of about 40 percent. In 45 million skilled workers and 40 million highly skilled workers are needed around the world, respectively. Europe is having a difficult time finding workers with the necessary skills, which has a negative impact on its production and overall competitiveness, according to a report by the European Centre for the Development of Vocational Training (CEDEFOP). Another report has highlighted that in the United States of America, the mismatch of unemployment & job vacancies is snowballing, and the industries are struggling for workers with the right skill sets. A similar survey has indicated that the Middle East is witnessing jobseekers lacking both technical skills and soft skills required for the jobs. Shortly, an acute shortage of skilled workforce will be experienced in developed

economies like Europe, North America, Australia, New Zealand, Japan and the Middle East. China is also facing a similar issue, but due to political factors, language barriers and domestic employability conditions, it has to address the same locally.

United Nations Population Division has brought out that the shortage in demand of skilled workers is around 15 % and the major contributors to the global workforce arena would be developing countries like India, Africa & South Asia. The situation deteriorates with the global shortage of skilled workers. There is an oversupply of ill-skilled, un-skilled and inadequately-skilled workers.

Industries in the developed economies across the globe, like Australia, Europe, the United States, Canada, and the Middle East, are finding it difficult to grow at the desired pace due to the skill shortage in a skilled workforce. They look with high expectations at the developing countries like India, Sri Lanka, Nepal, Bangladesh, Pakistan, Philippines, Thailand, Vietnam, Jordan, Egypt, Mexico, and Algeria to meet the skill shortage.

The following factors are responsible for the global skill shortage:

- (i) Demographic change and slowing trend of the population globally due to declining fertility and rising life expectancy rates.
- (ii) Changing skill requirements within sectors and across sectors due to the economic transformation.
- (iii) Constant skill modification as a result of the gradual shift from manufacturing that requires a lot of labour to manufacturing that adds more value.
- (iv) Mismatch between the skills as per industry requirement and the available skills of the workforce and graduated students as jobseekers.
- (v) Increasing demand for workers with integrated skill sets as the single skill set does not suffice.

Many challenges are encountered in meeting the global skill requirements, which calls for a systemic approach at a larger scale, greater efficiency and effectiveness. Some of the challenges are detailed as under:

- (i) There are structural challenges as a huge chunk of the population from developing countries that seek jobs in other developed countries are usually in the lowest level of skills (unskilled or semi-skilled) & earning brackets and hence have very poor preparedness to migrate overseas jobs.
- (ii) There is informal match-making between workers' vs overseas opportunities, which makes the situation very risky.
- (iii) The migration cost is prohibitive, and even landing in the host country is very hard.
- (iv) The facilitation of international mobility is also minimal.

To address these challenges in meeting the global shortage of skills, the developing countries, as the supplier of the workforce to the global world of work, needs to adopt the following steps:

- (i) Identify the critical global labour markets and the sectors in demand in these labour markets.
- (ii) Learn from global best practices on skill development & vocational training and implement the same in their country to skill their workforce
- (iii) Enhance the capacity of government & private institutions in the skill development sector to meet the current & future demands of industries and inculcate growth of their skill ecosystem.
- (iv) Undertake the skill development programs on mission mode by incorporating all critical components.

1.2.2 Opportunity for India to Meet the Global Skill Shortage

With a massive working population (expected to reach 70% in the working-age group of 15-59 years by 2025) and an equally massive youth population, India is a major provider of labour on the global labour market (around 55 percent below 25 years of age). India's workforce is expanding significantly each year, adding almost 16 million more young people. However, India will continue to profit from its demographic dividend until 2040, whereas the workforces of the most developed economies are

either contracting or stagnant, and China's demographic dividend has been on the decline since 2015.

India has a significant role in the world of work. Its presence is witnessed across the globe, starting from low-skilled labourers with long-term contracts in Southeast Asian Countries, to construction workers in Middle-East, to agricultural workers in Canada, healthcare staff in Europe, to high-tech technology consultants in Australia, US & European Countries. The Indians have successfully contributed to their host countries wherever they have migrated. The most significant factor which has made Indians acceptable in foreign countries is their sheer hard work, ability to leverage their skills, and quick adaptability to the local conditions. India is unable to generate adequate employment possibilities on the supply side. On the demand side, however, professionals entering the labour force often lack the skill sets necessary for success, which has a negative impact on employability. India's youth population can support both its home economy and the global market if it is properly skilled with future-focused and industry-related skills. However, it is a distant dream for India to cater for the global skill requirement despite its concentrated skill development programs. It requires the collaboration of all stakeholders in the Skill Development arena, viz. academia, training providers, government bodies, and Industry. for collectively designing, developing & delivering the required vocational training & skill development programs. Participation in the private sector is equally important in skill development. Focused efforts are needed to enjoy the real benefits of the use of digital technology in skill development. Furthermore, India needs to leverage its reputation for establishing a Government to Government (G2G) arrangement to facilitate the international mobility of workers and ensure the protection of the rights of Indian emigrants in a foreign land. Government need to formulate policies for addressing the issues of migrating workers.

1.2.3 Global Best Practices in Skill Development

It is always preferable to take lessons from excellent practises that have produced desired outcomes. The theory is applicable to skill development procedures as well. Introducing skill development and vocational training into formal education is a focus

in a few nations. Some use it in conjunction with on-the-job training as an alternative path to secondary and higher secondary education. For India, there are lessons in each of these models.

The following are some global best practices worth studying and adopting by India.

(i) Dual Training System of Germany

At this approach, skill development training is offered in both vocational schools and businesses or industries, which supply the practical expertise (which provides the theoretical knowledge). The state government is in charge of vocational training at schools, while the federal government is in charge of apprenticeship programmes and on-the-job training in businesses and industry. The system's defining characteristic is the collaboration between business and corporations (mostly small and medium-sized ones) and publicly financed vocational schools. To guarantee that their needs and interests are taken into account, the social partners (workers and trade unions) have a significant influence over the content and form of vocational education training and skill development. The majority of students choose this approach since it allows for future progression into academics without impediment. After the student has finished compulsory education, initial skill development begins at the upper-secondary level; he or she may select from a wide choice of programmes, including full-time general education, vocational schools, and vocational training. Adult education centres, distance learning institutions, family learning centres, technical colleges, professional academies, institutions of higher education, private organisations, trade unions, political parties, associations, chambers of industry & commerce, industries/companies, and public authorities are the main municipal institutions that provide continuing education.

(ii) Trailblazer Apprenticeship Model of the UK

With its employer-focused & demand-driven Skill Development System, Apprenticeship Programs, flexibility to Training Providers, Quality Assurance Framework, Labour Intelligence, and strict Quality Inspection regimes, the model adopts a decentralised approach to support local businesses. At the secondary and

higher education levels, skill development is made possible through regular courses and specialised advanced training. For all individuals under the age of 16 and for students up to the age of 18, education and training are required. There are essentially two Skill Development Programs: first-cycle university programmes for students with vocational qualifications or non-formal training provided by employers (for adults). Organizations representing employers, labour unions, and other social groups work together to create learning materials, deliver adult education, and establish connections with the job market.

(iii) Career & Technical Education Model of the USA

In the CTE model, students receive post-secondary education while also receiving training in skills related to the labour market. These programmes are provided through a disjointed network that includes a high school, community and technical colleges, and on-the-job training, all of which are tied to national career clusters. Technical training is an essential school-to-work transition tool in this paradigm that helps students find employment. Starting as early as the ninth year of school and lasting through two years of post-secondary occupational education or an apprenticeship programme, it is a planned 4+2, 3+2, or 2+2 sequence of study in a technical discipline. After that, secondary education and an associate's or certificate are required. The secondary and post-secondary consortium participants' articulation agreements make it easier for students to move smoothly from one institution to another within the system. The Career Pathways specifies the knowledge & skills at secondary and post-secondary levels for preparing students for jobs within career clusters. It is developed, implemented and maintained in partnership with academia and employers to facilitate students' academic, technical skills and employability.

(iv) Public-Private Partnership Model of Malaysia

The migration between formal education systems and skill development/vocational education systems can be facilitated at a number of places in this model. Post-secondary education offers skill development and vocational training. Secondary school completion is a prerequisite for the vocational and technical skill certificate programme.

There are four semesters total, one of which is an industrial training semester. A certificate from a community college is the entry requirement for a seven-semester diploma programme. The assessment technique gives theory lessons (classroom training), practical training, and work-based training enough weight.

(v) Skill Development System in Australia

After seven years of required basic school, skill development in the Australian educational system begins at the lower secondary level. Training programmes for skill development can be divided into formal and informal training and education systems. The formal Skill Development Structure is made up of Certificates I through IV, which offer introductory skills and training and are typically offered after the primary education. The goal of these six months to two years long courses is to teach entry-level information and abilities in communication that are relevant to the sector. Graduates of Certificate IV programmes may continue on to graduate academic programmes leading to a diploma, an advanced diploma, or a vocational graduate certificate or diploma, as well as to tertiary vocational education and training programmes. The informal skill development framework can be customised. The Australian Qualification Framework can be reached through a variety of routes. People can pursue qualifications in school, at work, or through Registered Training Organizations. There are providers in the public, commercial, community, and industry sectors that provide informal skill development training. Additionally, a variety of businesses, governmental organisations, and training providers offer full-time, part-time, online, self-paced, or distance learning options for skill development training. The Apprenticeship Program and the Recognition of Prior Learning Program both expand skill development. People can apply to the Registered Training Organizations to have their current abilities and knowledge gained through informal means evaluated.

(vi) Vocational & Technical Education of China

The elementary (6 years) and lower secondary (3 years) levels of the Chinese educational system are both required to get a general academic education. After lower secondary school, children are enrolled in general academic and vocational courses for

upper secondary education. Upper secondary vocational education graduates have the option of finding employment or continuing their studies in post-secondary university and non-tertiary Technical and Vocational Education and Training (TVET) colleges. The Skill Development system covers primary, secondary, and postsecondary vocational education that is provided in Junior and Senior Vocational Schools, Skilled Workers Schools, Skilled Technical Schools, Adult Specialized Secondary Schools, higher education institutions, independent VET Centers, etc. Another crucial aspect of secondary vocational education in China is the creation of the curricula. The Ministry of Education's national standards for general academic training are included in the curriculum, along with local school-level trade programmes that are tailored to the demands of the local business community. The education of vocational instructors is prioritised in China. Higher education institutions are designed to give students access to more modern technologies and current industry knowledge. Every year, one month of industry-specific training is mandated for the teachers. Financial assistance for this programme is provided by the school administration. The 1996 Vocational Education Law mandates industry engagement.

(vii) **Skills Development & Adult Learning Model of Canada**

The concept covers secondary school programmes, postsecondary training, apprenticeship programmes, community colleges, and workplace and workforce learning. The programmes for skill development are in line with what employers are looking for in terms of workers from various demographics and age ranges. The Canadian Skill Development is provided through Vocational Education and Training (a series of courses or multiyear programme providing specialised training in a skill leading to a career) offered through Secondary schools and Post-secondary level, Apprenticeship Programs (typically two to four years long industry-driven programmes covering practical training at the Workplace by the Employer and educational institutions provide the theoretical component), and an Internship Program.

The skill ecosystem's learnings from these models can be used to make it more accessible and effective, improve livelihoods, train young people to be ready for

transactional work prospects, and change rules and standards to be in line with international norms.

1.3 **Genesis of Skill Development / Vocational Education in India**

Human civilisation has evolved over the ages transmitting the knowledge and skills from one generation to the other and thus learning through passed on accumulated experiences to deal with natural resources, exist and survive. The knowledge and skills used to be transmitted from one person to the other and formed a family tradition. Later this pattern of knowledge & skill transfer extended to an apprenticeship under the guidance of an expert. In India, the apprenticeship form has existed for ages as a Guru-Shishya tradition of learning & training. Still today, a lot of youth in the unorganised sector learn occupational skills through this process and earn their living without any formal educational background. This form of transmitting knowledge & skills may be construed as the forerunner of today's concept of vocational training and skill development.

Skill development / vocational education is generally considered as a process of learning to carry out work in any particular trade proficiently & efficiently. The informal learning on the job in family tradition and apprenticeship under an expert/trade person in the un-organised sector has always received due acceptance/recognition and has been legitimised in Indian society even though the Industry does not recognise such a form of the learning process. Skill development / vocational education has been a subject of debate and deliberations for around a century.

Numerous commissions and committees established by the Indian government both before and after independence advocated for changes to the educational system, including skill development and vocational education. Sir Charles Wood, President of the Board of Control, British East India Company, sent Lord Dalhousie, the country's Governor-General, a formal despatch in 1854 that has come to be known as Wood's Despatch. The need for professional studies and vocational education in India was emphasised in Wood's Despatch. In 1882, the Indian Education Commission headed by Hunter made the first attempt to diversify the school curriculum and introduce

vocational education. However, neither the public nor the Govt. appreciated it, and the recommendations were ignored. Thereafter, the role of Skill development / vocational education was emphasised in 1929 by the Hartog Review Committee and in 1934 by the Sapru Enquiry Committee. In 1936, the Wood-Abbot Advisory Committee report introduced the Diploma level technical education and the establishment of polytechnics. In 1944, the Sargent Report highlighted the importance of introducing technical streams.

Post-independence, in 1948, the Radhakrishnan Commission underlined the requirement of vocational education for young men and women. In 1952-53, the Secondary Education Commission or Mudaliar Commission recommended diversification after eight years of schooling by providing training in various crafts /vocations. The initial Industrial Policy was developed in 1956. The formal Technical and Vocational Training Education & Training (TVET) sector and specific institutions for technical and vocational education were initially the focus of this initiative. In order to give practical instruction in a variety of trades, the Apprenticeship Act was passed in 1961. By offering rules and recommendations for advancing education in India, the Indian Education Commission, also known as the Kothari Commission, suggested an overhaul of the education sector in 1964. The National Labour Policy was established in 1966, and the first National Education Policy, which placed emphasis on the "essentially terminal nature of the vocational stream," was established in 1968. The first Industrial Training Institute (ITI) was established in 1969. As the main regulator and sponsor for polytechnics and technical colleges in India, the All-India Council of Technical Education (AICTE) was established in 1987. Initiated in 1986 and revised in 1992, the New National Policy of Education. The Economy opened in the 1990s and witnessed significant growth in the IT & service sectors and a relative slowdown in the manufacturing & engineering sectors.

The National Development Corporation (NSDC) was founded in 2008 to investigate the employment opportunities for trained and semi-skilled workers in non-traditional trades. This organisation also played a key role in the 2009 formulation of the first National Policy on Skill Development. It improved the private partnership's potential to increase skill-training capacity. The National Qualification Framework was

envisioned when the National Skills Development Agency (NSDA) was founded in 2013. (NQF). Non-engineering courses were added as optional trades in 2014 as a result of an amendment to the Apprenticeship Act. A separate specialised Ministry called the Ministry of Skill Development & Entrepreneurship (MSDE) was also created. The Skill India Mission was formally declared by the Honourable Prime Minister in 2015. In addition, the Training and Apprenticeship Division was transferred to MSDE, the Apprenticeship (Amendment) Rules became effective, and the National Policy on Skill Development & Entrepreneurship was developed.

1.4 **Skill Landscape of India**

(i) Requirement of Skill:

India has a massive population of 1.21 billion people and is still rapidly expanding at a rate of 17% annually. In addition to the enormous working population (of whom it is predicted that 70% would be between the ages of 15 and 59 by 2025), there is also a sizable young population (with around 55% of people under the age of 25), from which India's labour force grows by about 16 million each year. Despite the potential of the growing youth population, it is concerning that only 8.6 percent have received non-formal vocational training and only 2.2 percent have received formal vocational training (NSSO, 2011-12). If the existing & prospective workforce is trained well with the right 21st century skills, India can meet not only its domestic demand of labour but also cater to the demands of the world and can transform into a global talent hub of skilled workforce. The huge population is the opportunity as well as the challenge for India as it's a herculean task to reach out to and multi-million skill workforce ready youth population. The situation gets tougher with the rising migration of labour from agriculture to manufacturing and service sectors. Effective implementation of various schemes launched/run by the Government of India with equal participation from the concerned stakeholders is equally a very big challenge.

(ii) Current Status of Skill:

India, with its huge working & youth population, has an advantageous Demographic Dividend which is expected to last until 2040. According to World Bank's report, India will be adding annually around 12 million youth (below 29 years of age) to the existing Labour Force during the next two decades. Moreover, there would be a demand of 109 million approx. Skilled workers in key sectors. The Skill & knowledge of this youth population can prove to be the driving force of economic growth & social development in India. But, with the current skill status of the existing & prospective workforce, reaping the real benefit of this demographic dividend has a long way to go.

Considering the proportion of workforce formally trained with skill training in peer countries, i.e. UK (68 %), Germany (75 %), USA (52 %), Japan (80 %) and South Korea (96 %), the Skill trained workforce in India is a humorous minuscule (2 %) and expose its acute shortage of well-trained skilled workers. Above it, a majority of its educated workforce have very little or no skills, which keeps them unemployable/unemployed. Against the projected demand of 500 million skilled workers by 2022 in India, the current supply of skilled manpower (around 2%) is very insignificant. The majority (around 93%) are in the unorganised & informal sectors and not yet connected to any structured system of skill development.

A large population is informally skilled on the job in family tradition or as apprentices /trainee under any trading expert but lacks matching formal education /vocational training. The current education/ vocational training/skill development ecosystem is yet to be aligned and match the industry standards resulting in a vast reservoir of the educated but unemployable and industry-unfit future workforce. Unlike common connotations and perceptions, opportunities in the market are plenty triggered due to technological advancements, market growth & disruptions, but unfortunately, a majority of the workforce, possessing obsolete skills or lacking desired 21st-century skills, finds themselves unemployable and un-fit for those openings. They need to skill, re-skill & up-skill to match the growing market demands. A structural shift is evident with the fact that the Women's Labour Force Participation Rate (LFPR) in India is significant (31 %) yet contributes quite low (only 17 %) to India's GDP, which can be bettered with proper skill development.

A demand-driven approach to forecasting the skill requirements and enabling /equipping the workforce with industry-fit 21st-century employable skills through skill development interventions can unleash India's demographic dividend.

1.4.1 Skill Development Ecosystem

The ecosystem of skill development in India is very complex, vast & diversified and provides a wide range of skills to its diverse population. The skill development in India imparts both Education and Vocational training through formal as well as informal routes. The government organisations, industries /companies in the private sector, NGOs and other social organisations provide formal vocational training for skill development through various government-run Industrial Training Institutes, Private Industrial Training Centres, vocational schools and specialised technical training institutes etc.

Efforts to improve skills are a joint responsibility of various ministries, state governments & union territories and industry partners. The Government of India, with its clear vision of strengthening vocational education, technical training and operationalising new initiatives in skilling, has established a separate dedicated Ministry for the purpose in 2014, i.e. Ministry of Skills Development & Entrepreneurship (MSDE). After that, MSDE brought under its umbrella organisations like National Skill Development Corporation (NSDC), National Skill Development Agency (NSDA), National Skill Development Fund (NSDF) and thirty-three Sector Skill Councils (SSCs). The National Skills Qualification Framework supports skills efforts by MSDE and other ministries. MSDE coordinates the skill development efforts of the Government of India like developing a skills delivery framework, bridging the skill gap, integrating the demand & supply of skilled workforce, facilitation for skill up-gradation, and new skills conceptualisation. It is also responsible for strategic thinking, encouraging entrepreneurship, providing the direction to the Skill India initiative and building the required skill ecosystem in India. Subsequently, the Government of India launched the National Skill Development Mission (i.e. Skill India Mission) in 2015. All the skill development Programs and schemes are now under the Skill India Mission for greater coherence amongst ministries and departments.

1.4.1.1 Ministry of Skill Development & Entrepreneurship (MSDE)

Ministry of Skills Development & Entrepreneurship (MSDE) was formed in 2014 as a separate ministry for coordination of all Skill Development efforts in the country, matching the supply with the demand of skilled manpower, building vocational & technical training frameworks, upgrading existing skills, build new skills and innovative thinking for existing & future jobs. It aims for large-scale skilling with speed & high standards as per the vision of a 'Skilled India'.

The major Institutions under MSDE, their roles & objectives and key functions & responsibilities are as given below:

Table 1.2 Major Institutions under MSDE

Sl. No.	Name of Stakeholder	Role and Objectives	Functions & Responsibilities
1	Directorate of General Training (DGT)	<ul style="list-style-type: none"> • India's apex organisation for development & coordination of technical vocational education and trainings. • Ensure a supply of skilled manpower in the economy. 	<ul style="list-style-type: none"> • Vocational training policy formulation • Research • Standardisation • Designing & reviewing vocational training course materials & curriculum • Affiliation of technical vocational training institutions • Trade tests • Certification of Institutes.

2	National Council for Vocational Training at Centre and State Council for Vocational Training in States	Advises on issues pertaining to vocational training & Craftsmen Training Schemes.	<ul style="list-style-type: none"> • Establishing engineering and non-engineering trades • Award National Trade Certificates • Standardize syllabus, equipment, course duration, training methods, arranging trade tests • Periodical inspections of training institutions • Recognition of training institutions, • Prescribe qualifications for trainers & technical staff • Fix eligibility for the award of National Trade Certificates
3	Regional Directorate of Skill Development and Entrepreneurship	All earlier roles of Regional Directorates of Apprenticeship Training and integrating National Skill Training Institutes	<ul style="list-style-type: none"> • Implementation, Monitoring and Coordination of all Scheme of the Director-General of Training • Trade Testing Cell for examinations of all schemes • Handling of Court Cases • Coordination the activities of PMKK and PMKVY Centres • Coordination of Skill Development & Entrepreneurship efforts of different Ministries / Departments.

			<ul style="list-style-type: none"> • Coordination with District Skill Nodal Centre and Skill Universities • Setting up of new polytechnic and upgrading of new polytechnics • Supervise activities of NSTI Extension Centres/ Apprenticeship Cell
4	National Skill Development Agency	<ul style="list-style-type: none"> • Organize skills development across all sectors. • Evaluate the effectiveness of skill development • Build a centralised Labor Market Information System 	<ul style="list-style-type: none"> • Create, fund and develop a skill development ecosystem. • Anchor the National Skills Qualifications Framework • Set up professional certifying bodies in addition to the existing ones.
5	National Skill Development Corporation (NSDC)	<ul style="list-style-type: none"> • Enhance, support and coordinate the private sector's Skill Development initiatives through PPP model • Facilitates operational and financial involvement from the private sector 	<ul style="list-style-type: none"> • Provides funding to build accessible and profitable vocational training centres • Develop a low-cost and high-quality business model • Enables support system for quality assurance • Support organizations that promote & provide skill development • Develops suitable models for private sector initiatives

6	Sector Skill Councils (SSCs)	<ul style="list-style-type: none"> • create occupational standards, develop a competency framework • conduct train the trainer Programs • affiliate vocational training institutes • conduct skill gap studies in their sector • Ensure Labour Market Information System • assess and certify trainees on the curriculum aligned to the National Occupational Standards 	<ul style="list-style-type: none"> • Identify skill development needs. • Develops Sector Skill Development Plan. • Determine skills/ competency standards and qualifications and get them notified as per NSQF. • Standardise affiliation, accreditation, and certification process. • Assessment & certification for QP /NOS aligned training programs. • Set up affiliation, accreditation, examination and certification norms. • Promote academies of excellence. • Support skilling needs of vulnerable groups • Ensure employment
7	National Skill Development Fund (NSDF)	Building skill development capacity for establishing strong linkages with the market	<ul style="list-style-type: none"> • Acts as a catalyst in skill development. • Provide funds to enterprises, companies and organisations that provide skill training • Develop appropriate models for the private sector

Key stakeholders under MSDE, their objectives and key functions are as given below:

Table 1.3 Key Stakeholders under MSDE

Sl. No.	Name of Stakeholder	Objective	Function
1	The National Council for Vocational Education & Training	<ul style="list-style-type: none"> • Regulation of the functioning of vocational education & training entities • Establish minimum standards for the functioning of such entities. 	<ul style="list-style-type: none"> • recognition & regulation of Awarding Bodies, Assessment Agencies, and Skill related Information Providers; • approval of Qualifications; • supervision & monitoring of recognized entities • Redressal of grievances.
2	The National Skill Development Corporation (NSDC)	Quality assurance, information systems & training of the trainers and academies	<ul style="list-style-type: none"> • Implementation of government schemes • Facilitation of standards & accreditation systems of training through SSCs & industry partnerships. • Conducting skill gap studies and providing advisory services. • Funding of specific private sector skilling initiatives • Awareness of skill ecosystem

3	State Skill Development Missions (SSDMs)	Coordination of the skill-related activities of different departments at the state level	<ul style="list-style-type: none"> • Implantation of state and central government-initiated skilling interventions • Formulation of skill development Programs for their specific states. • Convergence of various implementation efforts in the state, in line with the national objectives.
4	Sector Skill Councils (SSCs)	Bridge demand & supply skill gaps in the country.	<ul style="list-style-type: none"> • Creation of national occupational standards (NOSs) • Prescribing qualification packs • Development of competency framework • Conducting training of trainer (ToT) Programs and skill gap studies • Assessing and certifying trainees on NOS-aligned curriculum

The major Schemes & Initiatives of MSDE on Skill Development are as given below:

Table 1.4 Major Schemes & Initiatives of MSDE on Skill Development

Schemes & Initiatives through NSDC	Schemes & Initiatives through DGT	Other Schemes and Initiatives
<ul style="list-style-type: none"> • Pradhan Mantri Kaushal Vikas Yojana • Rozgar Melas • Pradhan Mantri Kaushal Kendra • Capacity Building Scheme • Udaan • School Initiatives and Higher Education • India International Skill Centres • Pre Departure Orientation Training 	<ul style="list-style-type: none"> • Craftsmen Training Scheme • Crafts Instructor Training Scheme • Apprenticeship Training • Advanced Vocational Training Scheme • Vocational Training Program for Women • Upgradation of ITIs • Skills Strengthening for Industrial Value Enhancement • Initiatives for North East and LWE Regions • Trade Testing • Dual System of Training 	<ul style="list-style-type: none"> • Skill Loan Scheme • Indian Institute of Skills • Skill Acquisition & Knowledge Awareness for Livelihood Promotion • Academic Equivalence to Vocational Qualifications • Aspirational Districts • Swachh Bharat Abhiyan • Technology Initiatives

1.4.2 Challenges in Skilling Landscape in India

The socio-economic growth of any country depends on its Skill & knowledge pool. India has a "demographic dividend" due to its youth population which can be harnessed through appropriate skill development efforts. This will provide the youth with the opportunity for inclusion in contributing to the productivity of the country and also a

can reduce the domestic & global skill shortages. National Skill Development Mission had set an ambitious target of skilling 400 million people by 2022.

The demographic dividend of India is its opportunity as well as its most significant challenge. Millions of people with varied educational qualifications, social stratification, cultural differences, geographical inequities, physical capabilities, and gender differences require diverse and specialised skill interventions to suit their specific conditions and requirement. Some of the various challenges in the skilling & entrepreneurship landscape in India which needs to be addressed are enumerated below:

- (i) **Public perception:** Formal academic education is generally perceived as the primary option for preparing for a successful career and earning a livelihood. Skilling is construed as the left-out option or the last option for people who cannot go along with the formal education or dropouts from academia who has to earn a livelihood with some low-level skills to survive.
- (ii) **Coordination & monitoring mechanism:** A robust coordination & monitoring mechanism is required to converge the various skill development Programs launched & run by various Ministries & Departments of the Government of India for achieving the goals of the National Skill Mission.
- (iii) **Assessment & certification systems:** It is required to reduce the multiplicity of assessment & certification systems to eliminate inconsistent outcomes and avoid confusion among employers.
- (iv) **Trainers:** It is required to train more trainers for the skill development training programs, and effort is required to attract industry experts to contribute as faculty.
- (v) **Curriculum Design:** Many of the curricula being used for skill training are narrow & outdated and need constant updates as per the market and industry requirements.
- (vi) **Mobility between education and skill training:** There is minimal mobility between skill training programs, academic education and vocational education, which needs to be addressed with government policy intervention.
- (vii) **Apprenticeship:** The Industry still hesitates to accept apprentices compared to the regular and contract workforce. Proper promotion of the apprenticeship

programs is required, and the Industry needs to be encouraged to use the apprenticeship programs to their advantage.

- (viii) **Women LFPR:** A low and declining labour force participation rate is being witnessed in case the women population needs urgent attention as they can contribute significantly to the country's GDP.
- (ix) **Entrepreneurship:** The formal academic education lacks entrepreneurship focus. Society also gives priority to jobs & services and discourages the innovative entrepreneurship efforts of any enterprising individual. The budding entrepreneurs also lack mentorship and find difficulty in getting adequate access to finance their start-ups.

1.4.3 Policy interventions of the Government of India

Skilling the youth can satisfactorily address the issues relating to poverty & unemployment and help in achieving the goal of the Government. For skilling the youth of the country the first step is to have the required policies, initiatives & interventions.

The Government of India has introduced many Policy interventions and reforms which reflect its commitment to Skill Development. Some of the key interventions and reforms are detailed here.

1.4.3.1 Reform in Apprenticeship Model of Skill Development in India

The government of India's ambitious & visionary initiatives like 'Skill India' & 'Make in India' have significantly boosted the Indian economy. Backed by a young demographic dividend, the country is gradually becoming a global skill hub. This revolution, however, requires strong support from the workforce who are skilled & Industry ready, to harness the advantage and stay ahead of the curve. Unfortunately, a growing skills gap between the industry demand and the Skill possessed by the workforce /job seekers is being witnessed, which needs to be addressed at the earliest. A viable solution for bridging the demand & supply of Skills can be the "Apprenticeship" model. The model provides an opportunity to blend Industry's intellectual & physical resources with academic learning, which helps students to gain

hands-on experience in an actual work environment along with their academics. The number of apprentices in India is insignificantly low (0.4 million with just 0.1 % of the employed workforce) compared to peer countries like Germany (3 million), Japan (10 Million) and China (20 million). Hence, a great potential to tap with an apprenticeship. The Apprentice Model was introduced in India in the year 1959 with the introduction of the National Apprenticeship Scheme, and soon after that, in 1962, the Apprentices Act, 1961 came into force with the focus on providing on-the-job training to ITI pass-outs. Later, with the amendment of the Act in 1973, training of Engineering graduates & Diploma holders as Graduate apprentices and Technician apprentices came within the purview of the Act. Subsequently, in 1986, the Act was further amended to include the training of 10+2 students passing out of the vocational stream as technician (vocational) apprentices. In 2014, the training of non-engineering graduates was brought under the purview.

Initially, when the Apprentices Act 1961 was framed, the focus was primarily on manufacturing which gradually lost significance with the emergence of the service sector. Also, the training courses could not evolve to match the pace of industrial advancement; the Industry hesitated to adhere to the prescriptive apprenticeship norms as it was obligatory for public and private sectors employers to engage apprentices in prescribed Designated Trades and even stipend rates were far less than expectations compared to the wage rates. The visionary reforms of government in 2014-2015 addressed these gaps and have brought tangible, positive impact. With the introduction of the Apprentices (Amendment) Act, 2014, an additional focus has been given to service sectors by promoting 'Optional Trades' in addition to technical designated trades and the Industry is now allowed to design the course as per their own requirements & expectations. The paradigm changed from regulation of Industry to self-regulation by the Industry as the erstwhile quota system was replaced with the flexibility to engage apprentices within a band of 2.5% to 10% (now 15%) of their workforce depending on their requirements year on year basis.

The hiring and reporting processes have been automated through a dedicated apprenticeship portal of the Government of India. Sector Skill Councils, which are industry bodies, have been formed & empowered to promote & regulate

apprenticeships in their sector. The Government of India also launched the National Apprenticeship Promotion Scheme (NAPS) in August 2016 to provide financial benefits/ support to establishments engaging apprentices in the way of reimbursement of stipends and sharing of costs towards basic training. Industries are also realising the potential of apprenticeships and attracting the engagement of young minds that can lock in talent for the future.

It is estimated that Indian industries have a latent capacity for hiring around 10 million apprentices annually in which apprenticeship can play an instrumental role and also impact the success of the National Mission of 'Skill India' & 'Make in India'.

These comprehensive reforms made in the Apprentices Act 1961 signify absolute faith in the Industry for taking up leadership and promoting apprenticeships in India. India has taken a giant leap from a regulatory regime to that of self-regulation by Industry, as now Industry can set their own target engagement of apprentices as per their requirement decide on its duration, curriculum, assessment and certification. The Industry has a great opportunity to leverage for its own competitiveness and for the benefit of young India.

1.4.3.2 National Policy for Skill Development & Entrepreneurship, 2015

The 1st National Policy on Skill Development notified in 2009 outlined the broad framework, objectives & outcomes of India's skilling landscape. Based on experience from various skill development Programs, a paradigm shift in the skilling ecosystem and experiences of various skill development Programs, the earlier Policy was revisited new National Policy on Skill Development & Entrepreneurship was notified on 15th July 2015 to counter the challenges of skilling at scale with speed, standard & sustainability and aims to provide a framework for all skilling activities of India, align with common standards and link skilling with Industry requirement. As per the said Policy, the key to a successful skill strategy is to have an effective roadmap for the promotion of entrepreneurship.

To meet the objectives of the Policy and improve the skilling Landscape in India, MSDE has undertaken various initiatives and launched the PMKVY (i.e. Pradhan

Mantri Kaushal Vikas Yojana), notified common norms, set up various SSCs (i.e. Sector Skill Councils), implemented SANKALP (i.e. Skills Acquisition and Knowledge Awareness for Livelihood Promotion) and STRIVE (i.e. Skills Strengthening for Industrial Value Enhancement) schemes, launched Skill India Portal and conducted Rozgar /Kaushal Melas and Skills Career Counselling etc.

The commitment of MSDE towards the purpose of skilling is evident from its Vision Statement 2025, which states, "Unlock human capital to trigger a productivity dividend and bring aspirational employment and entrepreneurship pathways to all". The focus is on individual's economic gain, social mobility, creating a demand-driven & learner-centric skills market and facilitating employment, enhancing industry productiveness and generating entrepreneurship for the economic growth of India.

1.4.3.3 National Skill Development Mission:

The National Skill Development Mission (NSDM), launched on 15th July 2015, is an endeavour to ensure a robust institutional framework for successfully implementing skilling efforts in the country. It has a three-tiered, high-powered decision-making structure in which the Mission's Governing Council, chaired by the Prime Minister, is at the apex and provides overall guidance and policy direction.

The Mission's activities are reviewed by the Steering Committee, chaired by the Minister in Charge of Skill Development. The implementation, coordination and convergence of skilling activities across Central Ministries/Departments and State Governments are done by the Mission Directorate, with Secretary, Skill Development as Mission Director.

1.4.3.4 Common Norms

Common Norms define various 'Skill Development' activities, skill development curriculum and its alignment with the National Skills Qualification Framework, skill development Programs input standards and their expected outcomes. It is aimed at establishing result-focused, cost norms & fund flow mechanisms for the various skill

development Programs. The cost norms include support for the mobilisation of candidates, training of trainers, placement & post-placement assistance, tracking & monitoring and, infrastructure costs etc. The common norms apply to the skill development schemes of the Centre implemented through various Ministries/Departments. To bring in uniformity & standardisation, efforts are made by State Governments to align their skill development programs with the common norms.

1.4.3.5 Centres of Excellence

Centre of Excellence” provides leadership, support, benchmarking, Research, training of trainers and skill training for a specific sector(s). The main aim is to meet the skill demand, ensure a continuous supply of skilled workforce and propagate the best practices.

1.4.3.6 Skill Universities

National Skill Policy- 2015 envisioned National Skills Universities for skill development and training of trainers, either as a part of the existing university landscape or as new institutions. The 1st National Skill University in the country is being set up in Varanasi, Uttar Pradesh.

1.4.3.7 Skill Action Plan

National Skill Development Corporation (NSDC) under MSDE has researched the sectoral & geographical spread of incremental skill requirements, across 24 high-priority sectors, during the periods 2013-17 & 2017-22, assessed the skill demands & supply, highlighted vital job roles, mapped skill infrastructure and suggested actionable points for the stakeholders. Key stakeholders were extensively covered, including industry experts, trainers, trainees, sector skill councils and government bodies in the skill ecosystem. Primary interaction was made with around 1500 trainees, 1000 industry experts and 500 job roles. The said study estimated an incremental skill requirement of around 103 million (510.8 million in 2017 and 614.2 million in 2022) during 2017-2022 across these 24 sectors.

Based on the finding of the above Studies, discussions were held at length across 34 sectors with the concerned Ministries / Departments, and the sectoral training needs up to 2022 were identified, and a Skill Action Plan has been developed. It has been estimated that the incremental skill requirement and training need or around 128.21 million during 2017-2022 across 34 sectors.

1.5 Skill Development in Hydrocarbon Sector

1.5.1 Overview of Hydrocarbon Sector in India:

The Hydrocarbon Sector is among the eight core industries (viz. Cement, Coal, Crude Oil, Electricity, Fertilizers, Natural Gas, Refinery Products and Steel). It drives economic growth & prosperity in India and plays a very vital role in the economic growth of the country; hence, this sector is of strategic importance. The Oil & Gas industry is governed by the Ministry of Petroleum & Natural Gas (MoPNG), Government of India. The different segments of the Hydrocarbon Sector are as given below:

Table 1.5: Segments of the Hydrocarbon Sector

Sl. No.	Segment	Involves	Major Players
1	Upstream	Exploration, recovery and production of Oil & Natural Gas	ONGC, OIL and Crain Energy
2	Midstream	Processing, storing, marketing & transportation of commodities viz. crude oil, natural gas, ethane, propane and butane etc	IOCL and GAIL
3	Downstream	Refining & processing of crude oil, marketing & distribution of natural gas & products derived from natural gas	IOCL, BPCL and HPCL

1.5.2 Vision for Skill Development in Hydrocarbon Sector

India's requirement for oil & gas is much higher than its reserves, and the gap is bridged with the import of crude oil & natural gas. After that, the same is distilled/refined at refineries and then distributed. Many products other than petroleum & diesel are also obtained during the processing or fractional distillation process, which are utilised domestically as well as exported to the global market. Hence, India is a net exporter of petroleum products. Presently, the growth of the Indian economy has been established, and this would increase domestic energy consumption. Around 35 % of the country's energy needs are met by Oil & Gas, which is expected to rise to 45 % as per the Hydrocarbon's Vision -2025.

a. Hydrocarbons Vision - 2025

India with its Hydrocarbons Vision -2025, aspires for:

- i. Achieving self-reliance in energy security through enhanced domestic production and looking for more investment in equity oil globally,
- ii. Striving for a cleaner & greener India through improved product standards for enhancing the quality of life,
- iii. Developing the sector as a globally competitive industry through technology up-&gradation, global benchmarking and capacity building,
- iv. Ensuring a free market with the healthy competition of players and improved customer service and
- v. Considering the defence & strategic considerations safeguard oil security for India.

b. Vision 2030 of Natural Gas Infrastructure in India

It is estimated that the primary energy mix and substitution of oil for natural gas would undergo a substantial shift. In 2010, the share of natural gas in the energy mix of India was 11%; the same will grow to 20% in 2025. Considering the expansion plans of natural gas supply with the advent of additional RLNG terminals, Pan-India transmission pipeline network and expected transnational pipelines “Vision 2030 of

Natural Gas Infrastructure in India” has envisaged the growth of Natural Gas in the energy mix of India up to 20% by 2030.

1.5.3 Skill Development Efforts of the Ministry of Petroleum & Natural Gas

In 2016, The Ministry of Petroleum & Natural Gas signed a Memorandum of Understanding (MoU) with the Ministry of Skill Development & Entrepreneurship for the implementation of the Skill India Mission in the Hydrocarbon and allied sectors with the objective to:

- i. Develop broad National Skills Qualification Framework (NSQF) aligned plans for skill development.
- ii. Take up Recognition of Prior Learning under Pradhan Mantri Kaushal Vikas Yojana (PMKVY) in the hydrocarbon sector.
- iii. Promote apprenticeship training under the National Apprenticeship Promotion Scheme (NAPS)
- iv. Facilitate the setting-up of Centres of Excellence (CEOs) & Skill Development Institutes (SDIs) for vocational training

MoPNG, through its various agencies and PSUs, catalyses the skill development initiatives as per Skill India mission in the Hydrocarbon sector. Top PSUs of the Hydrocarbon Sector have created a corpus fund of Rs. 320 Crores. At present, a total no. of 167 Start-ups are being funded by the PSUs with a committed fund value of approximately Rs.195 Crores.

1.5.3.1 Hydrocarbon Sector Skill Council

In 2016, Hydrocarbon Sector Skill Council (HSSC) was set up under the aegis of the Ministry of Petroleum and Natural Gas, line with the National Skill Mission of India, as per the guidelines of the National Skill Development Corporation with representatives from the Government, Public Sector Undertakings (PSUs) and private companies.

Its mission is to build a pool of skilled workforce for the hydrocarbon sector with benchmarking of new skills & up-skilling as per the National Occupational Standards (NOS), ensuring inclusive growth with increased economic & social equity and enhancing productivity and sector competition. The vision is to meet the diverse skill needs of the hydrocarbon sector with increased employability and local and global job opportunities. It aims to implement & execute all skill development initiatives for meeting the skill needs of the entire value chain of the hydrocarbon sector, including coordination of skill development activities, development of a skill development plan, identification of skill gaps, development of National Occupation Standard, identification & enlisting Training Providers, training trainers, affiliation & accreditation of assessment agencies, benchmarking for new skills & up-skills, certification and establishing a robust Labour Market Information System for the hydrocarbon sector.

It certifies the uncertified third-party contract workforce like Retail Outlet Attendant (Oil & Gas), LPG Delivery Personnel, Tank Lorry Driver (Petroleum Products) Trades engaged in various PSUs of the Hydrocarbon Sector through various contractors, dealers and distributors under the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) Recognition of prior learning (RPL) Type-4 projects. It has completed the assessment of around 85,000 personnel so far. It caters for the skill requirement of companies in the Hydrocarbon sector by imparting sector-specific skills, with requisite national/international certification to bridge the skill gap within India and overseas.

The HSSC Team have identified around 134 job roles (Trades) for skill development Programs in Upstream (Exploration and Production), Downstream (Refineries and Marketing), Midstream and Gas (Including cross-country pipelines and city gas), Construction and services in the Hydrocarbon Sector. With this vision, HSSC has set up Skill Development Institutes. A model Skill Development Institute was first set up at Kochi. This start-of-the-art skill development institute (SDI), among many Centres of excellence, has been established in different regions of the country to impart advanced skill training to around 40,000 to 50,000 personnel in 10 years.

The SDIs are co-promoted by all PSUs of the Hydrocarbon Sector in the upstream and downstream sectors. In addition to specialized technical training (including hands-on training through simulators, cut-out models and actual plant and machinery, followed by a stringent assessment and certification process), SDI provides soft skills and English proficiency training.

The Institutes also provide practical skill development training and certification to the existing technical staff. The HSSC has developed the National Occupation Standards / Qualification Packs for the high-priority job roles of the sector are as below:

Table 1.6: National Occupation Standards / Qualification Packs developed by HSSC

Sl. No.	Occupation	Qualification Pack Title	NSQF Level
A	Upstream		
1	Exploration & Production	Asst. Technician – Production (Oil & Gas)	4
2	Exploration & Production	Assistant Technician - Drilling (Oil & Gas)	4
B	Midstream		
1	Calibration & Inst.	Process Instrumentation Operator (Oil & Gas)	4
2	Design	Draughtsman - Piping	4
3	Operations–Oil&Gas Pipeline	Evacuator - Pipeline	2
4	Operations – Oil & Gas Pipeline	Stainless Steel Tubing Technician	4
5	Pipe fitting in Oil & Gas	Pipe fitter (Oil & Gas)	4
6	Pipe fitting in Oil & Gas	Pipe fitter – City Gas Distribution	4
7	Pipeline Maintenance	Line Patrolling man (Oil & Gas)	3
8	Pipeline Maintenance	Technician (Mechanical)	4
9	Plumbing	Plumber (Welding) Asst.	2

10	Plumbing	Plumber (General) Helper	1
C	Downstream		
1	LPG Distribution	LPG Delivery Personnel	4
2	LPG Distribution	LPG Supervisor	5
3	LPG Installation	LPG Mechanic	4
4	Refineries	Industrial Technician (Oil & Gas)	4
5	Retail Distribution	Retail Outlet Attendant (Oil & Gas)	4
6	Retail Distribution	Retail Outlet Supervisor (Oil & Gas)	5
7	Safety & Environment	Fire Safety Technician (Oil & Gas)	4
8	Sales & Services	Direct Marketing Agents (PNG)	4
9	Sales & Services	Gas Meter Reader	3
10	Transportation(Oil&Gas)	Tank Lorry Driver – Petroleum Products	4
D	Construction & Services		
1	Welding	Industrial Welder (Oil & Gas)	4

Source: HSSC Brochure, Ministry of Petroleum and Natural Gas, Government of India

The location map of Skill Development Institutes under HSSC is given below:



Figure 1.19 Location map of Skill Development Institutes under HSSC

1.5.3.2 Skill Development Endeavours of Public Sector Undertakings in Hydrocarbon Sector

1.5.3.2.1 ONGC Limited

ONGC Limited (i.e. ONGC) is a Schedule “A” Maharatna Central Public Sector Enterprise of the Government of India under the aegis of MoPNG. It was founded on 14th August 1956 by the Govt. of India. It is involved in exploring & exploiting hydrocarbons in 26 sedimentary basins of the country. It is the largest crude oil & natural gas Company in India, contributing around 75 % to India’s domestic production. The crude oil extracted by ONGC is used as raw material by downstream companies

like IOC, BPCL, HPCL and MRPL for producing various petroleum products like Diesel, Petrol, Kerosene, Naphtha, LPG and CNG. Along with its subsidiaries HPCL & MRPL, it commands around 15 % of the total Indian refining capacity. It owns & operates more than 25,500 kilometers of pipelines in India, including sub-sea pipelines. No other company in India operates even 50 % of this length of pipeline.

Its operations include conventional exploration & production, refining & development of alternate energy sources like coal-bed methane and shale gas etc. Its domestic operations are structured around 11 assets (predominantly oil and gas producing properties), 7 basins (exploratory properties), 2 plants (at Hazira and Uran) and services (such as drilling, geophysical, logging and well services etc.) It has in-house service capabilities pertaining to all areas of Exploration and Production of oil & gas. It is involved in offshore & onshore extraction of crude petroleum & natural gas and incidental services. It is the only PSU of India to feature in Fortune's 'Most Admired Energy Companies' list. It has been ranked 26th among the biggest publicly traded global giants by Transparency International for its commendable Corporate Governance practices. It is one of the highest profit-making & dividend-paying enterprises and the most valued listed corporations in India. It has also been conferred with the Best Employer Award and certified as a 'Great Place to Work'. It has a committed team of around 31,000 professionals who work round the clock in challenging locations. It has implemented globally recognized QHSE Management Systems conforming to ISO 9001, OHSAS 18001 and ISO 14001 at its facilities and have been certified by reputed certification agencies at all its operational units.

Its international subsidiary ONGC Videsh currently has projects in 17 countries. On Jan 30th 2018, Oil & Natural Gas Corporation acquired the entire 51.11% stake of Hindustan Petroleum Corporation.

The major Subsidiaries, Joint Ventures and Associates of ONGC are as below:

Tale 1.7 Major Subsidiaries, Joint Ventures and Associates of ONGC

Sl. No.	Name
<i>Subsidiaries</i>	
1	ONGC Videsh Limited
2	Mangalore Refinery and Petrochemicals Limited
3	Hindustan Petroleum Corporation Limited
4	ONGC Mangalore Petrochemicals Limited
5	Petronet MHB Limited
6	HPCL Biofuels Limited
7	ONGC Videsh Rovuma Ltd. (India)
8	Prize Petroleum Company Limited
9	HPCL Shapoorji Energy Private Limited
10	ONGC Nile Ganga B.V
11	ONGC Campos Limited
12	ONGC Nile Ganga (San Cristobal) B.V.
13	ONGC Narmada Limited
14	ONGC Amazon Alaknanda Limited
15	Imperial Energy Limited
16	Imperial Energy Tomsk Limited
17	Imperial Energy (Cyprus) Limited
18	Imperial Energy Nord Limited
19	Biancus Holdings Limited
20	Redcliff Holdings Limited
21	Imperial Frac Services (Cyprus) Limited
22	San Agio Investments Limited
23	LLC Sibinterneft
24	LLC Allianceneftgaz
25	LLC Nord Imperia
26	LLC Rus Imperial Group
27	LLC Imperial Frac Services

28	Carabobo One AB
29	Petro Carabobo Ganga B.V.
30	ONGC (BTC) Limited
31	Beas Rovuma Energy Mozambique Limited
32	ONGC Videsh Rovuma Ltd. (Mauritius)
33	ONGC Videsh Atlantic Inc.
34	ONGC Videsh Singapore Pte. Ltd.
35	ONGC Videsh Vankorneft Pte. Ltd
36	Indus East Mediterranean Exploration Limited
37	HPCL Middle East FZCO
<i>Joint Ventures</i>	
1	ONGC Petro additions Limited
2	HPCL Rajasthan Refinery Limited
3	Bhagyanagar Gas Limited
4	Mumbai Aviation Fuel Farming Facility Private Limited
5	HPOIL Gas Private Limited
6	IHB Private Limited
7	Indradhanush Gas Grid Limited
8	Dahej SEZ Limited
9	Godavari Gas Private Limited
10	Ratnagiri Refinery Petrochemicals Limited
11	ONGC Mittal Energy Limited
12	Mangalore SEZ Limited
13	ONGC Tripura Power Company Limited
14	ONGC Teri Biotech Limited
15	HPCL Mittal Energy Limited
16	Shell MRPL Aviation Fuels & Services Limited
17	Mansarovar Energy Colombia Limited
18	Himalaya Energy Syria BV
19	SUDD Petroleum Operating Company
20	Hindustan Colas Private Limited

21	South Asia LPG Co. Private Limited
22	Aavantika Gas Limited
Associates:	
1	GSPL India Gasnet Limited
2	GSPL India Transco Limited
3	Pawan Hans Limited
4	Rohini Heliport Limited
5	Tamba B.V
6	Petro Carabobo S.A
7	Carabobo Ingenieria Y Construcciones S.A
8	Petrolera Indovenezolana S.A.
9	South-East Asia Gas Pipeline Company Limited
10	JSC Vankorneft
11	Falcon Oil & Gas B.V
12	Petronet LNG Limited
13	Moz LNG I Holding Company Limited

Corporate Social Responsibility in ONGC:

ONGC has work centres in remote locations across the country. Access to basic amenities like education, healthcare, drinking water and sanitation in these regions is limited, and the last mile delivery of these services has often posed significant challenges. ONGC, with its strategic CSR activities, adopted a specific CSR approach to solve problems related to healthcare, sanitation, drinking water, education, skill development & livelihood and environment that created actual value for the beneficiaries and enhanced the company's brand value. Through its various CSR Programs, ONGC has been reaching out to marginalized and deprived sections of the society and bridging developmental gaps in its identified thrust areas, viz. Art & Culture, Disaster Management, Education, Environmental Conservation, Healthcare, Sanitation, Protection of National Heritage, Skill Development, and other specified focus areas. The effort is to meet the objectives of the United Nations Sustainable Development Goals by consciously directing its developmental activities towards the

betterment of the Human Developmental Indices of the country. The plethora of CSR projects and programs across the country have been undertaken in line with the ONGC Corporate Social Responsibility and Sustainable Development Policy approved by its Board. The details of CSR Budget Allocation & Expenditure Details for FY 2020-21, FY 2019-20 and FY 2018-19 are as given below:

Table 1.8: CSR Budget Allocation & Spend Details of ONGC

CSR Expense Head	Expenditure incurred (Rs. in Crore)		
	FY 2020-21	FY 2019-20	FY 2018-19
Healthcare & Preventive Healthcare	364.35	92.46	76.95
Education	78.96	15.69	15.78
Skill Development	4.40	25.13	5.02
Swachh Bharat Abhiyan	44.95	31.63	22.47
Environmental Sustainability	20.18	17.89	4.18
Aspirational Districts	14.30		
Other CSR Activities	25.86	424.16	490.23
Total CSR Expenditure	553.00	606.96	614.63

(Source: ONGC Annual Report for FY 2020-21, FY 2019-20 and FY 2018-19)

ONGC's contribution towards skill development:

ONGC is committed to the cause of Skill Development and considers this as a strategic imperative and vital component of Human Resource Development. For implementing the skill development strategy, ONGC has established learning & research centres at its various work centres/locations and centrally coordinates through Corporate HRD & ONGC Academy. The endeavour behind these efforts is to provide world-class learning opportunities to its employees across grades & disciplines, starting from induction training for new recruits, refresher training for middle & senior-level executives,

certification training, project management training and leadership development training.

It has benefited around 3,783 youth with its skill development efforts in FY2020-21. It has undertaken various skill development projects for youth with active support from the Indian Army in the region of Baramulla, Jammu & Kashmir. Through its implementing partner, REACHA, around 300 boys have benefited with training in retail sales & hospitality and 60 girls with training in fashion designing, cutting & sewing. It provides skill training to 20 youth every year in wildlife videography and documentation under the Project Green Hub initiative and also assists them in gainful engagement in the field of wildlife & environment conservation. Some of these trainees have even won international awards in wildlife videography and documentation. It has provided skill training in water Hyacinth craft to 50 women in Sivasagar, Assam. Out of them, 20 became trainers, and 5 became master trainers with training in advanced design from the National Institute of Design, Ahmedabad. Skill Training in Welding & Gas-cutting from Welding Institute of India, Sivasagar, has been provided to around 120 youth from Assam and assisted with gainful employment. Skill training has been provided to 40 EWS youth from Assam and Uttarakhand under a specialized residential training program in Delhi and assisted with employment in the various hotel industry. It has also benefited around 500 EWS youth from Delhi, Odisha, Rajasthan, Tripura and West Bengal by providing them with skill training in plastic technology from the Central Institute of Petrochemicals Engineering & Technology (CIPET) and assisted them with employment in the industry.

At ONGC, it is believed that learning is a continuous process, and accordingly, it dedicates time, money and resources to the personal & professional growth of its employees. It ensures that all its employees across disciplines & grade are facilitated with world-class learning opportunities, viz. induction training for new recruits, refresher training for middle & senior-level executives, certification Programs training, project management training and, leadership development Programs etc. Executives are also nominated for a number of domestic & foreign training Programs, seminars and workshops beyond their planned training Programs. Apart from functional and

behavioural training, adequate exposure is also given through conferences, seminars and skill-building workshops. Leadership development programs for senior executives are given special emphasis. Developmental gaps at senior levels are identified through Assessment Centers, and corrective actions like executive development programs, job rotation and higher responsibilities are taken to bridge the said gap. Some of the in-house learning & development Centers are as given below:

Table 1.9: In-house learning & development Centers of ONGC

Sl. No.	Name	Function & Objectives
1	ONGC Academy	<ul style="list-style-type: none"> • Nodal centre for Executive Induction and Management Development Training. • Nurture future energy leaders through a comprehensive training Program called 'EXPONENT'. • Facilitate Skilled Development Centers. • Facilitate online training & automation of the training process. • The training Programs include Graduate Trainee Programs, Functional Training, Management Development, Quality Management and International Certification Programs.
2	Assessment Development Center	<ul style="list-style-type: none"> • Assess employees on identified competencies (i.e. Strategic orientation, managing the critical partnership, result orientation, planning & decision making, problem-solving, leadership, teamwork, personal development, team development, effectiveness) required for senior-level critical business positions, with the help of external consultants/ faculties and internal experts.

		<ul style="list-style-type: none"> • Identify and bridge the gaps between the required and the existing competencies.
3	Institute of Drilling Technology	<ul style="list-style-type: none"> • Certified Training on Drilling and Well Control. • Provides advanced technical knowledge through training and offers a plausible solution to field problems. • Provides techno-economic expertise & solutions to various field problems faced by various services of ONGC for promoting cost-effective E&P activities of the company. • Research & Development
4	Geo-data Processing & Interpretation Centre	<ul style="list-style-type: none"> • Seismic Data Processing & Interpretation • Seismic Software Development • provides solutions to complex E&P problems
5	Institute of Reservoir Studies	<ul style="list-style-type: none"> • Training in Reservoir Modelling & Management of oil & gas fields • Develops and applies reservoir engineering techniques • Formulates the development schemes of oil and gas fields of ONGC with a state-of-the-art Data Centre for carrying out seismic to reservoir simulation. • Integrated Reservoir Management combines Seismic, Geological, Well logging, Reservoir and Production.
6	Institute of Petroleum Safety, Health & Environment Management	<ul style="list-style-type: none"> • Safety Training • Promotes safety, occupational health, environmental practices and standards in the Petroleum sector.

7	Institute of Oil & Gas Production Technology	<ul style="list-style-type: none"> • Training in Production Technology • Providing reliable, cost-effective and timely services • Develops scientifically oriented & technically competent employees through motivation and training • Equips with eco-friendly and state-of-the-art technologies.
8	Institute of Engineering & Ocean Technology	<ul style="list-style-type: none"> • Training in Geotechnical & Structural Engineering • Facilitates innovation, development & acceleration of the future plans for self-reliance in technology. • Develops expertise in core fields of Geotechnical Engineering, Structural Engineering, Risk & Reliability Engineering, Materials & Corrosion Engineering and Alternate Energy
	School of Maintenance Practices	<ul style="list-style-type: none"> • Certified training courses in Oil Field Equipment maintenance • Provides comprehensive technical development of Maintenance Engineers and Field Engineers operating and maintaining Oil Field Equipment

1.5.3.2.2 Oil India Limited

Oil India Limited (OIL), a state-owned Navratna under the administrative control of MoPNG, is the second-largest hydrocarbon exploration & production PSU. It's in the business of exploration, development, production and transportation of crude oil & natural gas. It started operation with the discovery of crude oil at Digboi, Assam, and over time it has grown into a fully integrated upstream petroleum company. It was incorporated on 18th February 1959. Its name was changed from Oil India Pvt. Ltd. to Oil India Ltd. w.e.f. May 1961 and in July 1961, it was transformed into an equal

partnership joint venture company of Govt. of India and Burmah Oil Company Ltd., to expand & develop the oil fields of North-East India (at Naharkatiya & Moran). In 1981 it became a wholly-owned PSU of Govt. of India as the equity shares of the company held by Burmah Oil Company Ltd was transferred to Govt. of India. In 1997, it was conferred the status of Miniratna, and in 2010, it was conferred the Navratna status by the Govt. of India.

It has more than 100,000 Sq. KM of licensed areas for oil & gas exploration and has a global presence in countries viz. Bangladesh, Gabon, Iran, Libya, Mozambique, Nigeria, Sudan, United States, Venezuela and Yemen. It operates around 1200 Kms pipeline for transportation of crude oil produced by OIL & ONGC in the North-East region to feed refineries at Barauni, Bongaigaon, Digboi, Guwahati and Numaligarh and has around 700 Kms pipeline from Numaligarh refinery to Siliguri. It has also diversified into non E&P energy value chain by venturing into City Gas Distribution (CGD) projects. It has also acquired a stake in Numaligarh Refinery Ltd. (NRL) and Brahmaputra Cracker and Polymer Ltd. (BCPL). It has also diversified into the Renewable & Alternate Energy Sector in the Wind and Solar domains and has installed RE projects worth 174.10 MW of wind energy and 14 MW of solar energy. The major Subsidiaries, Joint Ventures and Associates of OIL are as below:

Table 1.10: Major Subsidiaries, Joint Ventures and Associates of OIL

Sl. No.	Name
<i>Subsidiaries</i>	
1	Oil India Cyprus Ltd.
2	Oil India International B.V.
3	Oil India International Pte. Ltd.
4	Oil India Sweden AB
5	Oil India (USA) Inc.
<i>Joint Ventures</i>	
1	Beas Rovuma Energy Mozambique Ltd.
2	DNP Ltd.
3	HPOIL Gas Pvt. Ltd.

4	Indoil Netherlands B.V. (JV of subsidiary Oil India Sweden AB)
5	Indradhanush Gas Grid Ltd.
6	Purba Bharati Gas Pvt. Ltd.
7	Suntera Nigeria 205 Ltd.
8	Taas India Pte. Ltd. (JV of subsidiary Oil India International Pte. Ltd.)
9	Vankor India Pte. Ltd. (JV of subsidiary Oil India International Pte. Ltd.)
10	WorldAce Investment Ltd. (JV of subsidiary Oil India International B.V.)
Associates:	
1	Brahmaputra Cracker & Polymer Ltd.
2	Numaligarh Refinery Ltd.

Corporate Social Responsibility in OIL

Oil India Limited, as a Responsible Corporate Citizen, is committed to the principles of Corporate Social Responsibility (CSR) and Sustainable Development (SD) towards achieving the inclusive and holistic development of its areas of operation and the society as a whole. The details of CSR Budget Allocation & Expenditure Details for FY 2020-21, FY 2019-20 and FY 2018-19 are as given below:

Table 1.11: CSR Budget Allocation & Expenditure Details of OIL

CSR Expense Head	Expenditure incurred (Rs. in Crore)		
	FY 2020-21	FY 2019-20	FY 2018-19
Healthcare	6.10	20.84	5.63
Education	15.69	32.82	27.12
Skill Development & Capacity Building	26.10	29.90	29.25
Women Empowerment	1.46	0.00	0.00
Sustainable Livelihood	9.55	7.01	5.65

Swachh Bharat Abhiyan	5.21	0.00	6.62
Environment	0.22	0.88	1.56
Art, Culture & Heritage	0.47	0.84	11.74
Sports	1.80	1.34	3.23
Infrastructure Development	13.65	16.28	0.00
Relief & Rehabilitation / Contribution to Govt. Funds	25	15.5	42.59
Total CSR Expenditure	105.25	125.41	133.39

(Source: OIL (India) Limited Annual Reports)

OIL's Contribution towards Skill Development

It has set up six centres for Skill Development in Assam (Guwahati, Jorhat, Dibrugarh and Nagaon), Rajasthan (Jodhpur) and Arunachal Pradesh (Itanagar) to benefit marginalized EWS students with an 11-month free residential coaching for entrance examination for admission into IITs and other reputed engineering colleges & medical colleges. These centres have an annual intake capacity of 30 students per centre and a success rate of around 90%.

It has imparted skill training in computer education, creative studies, environmental science, cleanliness, and behavioural science in its operational districts under Project Dikhya and has impacted around 35000 students of 30 rural minor schools via custom-designed mobile vans equipped with laptops and children-friendly delightful teaching atmosphere. It has also promoted adult education and impacted around 2000 illiterate & semiliterate adults in rural areas and tea gardens under this project in 36 locations. The project also includes Knowledge –Yan (K-Yan) with K-class under which it has distributed audio-visual education devices like high-end computers, advanced projection systems, DVD players and in-built audio systems in its operational areas of Assam & Arunachal Pradesh and benefited around 4,65,000 students. It has provided

training to around 1,000 primary school teachers of rural schools on innovative teaching methodologies under its primary school teacher Training Program. Life skill education has also been imparted in 75 Girls' schools. It has benefited around 10,000 persons in 30 locations under a Program on financial literacy for the rural community.

Skill development training on beekeeping & honey processing, mustard buckwheat, and local pulses processing, including its packaging & marketing, is being imparted under Project OIL-Jeevika, to the targeted beneficiaries in Assam. It has benefited around 15,000 youth /women of Assam and Arunachal Pradesh with Skill training in various trades under Project Swabalamban and also assisted with gainful engagement in different organizations.

1.5.3.2.3 GAIL (India) Limited

GAIL, a state-owned Maharatna PSU under the administrative control of MoPNG, is India's flagship gas marketing & distribution company and the Number 1 Gas Company. It was incorporated on 16th August 1984 as Gas Authority of India Limited with a vision to leverage the gas reserves of the country to fuel the nation's industrial and economic growth. With a strong presence across the gas value chain, which includes exploration and production, processing, transmission, distribution and marketing, the company has grown as India's top gas exploration and distribution company. Its key business includes Natural Gas Marketing, Natural Gas Transportation, Liquefied Petroleum Gas (LPG) Transportation, Petrochemicals, LPG & Other Liquid Hydrocarbon (LHC), Exploration & Production, Renewable Energy, City Gas Distribution and Project Execution. The details of its operations and operation sites are as given below:

Table 1.12: Details of operations and operation sites of GAIL

Sl. No.	Operation	Operation Sites
12	LPG Plants	Vijaipur, Madhya Pradesh (2 nos.), Vaghodia, Gujarat (1 No.), Auraiya, Uttar Pradesh (1 No.), and Gandhar, Gujarat (1 No.)

3	Petrochemical plant	Pata, Uttar Pradesh
4	C3/C3 Plant	Pata, Uttar Pradesh and Vijaipur, Madhya Pradesh
5	Compressor station	Vijaipur, Khera, Jhabua and Kailaras in Madhya Pradesh, Hazira and Vaghodia in Gujarat, Auraiya in Uttar Pradesh and Chainsa in Haryana.
6	LPG Pipeline network and pumping stations	Jamnagar, Kandla, Samakhiali in Gujarat, Nasirabad, Mansarampura in Rajasthan, Loni in Uttar Pradesh, Visakhapatnam, G.Konduru in Andhra Pradesh and Cherlapally in Telengana.
7	Regional Pipelines network and offices	Agartala (Tripura), Mumbai (Maharashtra), Vadodara (Gujarat), Rajahmundry (Andhra Pradesh), Delhi – NCR, Karaikal (Puducherry) and Kochi (Kerala)

It has an international presence in countries like the USA, Singapore, Myanmar, Russia, Egypt and China through its various international subsidiaries and alliances.

The details of its Subsidiaries, Joint Ventures and Alliances are as given below:

Table 1.13: Major Subsidiaries, Joint Ventures and Alliances of GAIL

Sl. No.	Name
<i>Subsidiaries</i>	
1	Brahmaputra Cracker and Polymer Limited
2	GAIL Gas Limited
3	GAIL Global (Singapore) Pte Ltd.
4	GAIL Global (USA) Inc.,
5	GAIL Global USA LNG LLC
6	Konkan LNG Limited

<i>Joint Ventures</i>	
1	Aavantika Gas Limited
2	Bhagyanagar Gas Limited
3	Central U.P. Gas Limited
4	Green Gas Limited
5	Indraprastha Gas Limited
6	Mahanagar Gas Limited
7	Maharashtra Natural Gas Limited
8	ONGC Petro-additions Limited
9	Petronet LNG Limited
10	Tripura Natural Gas Company Limited
11	Talcher Fertilizers Limited
12	Vadodara Gas Limited
<i>Associates:</i>	
1	China Gas Holdings Limited, China
2	Fayum Gas Company, Egypt
3	National Gas Company , Singapore
4	South-East Asia Gas Pipeline Company Limited, Myanmar
5	TAPI Pipeline Company Limited

Corporate Social Responsibility in GAIL:

GAIL adopts a project-based approach for almost all CSR projects. All relevant stakeholder groups are involved at different CSR project cycle stages from need identification, planning, implementation, monitoring, sustainability, and exit planning to impact evaluation. For almost the last two decades, the company's corporate social

responsibility function has been actualized through an independent department manned by professionals. To strengthen its CSR programs, GAIL collaborates with experts from diverse sectors, including Non-Governmental Organizations, Civil Society bodies, Government departments, Implementing Agencies. The details of thrust-wise CSR Budget Allocation & Spend Details during FY 2020-21, FY 2019-20 and FY 2018-19 are as under:

Table 1.14: CSR Budget Allocation of GAIL

Thrust Area	CSR Spent / Expenditure		
	FY 2020-21 (Rs. in crore)	FY 2019-20 (Rs. in crore)	FY 2018-19 (Rs. in crore)
AROGYA (Initiatives on Health, Nutrition, Drinking Water and Sanitation)	40.26	43.81	44.84
KAUSHAL (Initiatives on Skill Development & Livelihood generation)	13.76	30.57	41.47
UJJWAL (Initiatives on Education)	22.82	31.18	14.21
UNNATI (Initiatives on Rural Development)	4.19	4.56	13.60
SASHAKT (Initiatives on Women Empowerment)	1.86	0.90	0.54
SAKSHAM (Care of Elderly & Disabled)	3.08	2.96	1.08
HARIT (Green Initiatives)	1.11	1.85	

Other (Sports, National Heritage, Slum Area Dev. etc)	60.60	8.84	3.55
Capacity Building	0.72	0.63	
Total	147.67	125.30	119.29

(Source: GAIL (India) Limited Annual Reports)

GAIL's Contribution towards Skill Development

GAIL has benefited around 400 students by providing them industry-fit skill training in trades like customer-care executive, CNC machining technician, Draughtsman Mechanical, Industrial electrician, Industrial Electrician (Oil & Gas), Industrial Welder (Oil & Gas welding technician) etc. and at GAIL Institute of Skills in Nagaram, East Godavari, Andhra Pradesh and Guna, Madhya Pradesh and also assisting them with gainful engagements/placements.

It has also partnered with the Central Institute of Plastics Engineering and Technology (CIPET) since FY 2013-14 and provides support regarding skill training in 'Plastic Products Manufacturing Operators'. to unemployed youth. Around 1,200 youth have been trained and assisted with employment in a profitable way. This training program is aligned with the National Qualifications Framework (NSQF) and has been approved by NSDC under the MSDE. Around 221 youth has been trained at CIPET Centers located in Guwahati, Lucknow, Ahmedabad, Baddi, Jaipur, Hyderabad and Agartala, and more than 90% have been successfully placed.

It has benefited 160 underprivileged students per year by providing free residential coaching, boarding and lodging facility for 11 months at Kanpur (Uttar Pradesh), Dwarahat (Uttarakhand) and Srinagar (Uttarakhand) to nurture and preparing them for engineering entrances exams under GAIL Utkarsh Project. To date, 1139 students have been trained. Out of which 797 students (i.e. 223 in IITs and 574 in NITs and other engineering colleges) have been placed. It has also impacted around 6000 children and 100 teachers in 180 Govt. Schools in District Auraiya, Uttar Pradesh, under project

Bhavishya by facilitating them with solar energy-powered smart classes. Under the project, 155 Smart classes have been set up in Assam, Jharkhand (Khunti and Giridih), Karnataka (Dharwad) and Uttarakhand (Rudraprayag). School infrastructure like classrooms, IT facilities, libraries, and science labs have been created and facilitated with equipment and stationeries for promoting creativity and attendance among underprivileged students.

Skills training is being imparted to unemployed youth of Madhya Pradesh at GAIL Institutes of Skill, Guna. The project was launched in 2010 and has benefited more than 5,000 youth. In FY 2020-21, around 600 beneficiaries have been trained in jobs such as CNG Operator, Customer Care Executive, Industrial Electrician (Oil & Gas), Industrial Welder (Oil & Gas), Welding Technician Level-3 and Unarmed Security Guard. The project is being implemented through a partner agency and accredited by the NSDC with an employment rate of more than 70%. A similar Skill Development Program is being implemented at GAIL Institutes of Skill, Nagaram, providing skills training to unemployed youth in Nagaram and its suburbs, East Godavari District, Andhra Pradesh. The project was launched in FY 2015-16 and has impacted around 1,000 beneficiaries with skill development training. In FY 2020-21, 175 youth have been trained in trades like Industrial Electrician, Welding & Draftsman Mechanical etc. The placement rate is more than 70%.

It has also supported & empowered adolescent girls and women from urban slums in Delhi by imparting skill training in tailoring, data operation and, beauticians etc. The project has been run since FY 2013-14 and has benefited more than 1200 women beneficiaries with gainful engagement. In FY 2020-21, around 228 girls/women have been trained under the project.

1.5.3.2.4 Indian Oil Corporation Limited

Indian Oil Corporation Limited (IOCL), a state-owned Maharatna PSU under the administrative control of MoPNG, is India's largest integrated and diversified energy company and its flagship national oil company with business interests in the entire

hydrocarbon value chain. It was established in 1959 as Indian Oil Corporation Ltd. It is a leading Indian Government Company / PSU to feature in the Fortune ‘Global 500’ listing. Its operations include refining, pipeline transportation, exploration & production of crude oil & gas and marketing of petroleum products, natural gas and petrochemicals. In the field of exploration & production, it has 100 oil & gas blocks, two coal bed methane blocks and overseas blocks in countries like Gabon, Iran, Libya, Nigeria, Timor-Leste, Venezuela and Yemen. Major brands that are included in its portfolio are Indane LPG, SERVO lubricants, XTRA PREMIUM petrol, XTRAMILE diesel, and Propel Petrochemicals.

The group refining capacity is 80.2 MMT (32% share of national refining capacity). It has a cross-country pipeline network of 14,670 km with a throughput capacity of 94.42 MMTPA for crude oil & refined petroleum products and 21.69 MMSCMD for gas. It has around 52,703 customer touchpoints, 29,085 fuel stations (including 8,515 KSKs) and 755 CNG stations across the country. In R&D, it has around 1,000 patents. It is the second largest player in Petrochemicals in India. In FY 2019-20, the total sales of Natural Gas were 4.72 MMT, and in E&P, its share from 8 producing assets was 4.25 Mtoe. The details of its refineries are as given below:

Table 1.15: Refineries of IOCL

Sl. No.	Refinery Location	Commissioned in	Capacity in MMT (as on 1st April 2020)
1	Barauni	1964	6.00
2	Bongaigaon	1979	2.35
3	Digboi	1901	0.65
4	Gujarat	1965	13.70
5	Guwahati	1961	1.00
6	Haldia	1975	8.00

7	Mathura	1982	8.00
8	Manali, Chennai (CPCL)	1966	10.50
9	Paradip	2016	15.00
10	Panipat	1998	15.00
Total			80.20

The details of its Subsidiaries, Joint Ventures and Alliances are as given below:

Table 1.16: Major Subsidiaries, Joint Ventures and Alliances of IOCL

Sl. No.	Name
<i>Subsidiaries</i>	
1	Chennai Petroleum Corporation Limited
2	Indian Catalyst Private Limited
3	IndianOil (Mauritius) Limited
4	IndOil Global B.V
5	IOC Middle East FZE
6	IOCL Singapore Pte Limited
7	IOC Sweden AB
8	IOCL (USA) Inc.
9	Lanka IOC PLC
<i>Joint Ventures</i>	
1	Delhi Aviation Fuel Facility (Private) Limited
2	Green Gas Limited
3	GSPL India Transco Limited
4	GSPL India Gasnet Limited
5	Hindustan Urvarak and Rasayan Limited
6	IHB Private Limited
7	Indradhanush Gas Grid Limited
8	IndianOil Total Private Limited

9	Indian Oiltanking Limited
10	Indian Oil Petronas Private Limited
11	IndianOil Skytanking Private Limited
12	Indian Synthetic Rubber Private Limited
13	IndianOil Adani Gas Private Limited
14	IndianOil LNG Private Limited
15	IndianOil Panipat Power Consortium Limited
16	IndianOil Ruchi Bio Fuels LLP
17	Kochi Salem Pipelines Private Limited
18	Lubrizol India Private Limited
19	Mumbai Aviation Fuel Farm Facility Private Limited
20	NPCIL IndianOil Nuclear Energy Corporation Limited
21	Petronet CI LTD
22	Ratnagiri Refinery & Petrochemicals Limited
23	Suntera Nigeria 205 Limited
<i>Associates:</i>	
1	AVI-OIL India Private Limited
2	Petronet India Limited
3	Petronet LNG Limited
4	Petronet VK Limited

Corporate Social Responsibility in IOCL

IOCL's commitment toward the society is evident from its Vision / Mission statement. It has been contributing to social welfare, upliftment of society and development of communities through its CSR activities. Its major thrust areas under CSR are education, skill development in employment-enhancing vocational skills, women empowerment, community development, healthcare and sanitation etc. It has partnered with and positively impacted many stakeholders through more than 600 community development projects.

The details of its CSR Budget allocation & expenditure details are as given below:

Table 1.17: CSR Budget allocation & expenditure of IOCL

Expense head	Expenditure incurred (Rs. in crore)		
	FY 2020-21	FY 2019-20	FY 2018-19
Health and Sanitation	29.54	86.90	93.07
Contribution towards PMUY		73.87	85.92
Flagship Projects-CSR	12.69	16.82	14.62
Educational Scholarship	1.21	1.69	2.68
Swachh Bharat	16.38	7.17	8.26
Education/ vocational skills	84.99	254.57	207.56
Administration Expenses, training etc.	15.37	24.87	22.45
Drinking-Water	10.95	11.13	15.13
National Heritage, Art & Culture	11.95	6.04	0.48
COVID 19	252.48	0.47	
Other expenses	24.81	59.85	40.43
Total	460.37	543.38	490.60

(Source: IOCL Annual Report for FY 2020-21, FY 2019-20 and FY 2018-19)

IOCL's Contribution towards Skill Development

IOCL is benefiting under-privileged girls after class 12th by preparing them for JEE Main, JEE advanced & other central / state engineering entrances for admission in reputed Engineering Institutes like IITs, NITs, IIITs, etc. under its project IndianOil Vidushi. Under this project, girls from Odisha, Jharkhand & Chhattisgarh have benefited at its Bhubaneswar centre and girls from J&K, Uttarakhand, Himachal Pradesh and Punjab from its Noida centre. Free residential coaching & mentoring are provided to 30 girls selected on merit-cum-means basis at each centre.

It provides scholarships @ Rs.1000/- per student per month for the entire duration of the regular courses on merit-cum-means basis, under its project IndianOil Gyanodaya, in 36 ITIs & Polytechnics in the vicinity of its refinery locations. The scholarship is provided to 50 students per batch in each such ITI / Polytechnics. It is benefiting young underprivileged girls of North-East with nursing training [3-year Diploma in General Nursing and Midwifery (GNM) course to young girls and 4-year B.Sc. (Nursing) course] in its Assam Oil School of Nursing (AOSN). The intake capacity of AOSN is 30 students per year in each course. Four hundred ten girls have benefited and gainfully placed under the project. It has benefitted around 15,000 unemployed youth through its skill development centres under its Kaushal Vikas initiatives.

1.5.3.2.5 Bharat Petroleum Corporation Limited

Bharat Petroleum Corporation Limited (BPCL) is the 'Best Performing' Maharatna PSU under the administrative control of MoPNG. It started as an Oil and Gas Company in India and has now grown into an oil refining, exploration & marketing conglomerate featuring in Fortune 500 list.

Its history dates back to a pre-independence era when John D. Rockefeller, along with his associates, acquired control over several refineries & pipelines and formed Standard Oil Trust. To counter the growing significance of Standard Oil, its rivals (i.e. Royal Dutch, Shell and Rothschild) merged and formed Asiatic Petroleum to market petroleum products in South Asia. In 1928, Asiatic Petroleum (India) and Burmah Oil Company came together to form Burmah-Shell Oil Storage and Distributing Company of India Limited. On 3rd November 1952. It was incorporated with the name Burmah Shell Refineries Ltd. as a private limited company. On 24th January 1976, Burmah Shell Group of Companies was taken over by the Govt. of India to form Bharat Refineries Ltd., and on 1st August 1977, it was renamed Bharat Petroleum Corporation Ltd. Currently, BPCL is a Schedule a Maharatna PSU under MoPNG. It features in the Fortune Global 500 list of companies and has 2 Refineries (Mumbai and Kochi), 80 Retail (Installations/Depots/TOPs), 53 LPG Bottling Plants (1 is in the Refinery and 52

in other locations), 4 Lube Blending Plants, 64 Aviation Locations/Fuelling Stations/on-wheels, 1 Head Office and 4 Regional Offices.

The details of its Subsidiaries, Joint Ventures and Alliances are given below:

Table 1.18: Major Subsidiaries, Joint Ventures and Alliances of BPCL

Sl. No.	Name
<i>Subsidiaries</i>	
1	Bharat Petro Resources Ltd
2	Bharat Petro Resource JPDA Ltd.
3	Bharat Gas Resources Ltd.
4	BPCL-KIAL Fuel Farm Pvt. Ltd.
5	Numaligarh Refinery Ltd. (up to 25 March, 2021)
6	BPRL International B.V.
7	BPRL Ventures B.V.
8	BPRL Ventures Mozambique B.V.
9	BPRL Ventures Indonesia B.V.
10	BPRL International Singapore Pte Ltd.
11	BPRL International Ventures BV
<i>Joint Ventures</i>	
1	Petronet CI Ltd.
2	Bharat Oman Refineries Ltd.
3	Petronet LNG Ltd.
4	Indraprastha Gas Ltd.
5	Maharashtra Natural Gas Ltd.
6	Central U.P. Gas Ltd.
7	Sabarmati Gas Ltd.
8	Haridwar Natural Gas Ltd.
9	Goa Natural Gas Pvt. Ltd.
10	Bhrarat Stars Services Pvt. Ltd.
11	Delhi Aviation Fuel Facility Pvt. Ltd.

12	Mumbai Aviation Fuel Farm Facility Pvt. Ltd.
13	Kannur International Airport Ltd.
14	GSPL India Gasnet Ltd.
15	GSPL India Transco Ltd.
16	Kochi Salem Pipeline Pvt. Ltd.
17	Ratnagiri Refinery and Petrochemicals Ltd.
18	Ujjwala Plus Foundation
19	Petronet India Ltd.
20	Bharat Renewable Energy Ltd.
21	Brahmaputra Cracker and Polymer Limited
22	Assam Bio Refinery (P) Ltd
23	Indradhanush Gas Grid Limited
24	IHB Private Limited
<i>Associates:</i>	
1	FINO Paytech Limited
2	Petroleum India International
3	IBV (Brasil) Petroleo Ltd.
4	Taas India Pte Ltd.
5	Vankor India Pte Ltd.
6	Falcon Oil & Gas BV
7	Mozambique LNG1 Pte Ltd
8	Mozambique LNG1 Holding Company Ltd
9	Mozambique LNG1 Financing Company Ltd.
10	Mozambique LNG1 Financing Company LDA
11	LLC TYNGD
12	JSC Vankorneft
13	Urja Bharat Pte. Ltd.
14	DNP Limited
15	Matrix Bharat Pte Ltd.

Corporate Social Responsibility in BPCL

As a responsible corporate citizen, BPCL is committed to Corporate Social Responsibility (CSR), and it, therefore, forms a key part of the Company's overall vision touching the pulse of all, especially in rural & tribal India. Adhering to the Companies Act 2013 and the Companies (Corporate Social Responsibility Policy) Rules, 2014 it earmarks 2 % of its average net profit for CSR. Its key thrust/focus areas include Community Development, Education, Health & Hygiene, Skill Development and Water Conservation. Sustainability of the initiatives is the prime motto, factoring in community needs and cultural sensitivities, in the core thrust areas of Skill Development, Education, Water Conservation, Health & Hygiene and Community Development. Recognizing its duty to the communities near and far from its businesses, BPCL has contributed in a large way to the relief and rehabilitation activities in the wake of the coronavirus pandemic while also continuing its support to national missions like Swachh Bharat Abhiyan, Skill India and Transformation of Aspirational Districts program, to name a few.

BPCL relies on the strong partnerships it has forged with the Government, credible not-for-profit organizations and other agencies to bring the above-mentioned quality interventions to the doorsteps of those in need across the nation. In the year 2020-21, more emphasis was given to Health (@60 % of CSR expenditure) considering the ongoing COVID-19 pandemic. It supported Haryana & Uttar Pradesh with Cold Storage Equipment for the vaccination Program. Focus on other thrust areas declined due to factors like shutting down of schools (Education suffered), non-availability of labour as migrants returned to their homes (Infrastructure Development suffered), and physical classes were not held due to covid norms (Skill development suffered).

The details of its CSR Budget allocation & expenditure details are as under:

Table 1.19: CSR Budget allocation & expenditure of BPCL

Expense head / Thrust Area	Expenditure incurred (Rs. in crore)		
	FY 2020-21	FY 2019-20	FY 2018-19
Health & Sanitation	87.52	229.95	110.51
Education & Skill Development	43.79	102.17	58.10
Water Conservation	0.78	1.52	1.65
Community Development	8.05	10.52	7.41
Others	1.88	0.51	0.27
Administrative overheads	2.88	0.90	
Total	144.90	345.57	177.94

(Source: BPCL Annual Report for FY 2020-21, FY 2019-20 and FY 2018-19)

BPCL's Contribution towards Skill Development

BPCL is committed to the cause of skill development and supports holistic education with the help of technology, creates infrastructural facilities and facilitates access to education and improvement of education systems. It benefits around 400 students every year by providing diploma education in Automobile, mechanical & Computer courses at its 'Vivekananda-BPCL Skill Development Centre'. It also ensures that the teachers are prepared and in sync with the evolving education paradigm and encourages them to use current techniques for teaching & managing the classroom and develop updated teaching materials as per specific needs, especially by leveraging digital technologies, under its Saksham Project. The aim is to impact the entire school environment and learning experiences. It has benefited around 1,000 primary/ upper primary teachers & Head Masters of around 350 schools.

It has pioneered innovative learning activities like value-based story-telling, conducting games etc., with the help of educational trips, mobile libraries, learning camps etc., to promote learning and create a positive learning environment. It has also implemented 'Computer-Aided Learning and 'Digital Literacy as Life Skill' in low-income schools

of Mumbai, Jaipur, Lucknow, Uran and Solapur and imparts a one-year foundation course followed by a syllabus training in digital learning for the 10th Pass students. The projects are being implemented in 50 schools run by the Municipal Corporation of Greater Mumbai and 20 schools in Washala, a tribal village in the Thane district of Maharashtra and benefited /trained more than 55,000 students. It has set up a Skill Development Institute (SDI) at Kochi, where 756 students have been trained to date, and a batch of 123 students is undergoing training currently. During Covid19 Pandemic, the training activities at SDIs were seriously affected. Still, BPCL continued its Skill Development initiatives for youth in the Aspirational Districts of Madhya Pradesh. It adopted the Online mode of training and benefited 375 candidates from 15 batches by providing vocational skills training and assisting them with employment/self-employment.

1.5.3.2.6 Hindustan Petroleum Corporation Limited

Hindustan Petroleum Corporation Ltd (HPCL) is a Schedule ‘A’ Maharatna Oil & Gas Public Sector Undertaking (PSU) of the Government of India under MoPNG and a subsidiary of ONGC Limited. HPCL has 2 Refineries (Mumbai and Visakh), 18634 Retail outlets, 41 (Installations/Terminals/TOPs), 51 LPG Bottling Plants, 70 Depots, 51 LPG Bottling plants, 46 ASFs, 1638 SLO/LDP dealers, 6192 LPG distributors and 8.72 Crore LPG customers. Its product ranges include Liquid Petroleum Gas (LPG), Naphtha, Motor Spirit, Hexane, Propylene, Mineral Turpentine Oil, Aviation Turbine Fuel, Superior Kerosene Oil, High-Speed Diesel, JBO/WO, Light Diesel Oil, Furnace Oil, Low Sulphur Heavy Stock, Bitumen. The details of its Subsidiaries, Joint Ventures and Alliances are as below:

Table 1.20: Major Subsidiaries, Joint Ventures and Alliances of HPCL

Sl. No.	Name
<i> Holding Company</i>	
1	ONGC Limited
<i> Subsidiaries</i>	

1	HPCL Biofuels Ltd.
2	HPCL Middle East FZCO
3	HPCL Shapoorji Energy Pvt. Ltd.
4	Prize Petroleum Company Ltd.
<i>Joint Ventures</i>	
1	Aavantika Gas Ltd.
2	Bhagyanagar Gas Ltd
3	Godavari Gas Pvt. Ltd.
4	HPCL Rajasthan Refinery Ltd
5	HPOIL Gas Pvt. Ltd.
6	HPCL-Mittal Energy Ltd.
7	Hindustan Colas Pvt. Ltd.
8	IHB Pvt. Ltd.
9	Mumbai Aviation Fuel Farm Facility Pvt. Ltd.
10	Petronet MHB Ltd.
11	Petronet India Ltd.
12	Ratnagiri Refinery & Petrochemicals Ltd
13	South Asia LPG Company Pvt. Ltd.
14	Ujjwala plus foundation
<i>Associates:</i>	
1	GSPL India Gasnet Ltd.
2	GSPL India Transco Ltd
3	Mangalore Refinery and Petrochemicals Ltd. (MRPL)

Corporate Social Responsibility in HPCL

HPCL is a model of excellence in its commitment to society and believes in creating shared values and touching millions of lives. Its CSR policy is in sync with its vision of “becoming a model of excellence in meeting social commitment and creating shared value and interdependency of business and stakeholders” and is also inspired by the National Missions of the Government of India like the National Health Mission, National Skill Development Mission, Swachh Bharat Abhiyan, ‘Transformation of

Aspirational Districts’ program and other policies on rural/community development. It supports CSR projects that create empower individuals & communities through sustainable socio-economic development. The Thrust/ Focus Areas include Child-Care, Education, Environment & Community Development, Healthcare, Skill Development, and Sports to strengthen the company’s reputation as a socially responsible Corporate Citizen. The details of its CSR Budget allocation & expenditure details are as under:

Table 1.21: CSR Budget allocation & expenditure of HPCL

Expense head / Thrust Area	Expenditure incurred (Rs. in crore)		
	FY 2020-21	FY 2019-20	FY 2018-19
Education	10.10	39.58	29.93
Healthcare	130.51	25.03	12.71
Skill Development	2.50	41.27	20.23
Empowerment of Socially & Economically Backward groups	6.56	6.64	7.57
Sports	-	0.88	7.81
Swachh Bharat Abhiyan	3.77	27.22	56.83
Environment Sustainability	-	36.80	31.77
Others	2.91	4.82	
Total	156.35	182.24	159.81

(Source: HPCL Annual Reports)

HPCL’s Contribution towards Skill Development

HPCL is promoting practical science education to new generation learners, i.e. students of Class 5th to 10th, under Project Agastya, in 23 remote schools through Mobile Science Labs, which reach the doorstep of schools to develop an interest in science subjects. It has also imparted time-bound computer training programs and provided personal computers to government students in semi-urban / rural schools under Project Unnati and trained/skilled them in computer education, MS Office etc., free of charge. The teachers are also trained to ensure the sustainability of the project. Skill training is

being provided to unemployed youth /school dropouts in basic trades like Air Conditioning, Beauty Culture & Skincare, Construction, Electricals, Fabrication, IT, Plumbing, Retail and Refrigeration under Project Swavalamban. Residential training is also extended to youth from remote rural areas under this project. It is impacting around 13,000 young girls with education under Project Nanhi Kali, providing free computer education to around 12,000 students Under Project Unnati and supporting education and therapy of children with special needs under Project ADAPT.

Summary of Skill Development Endeavours of PSUs of the Hydrocarbon Sector

A comparative statement of the skill development endeavours of the above select major PSUs of the Hydrocarbon Sector in FY 2019-20 are tabulated below as given below:

Table 1.22: Skill Development Endeavours of PSUs of the Hydrocarbon Sector

Sl. No.	Name of CPSE	Skill Development Endeavour in FY 2019-20			
		Education	Women Empowerment	Vocational Trainings	Expenditure (Rs.)
1	ONGC	Supports	Supports	Supports	1,10,94,00,000.00
2	IOCL	Supports	Supports	Supports	1,74,15,62,000.00
3	HPCL	Supports	Supports	Supports	41,27,00,000.00
4	BPCL	Supports	Supports	Supports	1,00,66,63,270.00
5	GAIL	Supports	Supports	Supports	40,95,00,000.00
6	OIL	Supports	Supports	Supports	27,83,00,000.00

**The data is based on information gathered from respective websites of the selected PSUs of the Hydrocarbon Sector.*

The above-mentioned PSUs of the Hydrocarbon Sector have been undertaking skill development through education, women empowerment as well as various skill training / vocational training modes and spends considerably (around 20-30 per cent of the CSR budget) on various skill development Programs.

1.5.3.3 Skill Development Institutes of Hydrocarbon Sector

The Government of India rolled out the Skill India Mission as a flagship project for creating convergence across sectors and states with the aim of ensuring youth empowerment through improved skill and knowledge to enhance their employability. In line with the National Skill Development Mission, Hydrocarbon Sector Skill Council (HSSC) was set up on 26-04-2016 to facilitate the skill development requirement in Hydrocarbon Sector.

The Skill Development Institutes (SDIs) in the hydrocarbon sector are promoted by PSUs of the Hydrocarbon Sector under the MoPNG and are state-of-the-art Institutes for meeting the skilled workforce requirement of the Hydrocarbon Sector. These SDIs were conceptualised to be established as a collective CSR initiative with the pooled funds of BPCL, Balmer Lawrie, EIL, GAIL, HPCL, IOCL, OIL and ONGC for running vocational short-term skill training programs to enhance the livelihood of unemployed, underprivileged vulnerable youth and ensure availability of skilled manpower in the hydrocarbon sector. Accordingly, six SDIs have been established at Bhubaneswar, Vizag, Kochi, Ahmedabad, Raebareli and Guwahati with nodal PSU as IOCL, HPCL, BPCL, ONGC, GAIL and OIL, respectively for each such SDI. These SDIs are state-of-the-art Institutes, imparting skill training in the Hydrocarbons sector and sub-sector to cater for the sectoral need in different parts of the country.

The SDIs are affiliated with Hydrocarbon Sector Skill Council (HSSC) under National Skill Development Corporation NSDC and its courses are aligned to the National Skills Qualification Framework (NSQF) of the central government. Certificates are issued on completion of the course after due external evaluation.

The details of these SDIs are as given below:

Table 1.23: SDIs in the Hydrocarbon Sector

Sl. No.	Name	Sub Sector	Nodal PSU	Established in
1	SDI, Ahmedabad	Upstream	ONGC	September 2017.
2	SDI, Guwahati	Upstream	OIL	August 2017.
3	SDI, Raebareli	Midstream	GAIL	November 2017.
4	SDI, Bhubaneswar	Midstream & Downstream	IOCL	May 2016.
5	SDI, Vizag	Downstream	HPCL	October 2016.
6	SDI, Kochi	Downstream	BPCL	December 2016.

As per MOPNG, till March 2020, 15978 trainees had been trained by these Skill Development Institutes.

1.5.3.3.1 SDI – Raebareli

The journey of SDI, Raebareli, started with its society registration (registration no 1281) under Society Act 1860 on 8th August 2017. The primary motto is to enhance the employability of the unemployed marginalised /vulnerable youth by imparting skill training and assisting them with gainful employment. It is a 5-star accredited institute rated by NSDC and has state-of-the-art facilities, viz. Smart Classrooms, Computer Lab, Workshop with modern training equipment, Library, Conference Room, Wi-Fi Facility, CCTVs Boarding & Lodging facilities and Recreation Facilities etc. for all trainees. It is being promoted by 8 PSUs of the Hydrocarbon Sector viz. Bharat Petroleum Corporation Limited (BPCL), Balmer Lawrie, Engineers India Limited (EIL), GAIL (India) Limited (GAIL), Hindustan Petroleum Corporation Limited, Indian Oil Corporation Limited (IOCL), Oil India Limited and Oil & Natural Gas Corporation Limited (ONGC) with an initial contribution of Rs. 15 crores and the promoting PSUs were to share its operational expenditure for an initial period of 5 years. Alternative funding possibilities like government funds through various skill development schemes are also being explored for the operational sustainability of the SDI. GAIL (India) Limited (GAIL) was made the nodal PSU and assigned the responsibility for its administrative management.

M/s. NTTF (Nettur Technical Training Foundation) was initially appointed as a technical consultant in establishing the SDI at a rented building of M/s. ITI Ltd., Raebareli campus later w.e.f. 16th November 2017, they were also awarded the contract to operate the institute, i.e. provide certified, experienced & trained faculties, administrative staff including principal, placement officer, accounts-cum-admin assistant and warden etc., for training & placement activities. The first skill development training that was taken up as a pilot basis was the Pipe-Fitter (CGD) program of 3 months' duration as per a job role identified by the Hydrocarbon Sector Skill Council (HSSC) and targeted candidates in the age group of 18 to 25 years and minimum qualification of high school (10th Pass). A batch of 31 candidates was enrolled for the said program and was provided theoretical & practical training on core subjects, training on soft skills like computer operation, entrepreneurship, communication skills etc. There was 100 % placement on completion of the training & post-training assessment. Thereafter, the activities geared up and SDI, Raebareli is currently imparting employable skill training in 5 specific job roles in Hydrocarbon Sector. To date, around 500 candidates have been trained at SDI Raebareli centre, and have ensured their gainful employment by assisting the placement of 448 candidates. The details of courses (NSQF Level: 4) offered at SDI Raebareli are as given below:

Table 1.24: Courses offered at SDI Raebareli

S. No	Trade course name	Launch date	Min. Qual.	Age Group	Course Duration
1	Pipe Fitter CGD	16.11.2017	10 th	18 to 25 Years	3 months
2	PipeFitte Oil& Gas	05.11.2018	10 th	18 to 25 Years	3 months
3	Industrial Welder	30.04.2018	10 th	18 to 25 Years	3 months
4	Process Inst. Operator	26.11.2018	12 th	18 to 25 Years	6 months
5	Industrial Electrician	26.06.2019	12 th	18 to 25 Years	6 months

The details of major topics covered in courses offered at SDI Raebareli are as given below:

Table 1.25: Major Topics Covered in Courses Offered at SDI Raebareli

S. No	Trade course name	Major Topics covered
1	Industrial Electrician (Qualification Pack Reference No: HYC/Q 6101)	Electricity Fundamentals & controls, PLC using Siemens S7-1200, Variable frequency drives, AC-DC & DC-AC Motor-Generator set, Control Panel / Industrial Wiring, DC regulated power Supply, Digital Multimeter, Clamp meter, transformer, Auto Transformer, Earth Resistance Tester, Transformer Oil testing, Domestic Wiring and Universal & induction Motor.
2	Industrial Welder (Qualification Pack Reference No: HYC/Q 9101)	Engineering Measurements, Power Saws / Hand Shears / Chipping Knife cutting, Fitting Layout Positions, making grooves, angles or gap with allowances, micrometre, Vernier calliper & other measuring instruments, Metal Arc /Shielded Metal Arc /Semi-automatic /Tungsten Inert Gas Welding.
3	Pipe Fitter CGD (Qualification Pack Reference No: HYC/Q 6102)	Natural Gas & its Properties, Fitting & Welding Basics, Use of the micrometre, Vernier calliper and other measuring instruments, Electro-fusion Welding PE Pipes, Pipe/Sheet Cutting & Threading, Welding of Pipes (Metal Arc/TIG), Underground & aboveground Pipe Laying, Brazing and Soldering of Pipe Joints, Bending of Pipes, Installation & Clamping of GI & Copper Pipe, Installation of Valves, Regulators & Meters, CGD Line Diagram,

		Route Selection for GI Pipeline, Tools & Tackles, Conversion of Burner, Material & Threading Details, Safe Work Practices including work at Height.
4	Process Instrument Operator (Qualification Pack Reference No: HYC/Q 6201)	Fluid power system, Accumulators, Valves, Intensifiers solenoids, Electro-pneumatics and Electro-hydraulics operation and principles. Understanding circuits, Ammeter, Voltmeter, Wattmeter, Benchtop and Hand-held meters, Application of electronic devices, UJT Familiarization of advanced instruments such as digital storage oscilloscope, Arbitrary waveform / Function generator, Clamp meter, Laser Tachometer, Digital panel mount measuring devices. Understanding the principle and applications of sensors, Thermocouple, RTD, NTC, PT-100, Proximity sensor, Optical sensor, Digital sensor, Galvanic skin response, Touch sensor, Gas sensor, and Magnetic sensor. Understanding Schematic/Piping and Instrument Diagram and Basic instrument symbols. Process control, Temperature, Pressure, Level & Flow measuring instruments. Data acquisition & Diagnostic system. Human-machine interface, Analyzer, Composition, Electrochemical, Gas, Humidity liquid, dry solids, Automatic control and process dynamics, Digital numbering system for signal and data management, Familiarization of operator interface and configuring formats, Control valves, Regulator, Actuator and Electric power controller. Soldering and de-soldering techniques, calibration techniques,

		understanding industrial management like 5S, Kaizen, Types of Maintenance, Job cards & work – permit system and safe disposal of waste materials.
5	Pipe Fitter Oil & Gas (Qualification Pack Reference No: HYC/Q 6102.)	Natural Gas & its Properties, Fitting & Welding Basics, Use of a micrometre, Vernier calliper and other measuring instruments, Pipe/Sheet Cutting & Threading, Welding of Pipes (Metal Arc/TIG), Bending of Pipes, Laying Steel Pipe Lines, Jointing & Clamping, Tools & Tackles, Material & Threading Details, Material of Pipes and their Components, Pipeline Route Selection & Pipeline Markings, Testing of Welding Joints, Safe Work Practices including work at Height.

The details of training milestones achieved during last 3 years at SDI Raebareli are under:

Table 1.26 Training milestones at SDI Raebareli

Sl. No.	Job Role	Launch Date	Batch No.	Training duration		Trained
				From	To	
1	Pipe Fitter	16.11.2017	1	16.11.2017	22.02.2018	31
			2	30.04.2018	01.08.2018	26
			3	10.09.2018	27.12.2018	23
			4	01.02.2019	14.05.2019	27
			5	08.06.2019	26.09.2019	21
			6	13.11.2019	17.02.2020	29

			7	20.12.2019	23.03.2020	29
			8	15.10.2020	06.01.2021	20
			9	08.01.2021	31.03.2021	20
			Total			226
2	Pipe Fitter Oil & Gas	05.03.2018	1	05.03.2018	06.09.2018	26
			2	17.09.2018	30.04.2019	23
			3	18.06.2019	20.12.2019	20
			4	13.01.2020	27.03.2020	29
			5	15.10.2020	07.01.2021	20
			6	08.01.2021	31.03.2021	20
			Total			138
3	Industrial Welder	30.04.2018	1	30.04.2018	30.11.2018	23
			2	31.12.2018	29.07.2019	23
			3	23.09.2019	27.03.2020	26
				10.11.2020	31.03.2021	22
			Total			94
4	Process Instrument Operator	26.11.2018	1	26.11.2018	30.11.2018	23
			2	23.09.2019	25.03.2020	28
			3	15.10.2020	31.03.2021	21
			Total			72
5	Industrial Electrician	26.06.2019	1	26.06.2019	10.01.2020	25
				13.01.2020	23.10.2020	26

			10.11.2020	31.03.2021	22
			Total		75
Grand Total					605

Stages of Skill Training at SDI Raebareli:

Stage I: Admission process:

Before starting any Batch for Skill Training in a particular Trade, it is advertised in the newspaper and hosted on SDI Raebareli. Afterwards, the candidates must go through the online /offline registration process and appear for the Entrance Test. Subsequently, the selected candidates come for admission counselling, and finally, the candidates are selected based on merit and admitted for Skill Training at SDI Raebareli.

Stage II: Skill Training:

The trainees have imparted skill training, including theoretical and practical sessions monitored through internal assessments. The ratio of practical to theory training is 70:30, and the trainees must undergo training by experienced trainers. There are respective workshops for the courses offered where the trainees get the required hands-on practical training to be proficient in their job roles. Continuous monitoring through internal weekly & monthly assessments evaluates the progress. Weak trainees are identified and encouraged so that they too can perform better in training.

Stage III: Assessment & Certification:

The training assessment is done by Hydrocarbon Sector Skill Council (HSSC) and National Skill Development Corporation (NSDC), and thereafter, the trainees are provided with the training completion certificate. A sample Training Completion Certificate is attached below:



Figure 1.20 Sample Training Completion Certificate

Stage IV: Placement Activity:

Upon completion of skill training, the trainees are assisted with placement facilities and even after the placement, quarterly tracking is done for one year to ensure that the trainees are gainfully engaged. SDI Raebareli has tied up with various organisations and recruitment agencies like M/s Shree Krishna Industrial Recruitment (P) Ltd., M/s BVG Skill Academy and M/s Annu Enterprises Pvt. Ltd. etc. to assist trainees in getting placed in various organisations. The year-wise placement details at SDI Raebareli is given as under:

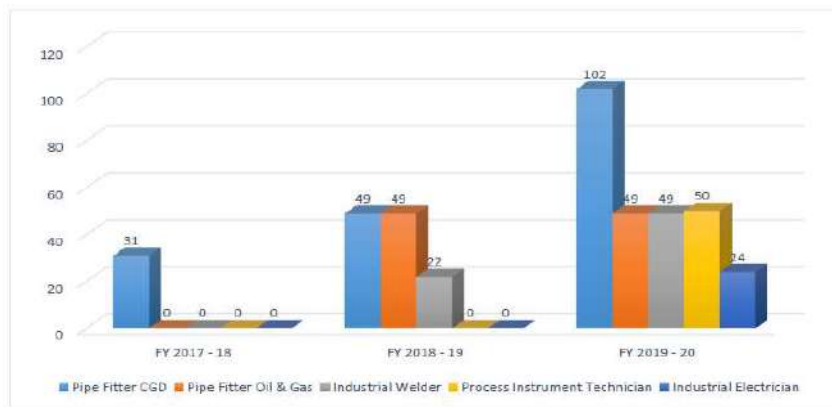


Figure 1.21 Year-wise Placement details at SDI Raebareli

The course wise placement details at SDI Raebareli is given as under:

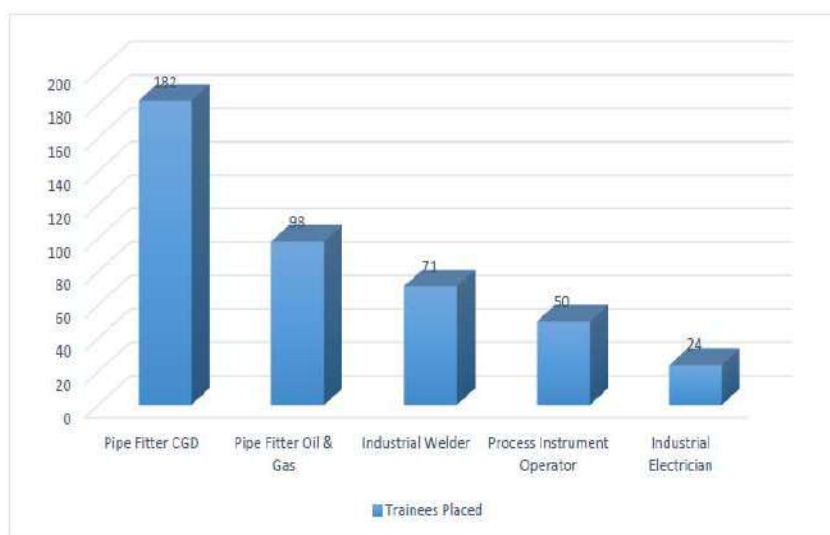


Figure 1.22 The course-wise placement details at SDI Raebareli

The details of placements during last 3 years at SDI Raebareli are as given below:

Table 1.27: Details of placements at SDI Raebareli

Sl. No.	Month	Job Role	Name of Hiring Organisation	Job Profile offered	No. of candidates placed	Average monthly Salary (Rs.)
1	May 2019	Pipe Fitter CGD	M/s SKH Metals Pvt. Ltd.	Trainee Fitter	27	9400
2	Sep 2019	Pipe Fitter CGD	M/s Jak Ventures Pvt. Ltd.	Trainee Fitter	21	10500
3	Feb 2020	Pipe Fitter CGD	M/s Shriram Auto Sales	Trainee Technician	4	7000

			Pvt. Ltd, Raebareli			
4	Feb 2020	Pipe Fitter CGD	M/s Indo Auto Tech Pvt. Ltd	Machine Operator	21	11200
5	Mar 2020	Pipe Fitter CGD	M/s Indo Auto Tech Pvt. Ltd	Welder	29	12000
6	Dec 2019	Pipe Fitter (Oil & Gas)	M/s India Seah Precision Metal Pvt. Ltd, Noida	Trainee Fitter	20	8830
7	Mar 2020	Pipe Fitter (Oil & Gas)	M/s Indo Auto Tech Pvt. Ltd	Welder	29	12000
8	Jul 2019	Industrial Welder	M/s India Seah Precision Metal Pvt. Ltd, Noida	Welder	23	12000
9	Mar 2020	Industrial Welder	M/s Indo Auto Tech Pvt. Ltd	Welder	26	12000
10	Jun 2019	Process Instrument Technician	M/s Sriram Pistons & Rings, Bhiwadi, Rajasthan	Assistant	22	14700
11	Mar 2020	Process Instrument Technician	M/s Doot Transmission Pvt. Ltd., Manesar, Gurgaon	Wire Harness Assembler	28	9500

12	Jan 2020	Industrial Electrician	M/s UKB Electronics Pvt. Ltd., Noida	Electrician	24	8279
13	Aug 2018	Pipe Fitter CGD	M/s Minda Furukawa	Trainee Fitter	26	9500
14	Dec 2018	Pipe Fitter CGD	M/s FIEM Industries	Trainee Fitter	23	12500
15	Sep 2018	Pipe Fitter (Oil & Gas)	M/s Minda Furukawa	Trainee Fitter	26	8500
16	Apr 2019	Pipe Fitter (Oil & Gas)	M/s SKH Metals Pvt. Ltd.	Trainee Fitter	23	9430
17	Nov 2018	Industrial Welder	M/s SKH Metals Pvt. Ltd.	Assistant	22	8900
18	Feb 2018	Pipe Fitter CGD	Contractors with M/s GGL and M/s CUGL	Trainee Fitter	31	9164

Co-curricular activities at SDI Raibareli

- **Rope in Program**

The trainees are familiarised with the SDI training cycle, activities & procedures, rules and regulations.

- **Industrial Visits**

The trainees are familiarised with Industries, working cultures, products etc. Industrial visit has been organised to nearby industries like M/s ITI Limited, Raebareli, M/s Rail Coach Factory, Raebareli, M/s GGL Gas distribution station, Lucknow, M/s GGL Gas Cylinder & Pipe Fitting storage yard, Lucknow and M/s GGL CGD pipeline route network in Lucknow

- **Workshops on Employability Enhancement**

From time to time, SDI Raebareli conducts workshops on employability enhancement with the support of various organisations to discuss and provide implementable inputs on training for better employment generation.

- **Felicitation Program**

On training completion, a Certificate distribution & felicitation program for trainees is organised wherein Hon'ble guests & Industry representatives felicitate the trainees.

1.5.3.3.2 SDI - Ahmedabad

SDI – Ahmedabad was set up in 2017 at Adalaj, Ahmedabad, Gujarat, as a Skill Development Initiative of ONGC and other PSUs of the Hydrocarbon Sector (i.e. IOCL, BPCL, HPCL, OIL, GAIL, EIL & Balmer Lawrie) to transform the skill & employment demographics in the area by undertaking employment linked skill training of vulnerable & unemployed youth. It has state-of-the-art facilities like Residential Training program with free Lodging and Boarding facilities, NSDC-approved Training Completion certificates, Skill training by industry expert trainers and the latest technologies as per industry standards, and Soft skill & Personality Development training, placement assistance and Personal Protection Kit etc. Its primary objective is to empower unemployed & needy youth with the right skills for Employability & Entrepreneurship, and it has the vision to adhere to the Skill India Mission and contribute to bridging the skill gap and empowering youth with internationally accepted skill sets.

The SDI at Ahmedabad started operation in September 2017 by imparting skill training in 3 trades, viz. Fitter Fabrication, Industrial Welding and Technician (Production). The duration of the said the training was of 6 months and 30 candidates per batch were trained and assisted with gainful employment in organizations like Aakash Exploration Services Ltd., JBM Auto, JBM System and PAL Shell Cast Pvt Ltd. The placement was 100% with an average annual salary of Rs. 1,25,280/-. With the help of its training partner, ADS foundation, 780 youth in 9 different job roles have been trained at SDI Ahmedabad during FY 2018-19 and FY 2019-20 and assisted with secured jobs in the industry. The details of training during FY 2018-19, 2019-20 and 2020-21 at SDI Ahmedabad are under:

Table 1.28: Details of Training at SDI Ahmedabad

Sl. No.	Job Roles / Trades	Duration	Min. Edu. Qualifications	Trained	Certification Agency
2018-19					
1	Pipe Fitter – CGD	3 Months	10th Pass/ITI	30	HSSC
2	Industrial Welder (O&G)	6 Months	10th Pass/ITI	30	HSSC
3	Assistant Technician- Production (O&G)	6 Months	12th Pass/ITI	30	HSSC
4	Assistant Technician- Drilling (O&G)	6 Months	12th Pass/ITI	30	HSSC
5	Suryamitra –Solar PV Technician	3 Months	ITI/Diploma	30	SCGJ
6	CNC Operator (Turning)	3 Months	10th Pass/ITI	30	CGSC

7	DTH Set Up Box Installer & Service Technician	3 Months	10th Pass/ITI	44	ESSCI
Total				224	
2019-20					
8	Pipe Fitter – City Gas Distribution (O&G)	3 months	10th Pass/ITI	33	HSSC
9	Industrial Welder (O&G)	6 months	10th Pass/ITI	33	HSSC
10	Assistant Technician- Production (O&G)	6 months	12th Pass/ITI	66	HSSC
11	Assistant Technician- Drilling	6 months	12th Pass/ITI	30	HSSC
12	Garment Manufacturing & Fashion Technology	3 Months	10th Pass	82	AMHSSC
13	Suryamitra –Solar PV Technician	3 months	ITI/Diploma	94	SCGJ
14	CNC Operator	3 months	10th Pass/ITI	165	CGSC
15	DTH Set Up Box Installer & Service Technician	3 Months	10th Pass/ITI	89	ESSCI
Total				592	
2020-21					

16	Industrial Welder (O&G)	6 months	10th Pass/ITI	30	HSSC
17	Pipe Fitter – CGD (O&G)	3 months	10th Pass/ITI	120	HSSC
18	Solar PV Installer	3 months	10th Pass/ITI	90	SCGJ
19	CNC Operator - Turning	3 months	10th Pass/ITI	180	CGSC
20	Sewing Machine Operator	3 months	5th Pass	90	AMHSSC
21	Trainer	3 months	As per SSC	30	MEPSSC
22	Retail Sales Associate	2 months	10th Pass	120	RASCI
23	Retail Outlet Attendant (O&G)	2 months	10th Pass	60	HSSC
				720	

Skill training at SDI Ahmedabad was stopped due to the Covid-19 pandemic from 16-March-2020. All the trainees were asked to go to their homes. Later on, in order to continue the training sessions despite the interruption, online training sessions were started using social media platforms like WhatsApp, YouTube etc. The details of companies and average salary offered during placement in 2019-20 at SDI Ahmedabad are as under:

Table 1.29: Details of companies during placement at SDI Ahmedabad

S. No.	Company/ Industry Name	Salary (Rs.)	Package
1	Aakash Exploration Services Ltd.	15000	
2	Acrysil Ltd	7000	
3	Adani Mundra Solar (HR Footprint Talent Solutions)	15000	
4	Adani Mundra Solar (Manpower Group Services India Pvt. Ltd)	15000	
5	Angel India Cad Cam	10000	
6	Arvind Smart Textiles Limited	9000	
7	Cosmos Manpower Pvt. Ltd.	12600	
8	Deep Industries Ltd.	12000	
9	Dharti Paper & Board Mills	11500	
10	DPS Bearings Pvt. Ltd	12000	
11	Finetech Industries	8450	
12	Gajanand Enterprise	9606	
13	Gas Facility Services (India) Pvt. Ltd	8278	
14	Gayatri Colour Chem Industries	8000	
15	Gurukrupa Enterprise	6920	
16	Harikrupa Enterprise	10000	
17	Honda Motorcycle & Scooter Pvt. Ltd	12000	
18	Inder Car Accessories Electronics	10,000	
19	Indian Armour Services	9600	

20	INNOV	15160
21	Institute For Plasma Research	8000
22	J.V. Engineering Workers	8148
23	Jacktech Hydraulics	7800
24	Jagruti Vevishal	9500
25	Jay Vishvakarma Gruh Udhoyg Kendra	8060
26	K.K Enterprise	8629
27	Karma Industries	8000
28	Kosol Energies Pvt. Ltd.	11400
29	KP Associates	9500
30	Chirag K. Patel Engineer, Contractor & Supplier	8326
31	Maswer Automotive India Pvt. Ltd.	21054
32	MME Infracon Pvt. Ltd	10000
33	Monarch Appliances	8000
34	ND The Cloth Zone	5000
35	Nidhi Garments	6000
36	P.M.D Engineering	10500
37	Padaliya Ashwinbhai gordhan (Labour Contractor)	9500
38	Pal Shellcast Private Limited	12000
39	Perfect Infotech	13000
40	RAJ Refrigeration & Services	10000
41	Rapid Global Business Solution India Ltd.	10386

42	RBD Engineers Pvt. Ltd	12000
43	S.S Mobile Technologies Pvt. Ltd	10000
44	Septec India	8060
45	Shree Ram Multi-Tech Limited	10500
46	Shri Krishan Manpower Services	8580
47	Shubham Construction	13000
48	Siddheshwari Engineers	7500
49	SPNN Business Services Pvt. Ltd	11079
50	Stallion Security & Manpower Services	8000
51	Subwell Industries	20,000
52	Supportive Careers Pvt Ltd	10655
53	Supreme Power Services	8400
54	Suzuki Motor Gujarat Private Limited	17,500
55	Team Lease Services Limited	15000
56	Tech Mahindra	16000
57	Tech Mahindra Business Services Group	12937
58	Transverse Advisors Pvt. Ltd.	14000
59	Trushape Precisions Casting Pvt. Ltd.	11500
60	Umiya Sadi Centre	8000
61	VB Industries	9000
62	Vestas Wind India Pvt Ltd	12000
63	ZD Auto Link	9500

The category wise (SC / ST / OBC and General Category wise) details of trainees at SDI Ahmedabad during 2018-19 and 2019-20 are as given below:

Table 1.30: The category wise details of trainees at SDI Ahmedabad

Financial Year	Batch	Trained	Placed	Salary Range (Rs.)	OBC	SC	Gen	ST
2018-19	8	224	146	9000-12000	131	36	49	8
2019-20	18	572	452	6000 – 21000	297	108	137	30
Total	29	886	684		472	154	219	42

The table details that two-year comparison of the number of batches, trained, placed, and salary range. There is a 100 per cent increase in all the parameters.

The Indicative Placement of Selected Candidates at SDI Ahmedabad is as given below:

Table 1.31: Indicative Placement of Candidates at SDI Ahmedabad

Sl. No.	Trade / Course	Candidate Name	Qualification	Company Name	Salary
1	Assistant Technician- Production (Oil & Gas)	Janak Jayanti Bhai Makawana	ITI - Diesel Mechanic	Aakash Exploration Services Ltd.	15000/-
2	CNC Operator – Turning	Manish Kumar Cheema Bhai Rathod	ITI - Fitter	Suzuki Motor Gujarat Pvt Ltd.	17500/-

3	CNC Operator – Turning	Nisarg Hasmukhbhai Patel	Diploma - Mechanical	Subwell Industries	20,000/-
4	CNC Operator – Turning	Parendrasinh Rameshsinh Chavda	10th	Suzuki Motor Gujarat Pvt. Ltd.	17500/-
5	Suryamitra – Solar PV Installer	Dilipkumar J. Kalal	Diploma- Electrical	Manpower Group Services India Pvt Ltd	15000/-
6	Suryamitra – Solar PV Installer	Shailesh Parmar	Diploma- Electrical	HR Footprints Talent Solutions Pvt. Ltd	15000/-
7	Pipe Fitter – City Gas Distribution	Shailesh Kumar Jivanji Thakor	ITI - Fitter	Shubham Construction	13265/-

1.5.3.3.3 SDI – Visakhapatnam

Skill Development Institute (SDI)-Visakhapatnam, registered as a Society under Andhra Pradesh Societies Registration Act, 2001, was set up on 20th October 2016. The nodal PSU for administering and managing the SDI is Hindustan Petroleum Corporation Ltd. (HPCL). The other promoters include Balmer Lawrie & Co., Bharat Petroleum Corporation Ltd. (BPCL), Engineers India Ltd. (EIL), Gail (India) Ltd. (GAIL), Indian Oil Corporation Ltd. (IOCL), Oil & Natural Gas Corporation (ONGC) and Oil India Ltd. (OIL).

It addresses the unemployment issues of the youth of Andhra Pradesh & neighbouring States by imparting specialised short-term skill training in SNQF-aligned vocational trades. It also provides training on soft skills & language proficiency to prepare the trainees for industry-fit and employable domestic as well as overseas.

The vision of the SDI is to be the leading institution in skill education and transform India's skilling ecosystem. Its mission is to improve the employability of marginalised & vulnerable youth and ensure socio-economic change through skill development by undertaking capacity building for other institutions involved in skill development.

The details of courses offered during FY 2018-19, 2019-20 and 2020-21 at SDI Visakhapatnam are as under:

Table 1.32: Details of Courses offered at SDI Visakhapatnam

Sl. No.	Course Name	Min. Qual.	Duration (Hrs.)
1	Retail Outlet Attendant (Oil & Gas)	10th	200
2	Retail Outlet Supervisor (Oil & Gas)	12th	200
3	LPG Delivery Personnel	10th	200
4	LPG Mechanic	10th	200
5	LPG Supervisor	12th	200
6	Industrial Electrician (Oil & Gas)	12th	1000
7	Industrial Welder (Oil & Gas)	12th	1000
8	Pipe Fitter (Oil & Gas)	10th	300
9	Automotive Service Technician (Two Wheeler)	10th	450
10	Draughtsman - Mechanical	10th	400
11	Fitter - Fabrication	10th	500
12	Manual Metal ARC/Shielded Metal ARC Welder	10th	500
13	Technician Instrumentation	Diploma	500
14	Assembly Operator - PLC	ITI/Diploma	260
15	Field Technician - Computing & Peripherals	12th	300
16	Solar PV Installer (Suryamitra)	ITI / Diploma	300
17	Domestic Data Entry Operator	10th	400
18	Domestic IT Helpdesk Attendant	12th	400

19	Manufacturing Assistant-Life Sciences	10th	200
20	Fitter Mechanical - Life Sciences	12th	260
21	Lab Technician/Assistant - Life Sciences	12th	230
22	Prod./Machine Operator - Life Sciences	12th	376
23	Warehouse Packer	10th	270
24	Inventory Clerk	12th	250
25	Mine Electrician	12th/ITI	540
26	Plumber (General)	10th	320
27	Customer Care Exec. (Relationship Centre)	12th	200
28	Customer Care Exec. (Call Centre Centre)	12th	200
29	Office Assistant - BOSCH BRIDGE Program	12th	200
30	Retail Sales Associate	10th	280

Placement Details

Candidates, after successful completion of courses, are facilitated placements in relevant job roles/industries anywhere in India / Abroad, subject to meeting placement norms, selection criteria, selection tests etc., specified by the prospective employer. SDI-Visakhapatnam plays a role of a facilitator for employment opportunities to interested candidates immediately upon successful completion of training from SDI-Visakhapatnam. Over 75 reputed Firms / Brands have provided placement opportunities to trainees passing out from SDI Visakhapatnam. Package ranges from 1.5 lakhs per annum to 2.5 lakhs per annum.

The details of placement during FY 2019-20 and 2020-21 at SDI Visakhapatnam are as under:

Table 1.33: The details of placement at SDI Visakhapatnam

S. No	Job Role	2019-20	2020-21	Total	Percentage placed
1	Assembly Operator-PLC	49	0	141	84%

2	Automotive Service Technician (two-wheelers)	45	0	45	24%
3	CNC Operator / Machining Technician	0	0	26	88%
4	Customer Care Executive (Call Centre)	74	9	181	68%
5	Customer Care Executive (Relationship Centre)	575	137	786	76%
6	Dassault – 3D Exp	99	0	99	70%
7	Data Analytics	0	0	36	92%
8	Domestic Data Entry Operator	247	0	347	49%
9	Domestic IT Help Desk Attendant	70	0	179	47%
10	Domestic LPG Installation & Safety for women	93	0	93	100%
11	Draughtsman – Mechanical	586	0	886	71%
12	Field Technician Computing and Peripherals	224	0	294	61%
13	Fitter Mechanical-Life Sciences	232	152	520	63%
14	Fitter-Fabrication	178	0	581	66%
15	Food & Beverage Service-Steward	0	27	27	100%
16	General Duty Assistant	0	20	20	100%
17	Industrial Electrician (O&G)	32	0	54	44%

18	Industrial Welder (O&G)	70	0	90	71%
19	Infrastructure Engineer (CCNA)	0	0	56	68%
20	Intelligent Solution Design (ISD)	0	0	40	80%
21	Inventory Clerk	121	0	486	82%
22	Inventory Clerk & Tally with GST	29	0	29	93%
23	IP&TC for 21 st Century (1- Day Certification)	0	0	275	80%
24	Jute Products Stitching Operator	230	0	260	100%
25	Lab Technician / Assistant Life Sciences	266	25	348	84%
26	LPG Mechanic	17	0	61	72%
27	Maintenance Supervisor / In charge-HVAC	58	0	331	71%
28	Manual Metal Arc Welding	343	23	883	88%
29	Manufacturing Assistant-Life Sciences	356	133	1222	82%
30	Mine Electrician	48	0	287	80%
31	Office Assistant	68	0	68	26%
32	Pipe Fitter (O&G)	63	0	155	84%
33	Pipe Fitters	0	0	201	69%
34	Plumber (General)	294	18	908	88%

35	Production/Machine Operator – Life Sciences	164	44	230	60%
36	Production / Manufacturing Chemist – Life Sciences	26	0	26	77%
37	Retail Outlet Attendant (O&G)	84	0	213	90%
38	Retail Sales Associate	221	61	282	77%
39	Retail Sales Associate & Tally with GST	39	0	39	100%
40	Solar Panel Installation Technician	0	0	20	95%
41	Solar PV Installer (Surya Mitra)	96	0	402	74%
42	Technician Instrumentation	100	0	320	56%
43	Warehouse Packer	30	0	63	87%
44	Warehouse Packer and Picker	24	0	114	82%
45	Warehouse Picker	0	0	43	86
	Total	5251	649	11767	75%

Companies for Placements:

The indicative companies for placement at SDI Visakhapatnam are as under:

Table 1.34: Indicative Placement of Candidates at SDI Visakhapatnam

Name of the organization	Trades selected from SDI-Visakhapatnam
Alivira Animal Health Ltd.	Manufacturing Assistant

Amara Raja Group	Pipe Fitter (Oil & Gas), HVAC, Solar PV Installer, Assembly Operator, Draughtsman Mechanical
Annora Health Care Ltd.	Fitter Mechanical
Aurobindo Pharma Ltd.	Manufacturing Assistant, Domestic IT Helpdesk Attendant
Blue Ocean Personnel & Allied Services	Inventory Clerk, Warehouse Packer/Picker
BN Infotech	Customer Care Executive
BPCL Petrol Pump	Retail Outlet Attendant Oil & Gas
CMR Central	Inventory Clerk
Crystal Management Services	Solar PV Installer
Cyient	Draughtsman Mechanical
Damayanthi Engineers Systems	Heat Ventilation Air Conditioning
DigiPub Apex Covantage India Pvt Ltd	Domestic Data Entry Operator
Divis Laboratories Limited	Manufacturing Assistant
Ecentric Solutions Pvt. Ltd.	Assembly Operator PLC, Solar PV Installer
Equic Dies & Moulds Engineers Pvt Ltd	Fitter Fabrication, Pipe Fitter, HVAC
Excel Media Pvt Ltd	Domestic Data Entry Operator
Flipkart	Inventory Clerk, Warehouse Packer/Picker
GE Power Controls	Technician Instrumentation
Gensol	Solar PV Installer
Genus Electrotech	Pipe Fitter
Granules India Ltd.	Fitter Mechanical

1.5.3.3.4 SDI – Bhubaneswar

Skill Development Institute, Bhubaneswar is a leading Skill Development Institute managed by Indian Oil Corporation Ltd. SDI-B provides training to the students with adequate skills to pursue a career as Industrial Electricians, Welders, Computer Data applications, Fitters, Instrumentation Technicians, Pipe Fitters, Solar PV Installation and LPG Mechanic. Around 240 students per batch are skilled in 8 trade courses, which are of 3-6 months' duration each. During 2019-20, 780 youth were skilled and certified. Since its inception, around 1600 underprivileged youth have been skilled and certified. The permanent campus of SDI-B set up at Taraboi, Jatni, Odisha, became a mega world-class model skill academy with technical support from National Skill Development Corporation (NSDC). The project can train about 3,000 to 4,000 youth every year in 16 regular trades pertaining to the hydrocarbon sector and local industries.

The details of courses offered at SDI Bhubaneswar are as under:

Table 1.35: Details of courses offered at SDI Bhubaneswar

Fitter Fabrication	Industrial Welding	Industrial Electrician
NSQF Level- Level 4 Minimum Qualification: 10th Corresponding QP: HYC/Q6103 (HSSC)	NSQF Level: Level 4 Minimum Qualification: 10th/12th/ITI Corresponding QP: HYC/Q9101 (HSSC)	NSQF Level: Level 4 Minimum Qualification: 12th Corresponding QP: HYC/Q6101(HSSC)
Pipe Fitter	CRM Associate	Technician Instrumentation
City Gas Distribution NSQF Level: Level 4 Minimum Qualification: 10th Corresponding QP: HYC/Q6102 (HSSC)	(Girls Candidate only) NSQF Level: Level 4 Minimum Qualification: Graduation Corresponding QP: SSC/Q2211 (IT-ITeS)	NSQF Level: Level 4 Minimum Qualification: Diploma-Mechanical/ Electronics/Electrical/Mechatronics Corresponding QP: CSC/Q0802 (Capital Goods)

Placements:

Skill Development Institute (SDI) is a Skill training institute imparting skill training in several skill trade courses on a non-commercial basis. Formed in 2016, SDI is growing in size and stature and helps students of Odisha from underprivileged backgrounds to learn skills and assist them in employment. SDI Bhubaneswar invites the potential employers to pay a visit to the SDI pilot campus to see the facilities and skill training being provided to the trainees for the skill courses Industrial Welders, Industrial Electricians, Computer data application (exclusively for girls), Fitter Fabrications, Instrumentation Technicians, Pipe-Fitter (City Gas Distributors) & Solar PV Installer. Also, the employers are requested to visit the upcoming Mega Model Skill Institute of International Standards at Jatni for collaborations and partnerships. Around 2630 unemployed youth were imparted training, and 91% of trained youth were placed in various organizations. The Indicative details of companies for placement at SDI Bhubaneswar are as under:

Table 1.36: Indicative Placement of Candidates at SDI Bhubaneswar

<i>List of employers who visited regularly (top employers)</i>	
1	Leighton Contractors (Asia) Ltd.
2	Medha Servo Drives Pvt. Ltd.
3	Senapathy Whiteley
4	ITC Limited
5	Steel1 (formerly Arcelor-Mittal Dhamm Processing Pvt. Ltd.)
6	Rhino Wires & Cables
7	UM Lifts Pvt. Ltd.
8	Capricious Foods
9	Johnson Lifts & Escalators
10	Indo-Mim
11	Lifelong Online Retail Pvt. Ltd.
12	Sanmarg Projects Limited
13	Corrosion Protection Pvt. Ltd.
14	Bango

15	RSB Transmission India Ltd.
16	Tech Mahindra
17	IKF Technologies Ltd.
18	Richa Software Solutions
19	Perennial
20	CTTC - Bhubaneswar
21	Lamco Industries Pvt. Ltd
22	TAP Plastics
23	Karvy
24	Tatwa Technologie
25	Krishna Ishizaki Auto Ltd.
26	John Deere (i.e. Howard Johnson Inc.)
27	OMAX
28	Motherson Sumi Systems Limited
29	Daimler
30	Peikko
31	Schneider Electric
32	Mongoose India
33	Pointec Pens & Energy Pvt. Ltd.
34	Apollo Tyres
35	Godrej
36	Sterlite Tech
37	Centurion University
38	GITA - Bhubaneswar
39	Krishna Polymer Technology
40	Blue Circle Groups
41	SJ Environmental Solutions
42	Pune Gas
43	Makeen Energy
44	Lava
45	Tata Projects Limited

1.5.3.3.5 SDI – Kochi

Skill Development Institute, Kochi, promoted by Public Sector Oil Companies, namely Bharat Petroleum Corporation (BPCL), Oil & Natural Gas Corporation, GAIL (India) Ltd., Indian Oil Corporation Ltd., Hindustan Petroleum Ltd., Oil India Ltd., Engineers India Ltd., and Balmer Lawrie. The Nodal PSU responsible for the operation of SDI Kochi is BPCL. It conducts six months of fully residential courses in Industrial Electrician (Oil & Gas), Fitter Fabrication, Industrial Welder (Oil & Gas) and Process Instrumentation with a batch size of 45 each for Industrial Electrician (Oil & Gas), Fitter Fabrication, Industrial Welder (Oil & Gas) and Process Instrumentation. Training classes are conducted by Nettur Technical Training Foundation (NTTF) and Certification by National Skill Development Corporation (NSDC). A nominal fee of Rs.5000/- for the entire six months' course, including food, accommodation, learning materials, class uniform, and safety shoes, is collected for every candidate.

The details of training during FY 2018-19, 2019-20 and 2020-21 at SDI Kochi are as under:

Table 1.37: Details of courses offered at SDI Kochi

1	Number of courses offered	04		
2.	Course details :			
	Name of the course	Course duration	Eligibility Criteria	Fees (if any)
A	Industrial Fitter Fabrication [FF]	6 Months	ITI/ITC/ Diploma/ +2	Rs 5000
B	Industrial Electrician (Oil & Gas)[IE]	6 Months	ITI/ITC/ Diploma/ +2	Rs 5000
C	Industrial welder (Oil & Gas) [IW]	6 Months	ITI/ITC/ Diploma/ +2	Rs 5000
D	Process Instrumentation Technician [PI]	6 Months	ITI/ITC/ Diploma/ +2	Rs 5000

The details of enrolment at SDI Kochi are as under:

Table 1.38: Details of course-wise enrolment at SDI Kochi

Course wise student enrolment for the past 5 years					
Course name	2019-20	2018-19	2017-18	2016-17	2015-16
FF	72	70	41	NIL	N.A
IE	87	90	88	45	N.A
IW	89	84	89	45	N.A
PI	73	86	43	NIL	N.A
Total	321 (123*)	330	261	90	N.A
Gender wise enrolment					
Male	Female	Total			
967	35	1002			

The details of placements at SDI Kochi are as under:

Table 1.39: Details of Placement at SDI Kochi

Total Students qualified for placement :	738 (711 + 27 Female)			
Gender wise placements information	Male	Female		
	651	25		
Year wise Placement details				
Courses	2019-20	2018-19	2017-18	2016-17
FF	37	59	29	--
IE	41	77	60	37
IW	40	70	76	44
PI	14	63	29	--
Total	132	269	194	81
List of employers who visited regularly (top employers)				
1	Saint Gobain Glass Pvt Ltd			
2	Scylinder India Pvt ltd			
3	Cochin Shipyard Ltd (Contract Basis)			

4	BPCL Kochi Refinery (Contract Basis)
5	Snell Pack Systems , Rapid Pack Pvt Ltd
6	Kurlis Industries,
7	Propell Industries , Coimbatore
<i>List of new courses introduced based on the market demand</i>	
1	Industrial Welding
2	Electrician
3	Process Instrumentation Technician
4	Fitter Fabrication

1.5.3.3.6 SDI – Guwahati

As per the directive of the Ministry of Petroleum & Natural Gas (MoPNG) and assistance of the Hydrocarbon Sector Skill Council (HSSC), Oil India Ltd. (OIL) has set up the Skill Development Institute (SDI) at Guwahati to partner in the National Skill Mission of Government of India. The said SDI had been set up in line with similar other SDIs established by major oil and gas sector PSUs in other parts of India and started operation w.e.f. 24th August 2017. A society with the name of “Skill Development Institute Guwahati” has been formed with representatives from OIL, ONGC, HPCL, IOCL, BPCL, OIL, GAIL and Balmer Lawrie and registered under the Societies Registration Act XXI of 1860 on 26th July 2017. The objective of the SDI is to cater to the skill needs of the youths of the North East region in order to enhance their employability in hydrocarbon as well as other sectors. It has adopted the National Council of Vocational Training (NCVT) I State Council of Vocational Training (SCVT) and National Skills Qualifications Framework (NSQF) I

It commenced operation with the following two courses, i.e. Industrial Electrician and Industrial Welder. Over the years, many employments linked to job roles have been added to the kitty. In 2018-19, 8 nos. of new courses, including Emergency Medical Technicians, Fitter & Rigger, Room Air Conditioner & Home Appliances Mechanic and Sewing Machine Operator, were introduced in which 636 nos. of youth were trained. In 2020-21 have trained 910 students in 16 different courses in the industrial &

hospitality sector and also in Indo-Japan Technical Intern Training Program. After completion of the training Program, the Training Completion Certificate is issued by Hydrogen Sector Skill Council (HSSC), and the trainees are also assisted with placement facilities. To date, more than 70% have already been successfully placed in post-skill training. The training /implementing partners at SDI Guwahati are IL&FS, Pragati Edutech and TRTC under Ministry of MSME.

The centre is a state-of-the-art facility with a spacious & attractive complex which includes an Administration Building, Hostel to accommodate 60 students equipped with indoor & outdoor games/sports facilities and other amenities, Smart class rooms with audio-visual facilities, well modern Computer Lab, experienced faculties/trainers, Library, workshops (welding and electrical), medical facilities, CCTV surveillance, Yoga facilities etc. The course is Fully Residential. Admission is made on the basis of written exams conducted at Guwahati. Certification by Hydro Carbon Skill Sector Council under NSDC.

The details of trainees trained at the respective SDIs during 2016-17 to 2021-22 are as under:

Table 1.40 Details of trainees trained at the respective SDIs

Sl. No.	SDI	Trainees Trained						Total
		2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	
1	Raebareli		31	121	280	173	294	899
2	Kochi	90	261	330	321	0	248	1250
3	Vizag	338	1560	3969	5251	649	3266	15033
4	Guwahati		41	636	910	970	1110	3667
5	Ahmedabad		90	224	592	720	498	2124
6	Bhubaneswar	84	222	504	780	251	407	2248
		Total Trained as on 28.02.2022						25,221

1.6 Research Statement

This research talks about the dominant fundamental issues that has a greater influence on the students who undertake the **Training / Skill Development Programs (SDP)** and the reliability of the SDP to test the skill and industry readiness of the trainees. This problem statement section highlights on some of the aspects of the research that is helpful in preparing the breeding ground for development of Research objectives. The review of literature helps in finding out the problem statements and that is numbered as PS-1, PS-2.....PS-5, are as follows:

PS-1: Previously no in-depth research is carried out to explore and identify the dimensions of the Training/Skill Development Program and its reliability for upskilling the students for pursuing their careers in Hydrocarbon Sector, this research tries out to resolve this issue.

PS-2: No satisfactory research is available that could establish the relationship between the Training/Skill Development Program and its reliability for enhancing the competency levels in the students to pursue their careers in Hydrocarbon Sector. Therefore, this research is an approach to study the reliability of Skill Development Program in enhancing the competency levels in the students and it aims at assessing how far the Training/Skill Development Program is helpful for the students to pursue their careers in Hydrocarbon Sector.

PS-3: In the process of investigation through the observation it is emerged that the Training/Skill Development Program program is not enough to fulfil the requirements of Hydrocarbon Sector in India. The curriculum is more theoretical and the exposure of the students get in practical field is not enough for giving them the real time information. As on date no accurate research is being carried out to test the validity of the curriculum taught in Training/Skill Development Program in adopting the present date requirements of the hydrocarbon sector. Therefore, this research is to emphasize on the challenges in curriculum taught Training/Skill Development Program. This research tries out to bring out the holistic view to this issues.

PS-4: During my study, I observed that students from various areas are coming to take up the course. They vary from age to gender to educational background, this gives them no level playing field to answer my questions. Thus, this research is an approach to evaluate the fairness adopted in the assessment of the programs based on the demographic characteristics of the students. In this research I tries to evaluate whether the Training/Skill Development Program program have fairness in the assessment of the programs based on the demographic characteristics of the students or not.

PS-5: From my observation I came to know that, the relationship between the flexibility of delivery method in assessing the adoption of fairness is not up to the mark. Therefore, this is considered to be one of the research problems that is undertaken to find out whether the relationship between the flexibility of delivery method in assessing the adoption of fairness succeeded in assessing the adoption of fairness that has the greater level of reliability and validity.

1.7 Research Questions

This section deals with the statement of research that is being developed from the objectives of the research. The research Assumptions that the researcher is going to take will decide the principal flow of his research and it will suggest various observations and experiments. Following are the five Questions taken to conduct the research:

- Is the Training/Skill Development Program program significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector?
- Is the Training/Skill Development Program significantly reliable for enhancing the skill levels in the students that help them to pursue their careers in Hydrocarbon Sector?
- Is the curriculum taught in Training/Skill Development Program significantly valid to meet the present date requirements in Hydrocarbon Sector?
- Is the Training/Skill Development Program has a significant relationship with the flexibility of the delivery method in assessing the adoption of fairness for achieving a greater level of reliability and validity?
- Is the Training/Skill Development Program has fairness in the assessment of the programs based on the demographic characteristics of the students?

CHAPTER -2
LITERATURE REVIEW

CHAPTER -2

LITERATURE REVIEW

2.0 Introduction

A literature review is a piece of writing created to address the most important aspects of current knowledge, including both substantive findings and theoretical and methodological contributions to particular themes. Since a literature review is a secondary source, it does not present any brand-new or unique experimental work. A literature review can also be seen as an analysis of an abstract achievement. The literature review should compare and contrast different authors' points of view on an issue, group authors who reach similar conclusions, critique aspects of methodology, note areas where authors disagree, highlight exemplary studies, highlight research gaps, and demonstrate how your study relates to the body of literature as a whole before summarising what the body of literature has to offer (Caulley, 2007). The review's objectives include defining and limiting the problem the researcher is addressing, situating the study in historical context, avoiding needless duplication, assessing promising research methodologies, relating findings to the body of current knowledge, and recommending additional study. Therefore, good literature critiques what has been published, points out areas of disagreement, raises issues, and identifies areas that require more study. One typical strategy for conducting a literature review is to start out broadly before narrowing in on more specific concerns.

2.1 Training:

Othayman, M. B., Mulyata, J., Meshari, A., & Debrah, Y. (2022) conducted a study, "The challenges confronting the Training Need Assessment in Saudi Arabian higher education". They examined the problems encountered by the Training Need Assessment System in emerging public universities in the Saudi Arabian Higher Education sector to understand how problems with this will affect the success rate of Training and Development curriculums. The study concluded that currently, there is an unsatisfactory commitment in determining the training needs of the staff by the HR

departments of Saudi Arabian public universities. It hurts staff morale and results in a lack of faith between HR directors and departmental staff.

Topiwala, M., & Pathak, A. (2021) conducted a research, "A study on the effectiveness of training and development on employee's performance at JK Paper Ltd." to determine the effectiveness of training & development on the performance of employees at JK Paper Ltd., Songadh. They concluded that Training & Development are essential to enhance the performance of employees by creating a highly skilled workforce and impacting employees' personal growth. The Employee's perception of training is very positive, and they get encouraged to perform enthusiastically on their job. There is, however a need for improvisation in training need identification.

Sahni, J. (2020) conducted a study, "Managerial Training Effectiveness: An Assessment through Kirkpatrick Framework", and researched the effectiveness of managerial training with Kirkpatrick framework. The findings emphasised a high level of training effectiveness at satisfaction and learning levels. The training success was associated with factors like practical orientation, training environment, trainer's role, and usefulness of training.

Bharthvajan, R., & Fabiyola Kavitha, S. (2019) conducted a study, "A Research on Effectiveness of Training and Development in its Solutions" to test employees' effectiveness after the training and development. They advocated for frequent evaluation of the training needs and regular monitoring of employee performance & feedback. They recommended proper maintenance & retention of training records, careful selection of trainers, continuous feedback, personalised care to the trainees, and interactive & active nature of training.

Sharma, R. (2018) conducted a research titled "A Study on Training Need Analysis of Employees," to find out the types of training, including technical, non-technical or soft skills, required for the employees working in an organization. The study revealed a significant need for training among employees in both technical and non-technical areas.

Gowsalya, R. S., & Asma, V. K. (2017) conducted research titled “A Study on Training Effectiveness. International Journal for Research Trends and Innovation” to review the model of training effectiveness and suggest its adoption by the HRD executives in their planning, designing and implementing a training program. They concluded that training effectiveness programs in the organization are positive in response. However, more training effectiveness is still needed in the organization so that the employees are motivated time by time, and they should know their strengths & weakness. It would facilitate their working and improve their knowledge & skills for the betterment of their organization.

Rodriguez, J., & Walters, K. (2017) conducted a study, "The Importance of Training and Development in Employee Performance and Evaluation". The goal was to have brief information regarding employee training & development during implementation. It ultimately enhances employee performance. They revealed that employees are the most important asset as they take responsibility for customer satisfaction and the quality of products and services. Without proper training & development opportunities, accomplishing tasks to their full potential is unimaginable. Employees who perform well in their job-related duties keep their jobs longer with higher job satisfaction. Training & development is a vital tools used to not only maximise the performance of employees but make them more efficient, productive, satisfied and motivated. Identifying the right learning opportunities for employees will help the organisation in remaining competitive in the global market..

From the above research papers, it is clear that employees are the most valuable asset of the organisation. Training & development can enhance their performance and help in creating a highly skilled workforce. In absence of training it would be difficult for the employees to reach their full potential. If the organisation identifies the right learning opportunities and accordingly provide the training to its employees, it will make them more efficient, productive, motivated and innovative; at the same time the organisation too becomes competitive in the market. It is required to have frequent evaluation of the training needs and regular monitoring of employee performance & feedback to ensure effectiveness of the training program. Proper maintenance & retention of training records, careful selection of trainers, continuous feedback,

personalised care to the trainees, and active interaction during the training are highly critical to derive the best out of the training. More training effectiveness is still needed in the organization so that the employees are motivated time by time, and they should know their strengths & weakness. It would facilitate their working and improve their knowledge & skills for the betterment of their organization.

2.2 Skill Development Training

Banajawad, V. T., & Adi, M. S. (2020) in their study on Skill Development Programs for rural youth in India tried to comprehend the status, challenges & government initiatives on skill development. The study highlighted the growing momentum of skill development and the role of education & skills in enhancing employment opportunities, eliminating poverty, boosting productivity and promoting rural development in an environmentally sustainable manner. All that is required is assimilating skills, policies and strategies for rural development, and it must also blend education with skill-based training and industry-link placement facility. Skill development is vital for meeting youth's requirements for rural development.

Dash, C. S., & Dash, S. (2020) conducted a study on "Skill Development Mission and the Skill Landscape of India: - An Empirical Study" to understand the skill landscape of India vis-a-vis technological disruptions, global transformation and international the mobility of the workforce. The findings brought out that despite the commendable achievement of the 'Skill India Mission, challenges still persists in terms of gender inequality, sectoral imbalance, training, and placements.

Ganguly, K., Gulati, A., & Braun, J. V. (2019) researched "Skill Development in Indian Agriculture and Food Processing Sectors: A Scoping Exercise". The objective is to evaluate the operational policies and institutions in India's context of skill formation with a focus on the food sector and agriculture. They concluded that skill development has gained significant relevance over the years, banking on its vast youth population, expanding workforce and rising sectoral productivity & growth. For achieving the desired results, it is imperative to address the challenges encountered in

skill development programs with the help of alternative approaches based on effective program designs, better partnerships and appropriate institutions.

Krishnamoorthy, A., & Srimathi, H. (2019) conducted a study on "Skill Development - The future of India" and analysed the practices & initiatives of skill-based vocational training. The skill development policies, plans and practices were evaluated with the international practices. The findings indicated that India would benefit from a young workforce. They concluded that the global requirements of the workforce require proper study & analysis, including adequate steps in imparting vocational & industry-linked skills for empowering Indians to compete globally and sustaining India's development & growth. A mixed strategy blending all the global best practices, introspection and periodic review is imperative for improving the skill development landscape in India. The stakeholder's contribution would help our vocational and higher education system to blend necessary skills for achieving the targeted goals.

Kaur , J., & Dogra, M. (2018) conducted a study on "Skill Development in Punjab: A Critique Study of Initiative, Challenges and Way Forward", intending to assess the role of Punjab Skill Development Mission in promoting skill development in various districts of Punjab like Amritsar, Jalandhar and Ludhiana, comprehend challenges encountered in execution and ponder on possibilities for continual system improvement. They concluded that backed by disruptions on account of globalisation, knowledge & competition, the developing & developed nations are in want of more and more highly skilled workforce for their economic growth. The Nation's skilled workforce is highly imperative for meeting global quality standards, adapting to advanced technologies, fostering foreign trade, and ensuring economic development. Considering the various challenges encountered in Skill Development Mission in Punjab, especially in attracting students and retention them in them, the Programs need to be appropriate & effectively implemented. A good state-level strategy, high quality training and effective measures of improvement are vital to propel productivity, ensure economic diversification and secure the standard of living of youth.

Hansel, F. (2018) conducted a study entitled "A Study on Impact of Skill Development at Entry Level Job Candidates in India" to determine the gap between an individual's

level of performance & expectations at various stages of life and their employability at an initial-level job. The study's findings indicated that Skill development is becoming crucial considering the transitioning era, the advent of technologies and organisational advancement. Besides the efforts of Government, Industry and other stakeholders, it is crucial to build up the competitiveness of candidates at entry-level jobs, which is missing and resulting in the loss of the youth's potential. Before taking up any initiatives for human potential development, especially jobs at entry-levels, it is vital to ensure that it has a long-lasting, sustainable effect on the market as it directly influences the future of the next generation. Youth need to understand that they should first focus on building their skill sets before applying for any jobs as it would impress the interviewer and increase the chance of being selected.

Maithreyi, R., Jha, J., Padhmanabhan, S., & Menon, N. (2018), in their paper titled " Skills Education and Workforce Preparation: Examining the Disconnects between Policy Intentions and Outcomes in India", made a qualitative analysis of the National Skill Policy & National Qualification Framework highlighting the shortcomings in bringing desired outcomes for vulnerable youth. The study brought out the paradox of skill development that it intends to bring inclusive & equitable development, but it is creating a global pool of cheap labour for industries. The greater emphasis on skilling in the education system is drifting from the real purpose of education, i.e. personal development. With the cafeteria approach of skills education, the onus on gaining the right skills has shifted to the individuals as he/she has to choose the training from the on-demand and user-fee-based training. It has confined individuals to the lower ends of the service economy rather than giving them greater control. The skill education system moulds according to industry requirements of quantity & quality of the workforce, but the industry requirements constantly change with the economic cycles. Allocation of funds is imperative for skilling and education. Along with the focus on meeting the skilling targets as per Industry needs, it is also essential to address the concerns of social equity and inclusion of vulnerable youth. It is imperative to have a broader approach to education needs to guarantee all students access to general education and specific technical skills.

Pandey , A., & Nema , D. K. (2017), in their research article "Skill Development Initiative in India: Need and Challenges", aimed to examine the skill capacity, need & impact of skill development in India and evaluate various skill development initiatives & strategies and challenges experienced in the skill development system. They concluded that focus is required on up-skilling & developing the human resources and making them productive and secure inclusive economic growth of the country, which can be achieved by increasing the knowledge base, improving the skills and modernising the attitude of the workforce. The academia needs to take the lead in the skill development Programs and make it its elementary aim & mission to ensure the socio-economic & industrial development of the country.

Prasad , J., & Purohit , D. (2017) conducted an exploratory study entitled "Skill Development, Employability & Entrepreneurship through Make in India -A Study". They aimed to comprehend the impact of the Make in India initiative on employability, its status & challenges and measures for bridging the skill gaps. The study concluded that for the success of the 'Make in India' mission, the youth needs empowerment with formal education and technical & vocational training of global standards for meeting the Industrial and Market requirement. Despite the Government's concentrated efforts in shaping the skills of such a mammoth workforce, there is still some lacuna in the system in creating a robust workforce with the right skills. Today the requirement is not only for white-collar and blue-collar but also for the grey-collar and rust-collar-skilled workers at the grass-root level. Government, Industry leaders and stakeholders need to collaborate as they cannot work in isolation. The vocational training involving both soft skills & technical skills should start early from the High School level so that students are fit to join the industry. The standard and quality of training also need to be upgraded. It is essential to inspire the beneficiaries of the skill development program for learning, making them self-reliant and have a better life. The basic infrastructure must also meet the latest technology and market needs.

Srivastava, S. (2016), in her paper "Skill Development Initiatives in India-Some Reflections", analysed the Skill Development initiatives in India. She concluded that the Government's policies, initiatives & intervention in skill development Programs would not bring the desired result, despite Government's effort in skill development,

without effective implementation & monitoring by stakeholders. Skilling the youth can satisfactorily address the issues relating to poverty & unemployment.

Sharma, L., & Nagendra, A. (2016) conducted a study on "Skill Development in India: Challenges and Opportunity, comprehending the current position of vocational education & training and evaluating various vocational training models of the emerging economies. The study concluded that the Indian Government's 'Make in India' campaign and the accelerated economic growth have put skilled manpower in the spotlight.

Jain, T., Verma, R., & Agarwal, R. P. (2016), in their research paper "Emerging trends in Skill Development for empowering women", analysed the adequacy of efforts of Government & other social organisations to empower women in India, ascertained women's accessibility to and technology, especially in rural areas, challenges at the workplace and its probable solutions. They opined that the skill development sector requires a paradigm shift in favour of innovations, improvements and high-quality training. The concept of training & skill development needs to move beyond the conventional goals and encourage higher self-esteem and overall personality development for effective Skill development.

Pandey, S. (2016) conducted a study entitled "Improvising Skill Development & Employability Potential through Higher Education, Research & Innovations to comprehend policies on skills development and identify ways to fill the gaps between Government and private programs. The study's findings indicated that the collaboration of private players could be instrumental in bridging the gaps in Government policies. Innovation is vital in designing skill development programs to achieve the dual target of environmental protection and livelihood. More trained trainers at different levels are required to impart formal skills, providing proper attention to trainees. The majority of Government Schemes are indirectly benefitting private partner enterprises. Despite such a large landscape of skill development with 20 Ministries/Departments running 70 plus skill development Programs, gaps are still evident in terms of capacity & quality of training infrastructure, outcomes, workforce aspirations, certification and standards. Government intervention is imperative to address the issues in skills development.

From the above research papers, it is clear that Training / Skill Development Program is critical in addressing the aspirations of youth, especially from vulnerable sections of society and ensure the success of the Skill India Mission. Overcoming all obstacles & challenges of gender inequality, sectoral imbalances, and accessibility is still a dream. Despite the remarkable landscape of skill development, gaps still exist in terms of capacity & quality of training infrastructure, outcomes, workforce aspirations, certification and standards. A state-level strategy with paradigm shift & alternative approaches to Skill Development based on innovation, proper program design, a cohesive collaboration of stakeholders, appropriate institutional infrastructure, continual improvement in high-quality training, access to technology, effective implementation and monitoring is highly imperative. The skill education, involving both soft skills & technical skills, needs to be started early at the high school level by blending the formal education with skill-based training and industry-link placement facility. Besides Government's and stakeholders' concentrated efforts on skill development, the beneficiaries, i.e. students/youth, also need to understand the importance of skill development programs and appreciate the efforts in the direction. Due to awareness Programs on Skill Development, vulnerable target audiences now focuses on building their own skill sets, which can increase their employability & acceptance by Industry or make themselves self-reliant to ensure a better life with a better standard of living. The 'Skill India Mission' success can create an abundance of skilled workforce which help the 'Make in India' campaign and boost the country's economic growth.

2.3 Skill Gap and Shortage of Skill

Arora , R., & Chhadwani, M. (2019) conducted a study on "Analysing the impact of Skill India as a tool in reshaping Indian Economy" and the need for the Skill India campaign to reshape the country's economy. They brought out that to further increase the momentum & implement the Skill India Mission, the government has set a herculean target of skilling around 500 million by 2022. But, the target appears difficult with the current pace as the training to job transition rate is also very low. The skilling to placement ratio is also low. The government could train only 1.97 million people

against a target of 2.4 million in the first phase. Only 2.3% of India's workforce has formal skill training compared to peer countries. India needs to urgently train skills more efficiently. It is vital to ensure proper skill acquisition & maintain an effective implementation rate and training to job transmission rate during the Skill India Mission.

Kotawadekar, S. V. (2018) made a study on "Skill India –Need & Challenges" to appreciate the current capacity, need and challenges of skill development system in the country. She concluded that despite a well-institutionalised vocational training system, youth are not sufficiently skilled as per industries' requirements. Thus, to speed the economic growth, India has recently made policy reforms for accelerating skill development. The reforms introduced required changes in the national institutional framework and institutional level.

Gill, M. (2015) conducted a study on "Bridging the skills gap through vocational education" to analyse the unemployment scenario due to academic outcome of our educational institutes and identify the skills supply gaps vis-a-vis Industry demand. The significance of vocational education in enhancing youth's employability skills is brought out in the research and finally advocates for a reform of the current vocational education system to bridge the skills gap in the Indian youth and suggested a certain vocational education system to fill this gap.

Kanchan, S., & Varshney, S. (2015) researched "Skill development initiatives and strategies". The main objectives were to understand the present status, challenges, initiatives and strategies of skill development in India. The findings indicated that most of India's workforce (80%) lacks identifiable & marketable skills. Hence, it is necessary to bridge the skill gap through skill development initiatives to a global pool of skilled workforce with a surplus of around 47 million manpower. Despite all efforts by the Government to shape the skill landscape, there are many lacunae in the system. Alongside the white and blue-collar workers, Grey collar- knowledge workers and rust-collar-skilled workers are essential for a growing economy like India. The initiatives on skill development in the country is unfortunately not benefiting the casual workers who form a major chunk of the workforce. Government, industry partners and other stakeholders must join hands and work together considering the high stake involved.

From the above research papers, it is clear that India faces an acute shortage of skilled & trained workers as a majority of the workforce is short of the required employable skills. It is almost negligible compared to advanced economies like the USA, UK, Germany, Japan and South Korea. Suppose India wants to compete with these advanced nations and be the global skill hub, it must put concentrated efforts into effectively implementing and making the Skill India Mission a success. There is a well-institutionalised technical & vocational education system in place, but the same is inadequate to provide enough industry-linked skills. It is imperative to reform the entire vocational education system and have a proper centralised database system to map the availability of Skills in the country. It helps bridge the shortage/gap and match the demand & supply of skilled manpower in each sector at various levels & stages. The intention & effort of the Government towards skill development and addressing the skill gap/shortage of skill in the country is laudable. However, certain shortcomings still need to be worked upon jointly by the Government, industry and partner stakeholders.

2.4 Demographic Dividend

Swain, A., & Swain, S. (2020) studied "Skill Development in India - Challenges & Opportunities". They figured out that India, with around 60% youth population, has a 'demographic dividend'. It need to capitalise on this demographic dividend and add value to the country's economy by supporting the 'Make in India' campaign by providing a skilled workforce in the country. The 'Skill India' mission need to focus more on entrepreneurship skills for enhancing job generation in the country. Government of India has launched numerous schemes for skilling and ensuring employability of the Indian youth. But, Indian youth should also be be aware of such schemes, get the required training and be employable.

Chenoy, D., Ghosh , S. M., & Shukla, S. K. (2019) in their research paper "Skill development for accelerating the manufacturing sector - the role of 'new-age' skills for 'Make in India'" have emphasised on developing the right skills for meeting the growing skill gap in various manufacturing sectors in the changing industrial landscape defined by cutting edge technologies. They concluded that India's demographic advantages can be realised only by reskilling & upskilling the existing workforce

through lifelong learning initiatives. The youth needs to be skilled with 21st-century skill sets. Government alone cannot develop a skill-based workforce to drive the 'Make in India' initiative. It is imperative that Government, collectively with industry partners, can develop a skilled workforce.

Prakash, A. (2017) studied "Skill Development in India: Challenges and Opportunities". The study's objective was to comprehend the status of vocational education & training, and review emerging economies' vocational training models. The study brought out that a huge scope exists in generating a skilled workforce in the country by utilising the "demographic dividend". The branding activities and the PPP model can ensure a better supply of skilled workforce.

Kumar, R. (2017) in his research article "Skill development issues, challenges and strategies in Bihar the vocational education", reviewed the status & challenges of education, skill development & employment in the state of Bihar. He concluded that a skilled workforce is of utmost importance for making Bihar nationally competitive and putting it on a growth trajectory. In transforming its demographic dividend into a 'Knowledge Economy,' it would be essential to establish a robust & proficient skill development system and concentrate on advancing relevant skills. Piecemeal interventions to tackle challenges would not suffice, but a holistic solution is needed.

Misra, S. K. (2015) conducted a study entitled "Skill Development-A way to leverage the demographic dividend in India" to appreciate the policy initiatives on skill development and figure out the way forward in domestically producing world-class skilled manpower through effective use of these government schemes. The findings indicate that the country can capitalise on its demographic dividend and supply a skilled workforce for the domestic and global market. The Government, with its National Policy on Skill Development, aims to skill 500 million by 2022 despite all challenges not limiting to training quality, curriculum standards, global accredited courses etc. Skill Development efforts of the Government are laudable. There are miles to go in terms of the policy framework and implementation of the initiatives/schemes for which a robust approach is imperative. The skill development policies must align with the Industry & global market. All these require the active participation of the Private Sector and collaboration of all concerned stakeholders.

Saini, V. (2015) conducted a study entitled "Skill Development in India: Need, Challenges and Ways forward", intending to study the present skill capacity and challenges faced and suggest solutions or ways forward. The study's findings indicated that India has remarkably evolved into one of the biggest & fastest-growing economies. But, to keep up with this growth trajectory and capitalise on the demographic dividend, it is imperative to equip & empower its workforce with the right skills through a continuous & efficient skill development system. Unfortunately, the educational institutions face a very high drop-out rate (50% in the age group of 5-14 years and 86% after 15). On the contrary, the Workforce participation rate rises rapidly beyond 14 years of age, resulting in a huge semi-literate workforce (38% are illiterate, 25% have education below primary or up to primary level, and 36% have education up to middle / higher level) incapable of acquiring any higher skills. To make it worse, 80% of the Indian workforce lacks marketable skills, only 2% have formal vocational training, and 8% have non-formal vocational training. The availability of skill trained workforce in India appears very insignificant when compared to peer developed economies like Korea (96%), Germany (75%), Japan (80%) and the United Kingdom (68%). These scary facts are warning bells reminding us that without appropriate & timely action on skill development skilling the workforce, the demographic dividend that appears a bliss today can soon turn into a demographic catastrophe. All that is required is to increase the capacity & capability of skill development programs. Collaborative efforts of the Government and its partner agencies in effectively implementing the skill development system are appreciable. However, still, there are many issues & challenges which require urgent attention of policymakers.

The research papers show India has a demographic dividend owing to its huge youth population. However, this advantageous position can benefit by skilling its unemployed youth & the existing workforce through appropriate skill development initiatives. The task on hand to skill 500 million by 2022 as per the National Policy on Skill Development is herculean for Government to handle alone. Collective & collaborative action with an industry partner is required to develop the required pool of skilled workforce in the country, which can meet not only the domestic market demand but also cater for the global market. The vision of evolving into a global hub of skilled workforce and global skill capital appears exciting. However, the ground reality suggests that

without appropriate & timely action on skill development, the anticipated bliss can be catastrophic. The capacity & capability of skill development programs must be scaled up to overcome all possible challenges.

2.4 Employability of Youth

Gupta, P., Datta, A., & Kothe, S. (2021), in their research paper "Logic Model Framework for Employability and Skills Development in Vulnerable Youth: evidence from pilot intervention and quasi-experimental research", aimed to introduce a simple logic model framework for providing role-based vocational training and sustainable placement of vulnerable and disadvantaged students. They brought out that the disadvantaged and vulnerable youth enter work either with a lack of sufficient educational qualification or desired employability skills. Hence to ensure their secure future and upward mobility, the required learning skills are introduced progressively at the school level. Flexibility in delivery, mentoring, financial support and social security helps in easy access to the skill development programs. Skill development framework with multi-stakeholder partnership, the curriculum should be relevant & industry-aligned, and programs are sustainable & scalable. Social inclusion of vulnerable youth is an equally important element of such interventions aiming to enhance self-efficacy & overall well-being.

Motkuri, V., & Revathi, E. (2021), in their research paper titled "Skill Development in India - A Conceptual Framework Mapping Educational (and Training) Outcomes and Occupation-Job-Skills Standards of Industry and Labour Market", developed a conceptual framework for understanding the skill development sector, policy and relational mapping of the educational learning outcomes (knowledge, skill, aptitude and competencies) and industry-occupation-skill standards of job roles of the labour market. They noted that skill shortage in certain sectors /industries is being witnessed due to skill gaps and of graduates. Their employability levels fall short compared to desired levels required for the Industry. They further observed that the standardisation of training quality of skill development initiatives is a serious concern and has a high dependence on the private sector especially private training providers and assessors.

Patil, S. C., & Charantimath, A. B. (2021) in their research paper "Employability through Skill Development Program - an overview of the significance of Employability skills" tried to figure out the employability skills and skill gaps. They concluded that training, education and short-term courses can bridge the skill gap. Despite best efforts, there is room for transforming the abandoned knowledge into skills. Various ambitious missions of the Government of India, like. Make in India, Atmanirbhar Bharat, and 5 trillion economy dreams, can be achieve the goal of the national mission with collective efforts.

Thakur, R., Sharma, N., & Mankotia, B. S. (2021) in their article "Impact of Skill Development Trainings on Poultry Production", opined that skill development training could immensely help unemployed rural youth in alleviating poverty by improving their socio-economic conditions. They highlighted the impact of training on poultry production. They also noticed that most trainees (around 80 %) post their training have either fortified their existing poultry firms or have started their new farms. They concluded that rural youth benefited from the said skill development training on poultry farming by enhancing their knowledge & skills. Such training also strengthened the production of poultry in the locality.

Joshi, T., & Pandey, M. (2018), in their research "Skill Development -Enhancing Employability in India", showed that India has the potential to be the world leader in the skilled workforce. There is a need for mapping manpower requirements, not just domestically but globally and constantly updating training programs & syllabi to expose the youth to advanced technology and industry environment. It is required to promote apprenticeship and entrepreneurs in the country, predicting future possibilities and preparing them today.

Kumar, Y., & Ramya, K. R. (2017), in their research paper "Economic prosperity through Skill India - A study of key success factors & challenges", aimed to ascertain the awareness of skill development, understand the associated challenges of self-employment and ponder possible solutions. The study's findings indicated that India is experiencing a huge unemployment problem. The Government is taking due care to address the unemployment issue by promoting self-entrepreneurship and working towards the overall development of youth by providing them with appropriate training.

In the study, most respondents were aware of the Skill India Campaign due to publicity by Government. Most respondents were skilled with skill development training, which has benefited them in their overall development. The survey highlighted that the respondents faced problems setting up their enterprise despite training. It needs serious introspection and review. Almost all the respondents were motivated through the Campaign and encouraged others to self-employment. The researchers concluded that the youth needs to shoulder the responsibility and focus on the creation of jobs & social security to make India a developed country.

Dinesha , P. T., & Naveenchandra, C. B. (2016) in their research article "Women Skill Development and Make in India: Opportunities and Challenges", aimed to deliberate on the significance of skill development in informal sectors and discuss the difficulties women face in skilling and ponder on possible policy interventions. They have remarked that the employment and skill development revolution has to go hand in hand to unlock the true potential of the women workforce in India. There should be a focus on women-specific policies to effectively participate in the employment market. The skill development process needs to be more flexible to encourage women's enrolment. The skill training needs to assimilate certain basic skills, deeply impacting skills to improve employment prospects.

Mishra , N. K., & Panda, D. (2016) in their article titled "Emerging Issues and Options of Skill India", attempted to highlight the essence & schemes and deliberate associated issues and challenges of Skill development in India. They concluded that skill development is non-negotiable for the employment of educated youth, and it will also be instrumental in the country's social development. The apprenticeship Training Program can potentially address the requirement of technical manpower. The strategy should focus on qualitative skill training through modular skill courses, effective assessment and credible certification for enhancing employability.

Sharma, P., Paliwal , A., & Kumar , V. (2016) in their article "Skill Development: A Pre-Requisite for Job Creation, Economic Growth and Poverty Reduction", aimed to comprehend the issues of skill development and its role in driving the economic growth and plummeting poverty. They concluded that skill development could eliminate

exclusion & poverty and enhance the competitiveness & employability of the working class. Education & skill training can enable the working class & vulnerable youth to move out of the vicious cycle of illiteracy /unsuitable education, low productivity, and low-grade jobs with low wages. It can also break the barrier of gender & social inequality.

Rani, G. S. (2016), in her research article "Skill Development Training Programs - Reducing Gender Inequality in India", tried to figure out the importance of skills for the country's development with a particular focus on gender inequalities. She brought out that Skills & knowledge are driving forces of a country's economic growth & social development. It is even more relevant in the wake of globalisation and technological disruptions. India needs to focus more on developing relevant skills to evolve into a 'knowledge economy. Skill development initiatives with appropriate training, testing and global certification, backed by a joint effort of Government and private partnership, can establish the required skill landscape which is credible, reliable & trustworthy, that can meet the skill needs of the Industry. According to experts, there would be around 60 new jobs globally, which requires a skilled workforce for quality jobs. It is an excellent opportunity for Indian Youth, but to avail of it, the role of government & private partners is very critical.

Nayak, P. (2015) in his article "Towards Enhancing Employability of Young Indians", analysed the requirements, approaches, prospects, and difficulties in enhancing the employability of young Indians (especially in the age bracket of 14-35 years). He concluded that there is huge potential for boosting employability through education & skill development. Efforts of Govt. of India in this direction are laudable, but new and concrete results are yet to be realised. It requires awareness at the ground level, a changed mindset, a focus on contemporary & future skillsets and a new identity of the skill ecosystem with collaboration from all stakeholders, including academia, Industry, Government, NGOs and financial institutions. The Government and the industry partners should jointly endeavour to create employment and, at the same time, should also make an effort to enhance employability through the right education & skill development to address issues like regional imbalances, discrimination, and poverty and ensure sustainable, inclusive growth.

From the above research papers, it is understood that skill has become more pertinent in the current era due to technological advancements, market disruptions and globalisation. In its endeavour to transform into a 'global skill capital' and 'knowledge economy, India needs to develop a pool of skilled manpower who are adequately trained with employable possess industry-linked, relevant, contemporary and future-focused skills. Unfortunately, youth as new entrants to the world of work, especially from the disadvantaged and vulnerable section of society, are not adequately educated or skilled. It is imperative to progressively introduce the desired employability skills from the school level, which can secure their future and help their upward mobility. Even skill shortages have been witnessed in various sectors due to skill gaps of youth graduating from academia which reduces their chances of employability. The skill gap can be bridged with structured skill development Programs involving vocational training, quality academic education and short-term courses. The inherent aim of such skill development programs is self-efficacy, well-being and social inclusion of youth (especially from a vulnerable group of society), ensuring appropriate employment. The success of such skill development programs depends on the access to such programs, flexibility in delivery methods, proper mentoring, adequate financial support and social security ensured through a robust skill development framework fortified by a multi-stakeholder partnership. The future of jobs in India seems very positive due to the positive interventions of the Government through various ambitious missions. The atmosphere abroad is also very exciting as it has been estimated to have around 60 million new jobs globally, which can prove to be a boon for Indian Youth, provided they are still ready to avail the of overseas employment opportunities. The role of the Government is very critical in the matter of facilitating Indian youth in their international movement and ensuring the social security net for them

2.5 Empowerment of Women

Bhuyan, K. S. (2020) in her research article "Women Empowerment: The Role of Education in Women Empowerment", has deliberated on the role of education in empowering women, challenges, constitutional provisions and probable solutions to issues w.r.t. women empowerment. She opined that women empowerment programs

should be taken up to make women more self-confident, self-reliant and financially independent so that they are filled with a positive attitude in taking decisions and contributing to the economy. These objectives can be achieved with the education and skill development of women. India is still way behind in women's literature, which directly impacts the lives & livelihood of women and their families.

Shetty , S. S., & Hans, V. B. (2019) in their article "Education for skill development and women empowerment", aimed to establish the role & benefits of education & skill development training in empowering women. They concluded that empowerment should bring in better literacy, the realisation of rights & responsibilities, socio-economic inclusion & involvement, access to resources and improved living standards for women. Girls/women, if given quality education and skill training, can not only secure livelihood for their families but also partner with their male counterparts in ensuring the progress of the society and ultimately contribute to the development of the Nation.

Kaur, M., Mann , S. K., & Kaur, K. (2018) in their research article "Obstacles and ways to facilitate skill development among rural women", had the objective to comprehend the challenges and possibilities for women empowerment through skill development. They brought out that the country's socio-economic growth depends on its skilled workforce, and hence the concept of "Skill Development" has gained national importance. Women constitute half of the population, but their participation in the workforce & economy is way behind their men counterparts. The issue at the rural level can be directly attributable to their acquired skill sets forcing women to settle for low-skill and low-paid jobs. Skill development can address the challenge and make the rural women self-reliant and self-confident, empower them in taking decisions in the family as well as outside and thus help in their inclusion in society & economy. The fact that Skill development positively impacts the employability and earning opportunities for women has been well acknowledged by the Government, and hence many skill development initiatives like PMKVY, UDDAN and STAR have been introduced. However, a long way is still to go to realise the intended benefits. The roadblocks need to be identified and eliminated to facilitate the skill development of rural women.

Vyas, A. (2018) in her article "The impact of skill development on women empowerment", aimed to understand the role of skill development on women empowerment and suggest a way forward. She argued in favour of gender-responsive skill development strategies for empowerment and inclusive socio-economic development of the Nation. All that the women require is an opportunity to prove that they are no less than men and are equally entitled to dignity, fair treatment, rights and respect in society. Efforts in the right direction can liberate women from all limitations. As India gradually progresses towards evolving into a knowledge economy, it is imperative to focus on the skill development of women and equip them with skills relevant to the emerging economic environment.

Rao, M. K. (2018) in his article "A study on rural women empowerment in India: through the eyes of entrepreneurship and skill development", aimed to deliberate on the concept, status and Government initiatives on rural women empowerment & entrepreneurship and ponder on various possible solutions for bettering it. He brought out that the hardship women face in rural areas in terms of socio-economic challenges, cultural norms, inequality, mindset, domestic responsibilities, deprivations, and discrimination are way more severe compared to their counterparts from cities. The exploitation is inevitable in the face of poverty, restricted mobility, lack of access and societal limitations. There is no option but to settle for low-paid & low-skilled jobs. The only hope against all the odds is empowering them through education & skill development. The initiatives of Govt. of India in the form of Skill India & Stand-up India for uplifting youth, especially women, are laudable and can address the issue and bring positive change.

Pitambara, & Choudhary, B. B. (2017) in their article "Empowering women through skill development", has explained that the goal of skill development is not only to prepare individuals for jobs but also to better their work performance and enhance their quality of work. Certain challenges need to be addressed, the focus needs to be broadened to gender and not limited to women, and the inclusive policies eliminating discriminatory practices are required to build a favourable skill development ecosystem for women. The employment pool must be broadened to encourage women's participation in local economics. Women empowerment can bring in socio-economic

development when the women are educated, and they also help develop the entire family.

Ahamad, T., Sinha , A., & Shastri, R. K. (2016) in their article "Women Empowerment through Skills Development & Vocational Education", deliberated on skill development through various national programs of Govt. of India like the National Skill Development Mission, Pradhan Mantri Kaushal Vikas Yojana etc. They highlighted the plight women have faced due to discrimination & inequalities through ages and to bring them back to the mainstream. They should be empowered & encouraged to participate in the economy. Govt. of India has been giving special attention to skilling women as per world standards to bridge the gap between the Female Labour Workforce and their employment.

Gupta, S. K. (2016) in his article "Study of women empowerment through skill development & vocational education in India", attempted to determine the impact of Skill Development & Vocational Education Training on the empowerment of women and highlighted the effort of the Government and challenges on the way to skill development. He brought out that in the era of globalisation & liberalisation, the horizon of policy makers & Industry has expanded to extend women's vocational training, skill development and entrepreneurship opportunities. Of late, the role of women is well acknowledged, and women's entrepreneurship has been promoted. Today, women are even willing to take up business as entrepreneurs and contribute to the growth of the Nation. Human resource needs to be developed, and appropriate training policies need to be formulated to empower women and help them earn a sustainable livelihood themselves.

Babel , S., & Sharma, S. (2016) in their article "Impact of skill development training among rural women for entrepreneurship development", aimed to formulate a skill & entrepreneurship development intervention package to train rural women and assess its effectiveness. They found that respondents had a positive perspective about the training as it allows them to start up their establishment using the value-added jute products for producing decorative handicraft products. The innovative idea of using jute for producing the commercially demanded handicraft products was well appreciated by all respondents as otherwise, it was not utilised properly. They recommended that

Cooperatives, DRDA, DIC, Government and NGOs conduct specialised skills-oriented training exclusively targeted at women's empowerment.

From the above research papers, it is understood that the socio-economic growth of a nation cannot be envisaged, excluding the involvement of women as they constitute half of the population. In a country like India, women have been marginalised & discriminated since ages. Women need an opportunity to prove that they are no less in any matter so over compared to their counterparts and that they can contribute equally to the family and the economy. The intervention of the Government is required to break the age-old barriers that limit women in society. Education & skill development can help empower women and equip them with the required employable skills to ensure their sustainable livelihood. The efforts of Govt. of India under the "Skill India Mission" and through its implementing agencies are appreciable. Private partners, Industry, NGOs and civil organisations are also joining hands in the direction, which has helped in serving the purpose. Still, miles to go before real goals are achieved.

2.6 Influence of Technology

Pelau, C., Ene, I., & Pop, M.I. (2021) researched "The impact of artificial intelligence on consumers' identity and human skills" to find out the correlation between the influence of efficiency and fascination with artificial intelligence, the influence of the social circle and the perception of preserving the identity of consumers concerning various forms of artificial intelligence. Concluded that the development of Artificial Intelligence can be useful for individuals and humanity only if we understand to make the right use of such robots and intelligent machines for the benefit of humans.

Paek, S., & Kim, N. (2021) in their article "Analysis of Worldwide Research Trends on the Impact of AI in Education", aimed to examine the current impact of AI and predict its future impacts on education. They also deliberated on the global research trends on AIED and collaboration status by countries. They concluded that nowadays, Artificial Intelligence is omnipresent, impacting human civilisation and is also becoming instrumental in the revolutionary change in the education sector. AI forces us to change our education perspective, starting from its purpose, content and teaching methods. With the advent of AI, the world is gradually upgrading from a knowledge

transfer-based public education to a more personalised & creative convergence education. AIED can be witnessed everywhere in the form of AI tutors, chatbots etc., yet a long way to go. We need to define the concept, direction and other related terms of AIED.

Hui, F. (2020) in his research paper "The Impact of Artificial Intelligence on Vocational Education and Countermeasures", analysed the impact of AI on vocational education and measures for enhancing the standard of vocational education & quality of teaching. He concluded that the vocational training institutes are gradually upgrading to smart classes & information-based teaching but still are way behind the pace of growth of AI. They need to cope with the pace of technology by constantly aligning the teaching contents and adapting to the market requirement in terms of talent level & quality demands due to the advent of AI. The shortcomings & gaps in students' skills need to be identified with AIED and work on its solutions. The vocational education tasks need to be integrated with the actual teaching so that the students can improve their overall quality.

Panigrahi, A., & Joshi, V. (2020) in their research article "Use of Artificial Intelligence in Education", aimed to understand the applicability of AI in education and its advantages. They observed that AI has graduated from a simple rule-based system to a data-driven system rather than an advanced context-driven one. They discussed the various approaches in AIED that improves learning outcomes. AIED has changed the learning experience with its flexible learning environment and personalised learning experiences. The study concluded that focused & collaborative efforts are required by all the stakeholders of the Education sector to comprehend, admit and utilise AI-based products that benefit them and can be used to create customised, pertinent, appealing, understandable and controllable solutions for every learner.

McKee, S., & Gauch, D. (2020) in their research paper "Implications of Industry 4.0 on Skills Development", concluded that with the help of emerging and converging technologies in various combinations, a new world of possibilities for educational transformation could be opened up. However, as we move towards this educational transformation, we must ensure that the world transforms into a more useful, productive, secure place and better place for all.

Jahan, M. (2019) in her article "Women empowerment through skill development Programs in India", has revealed that technology has improved the status of women. With the help of advanced technology, women have now access to new jobs professions & occupations. Women also need to master the technology, learn machine design, and practice it in workshops as there is ample scope for women technicians in mechanical industries. Women must be empowered with skill development to prepare them for such industries.

Goksel, N., & Bozkurt, A. (2019) in their research article "Artificial Intelligence in Education: Current Insights and Future Perspectives", had the aim to understand the key concepts in Artificial Intelligence and the possibilities of AI in education & training. The researchers have deliberated the vision & viewpoints of AI on various aspects like DL (Deep Learning), ML (Machine learning), and NLP (Natural Language Processing) etc. and identified areas of research like adaptive learning & styles of learning, AI-based expert tutoring system and AI-based educational processes. They concluded that AI indeed enables human lives and the advancement of human progress. However, before fully integrating AI into educational processes, it is essential to develop a serious stance. Because of this, it is essential to develop an ethical policy and define the how AI will use the human-generated data. Secondly, the AI-featured educational processes should be tested repeatedly to prevent any automated processes and machine learning.

Ray, G. (2019) in his article "Digital Skills, Transmedia and Artificial Intelligence", has deliberated the development of communicative competencies and the implications of Industry 4.0 on teaching & training. He concluded that innovative strategies need to be synchronised for implementation in academia, training institutions & industries. It requires a partnership of all concerned across the society. Knowledge creation now also involves the contributions of intelligent machines and AI. The students need to be taught to learn to live in the new world of AI. Policymakers need to accordingly frame policies for implementing initial learning in academia and reskilling / training in formal and informal environments. He also mentioned that AI and other upcoming technologies should be targeted toward solving human problems. Otherwise, it would be another world problem.

Ra, S., Shrestha, U., Khatiwada, S., Yoon, S. W., & Kwon, K. (2019) in their research article "The rise of technology and impact on skills", has discussed the skill demands of the fourth industrial revolution, the impact of automation on jobs and emerging trends in the education system. They concluded that the demand for specialised skills is changing very fast due to the rise of technology. Adapting to such change requires unlearning old technologies and learning & relearning new ones. Innovative modes of education & learning deliver to address the changing skills demand. New technologies facilitate innovative modes of education and delivery of learning with the potential to address the first implication of rapidly changing skills demand. In short, new technologies can offer an antidote to the challenges they present. In order to meet changing demands and maximise the full potential technology offers, it is crucial to cultivate learnability in the workforce. Since exponential technological advancements affect current and future workers, learning needs to be continuous and undertaken by all actors. Moreover, for continuous learning, the existing education systems are not sufficient. The creation of a learning society is imperative.

From the above research papers, it is understood that technology, including Artificial Intelligence (AI), robots & machines etc., can be useful only when we learn to use it to our advantage. AI is also impacting the education sector and bringing revolutionary educational transformation. Youth has to adapt to the market changes of AI by acquiring the required skills and learning to utilise AI-based products that provide solutions. As we move towards integrating our educational processes with AI, we need to have an ethical policy and determine the boundaries for using AI data. Precautions need to be taken by reconfirming the AI outputs to prevent unwanted problems and ensure that the AI & other intelligent machines don't dominate humans.

2.7 Collaboration with stakeholders

Kaur, R. (2018) in her research article "An Overview of Corporate Social Responsibility (CSR) Initiatives in India", studied the statutory requirement and initiatives taken by Indian companies for CSR and opined that the challenge for companies is to determine a strong and innovative CSR strategy which should deliver high performance in ethical, environmental and social areas and meet all the

stakeholder's objectives. Corporates should together endeavour to bring a positive change in the current social situation in India in order to have an effective and lasting solution to the social issues. The Government needs to partner with corporates and NGOs so that their combined skills such as expertise, strategic thinking, manpower, and money could be channelised to initiate extensive social change and put the socio-economic development of India on a fast track.

Bala, M. (2018) in her article "CSR Initiatives in Education in India a Critical Review of Initiatives, Issues and Challenges", aimed to understand the concept of Skill Development, challenges encountered in self-employment and provide befitting suggestions. She concluded that the education system in India needs restructuring even at elementary, secondary and higher education levels. This can be achieved only when the corporates too come forward and shoulder the responsibilities towards society. In a real sense, the corporates are consumers & users of trained, skilled manpower graduating from universities. In order to reap concrete benefits, the corporates have to extend support to the educational institutions to produce the required skilled and trained manpower by providing funds for research and development, organising various workshops, training and development programs, infrastructural support and last but not least providing facilities for qualitative education with non-profiteered modes.

Parekh , A., & Prakash, P. (2018) in their article "Why companies prefer CSR in education", have brought out that, of late, companies have started displaying their strategic thinking by choosing education in general and skill development in particular as their CSR initiatives. They opined that Corporate Sector acts as a partner to Government in addressing the issues in the education ecosystem by utilising the mandatory statutory provision for CSR spending. They have concluded that companies should have strategic thinking and follow a balanced approach in creating a portfolio of CSR initiatives of high-risk & high-return social Programs with low-risk & low-return Programs.

Sawant, P. D. (2018) in his research article "Corporate Social Responsibility & its Impact on the Profitability of select Private, Public and Multi-National Companies in India - An Empirical Study", pointed out that if the company spends some percentage

of their profit on the betterment of the society, there is a probability that society in return would support its growth.

Mohanty , A., & Mishra, B. B. (2017) in their research article "Corporate Social Responsibility: A Comparative study between MCL and NALCO", figured out that the challenge for the companies is to determine a strong and innovative CSR strategy to deliver high performance in ethical, environmental and social areas and meet stakeholder expectations. Incorporating some new activities will help them to ensure social commitment and attend sustainability in the long run.

Gupta, A. K., Maheshwari , M., & Gaur, P. (2017) in their research article "Corporate Social Responsibility Practices in India: A Review of Literature", made a review of literature on the Corporate Social Responsibility Practices in India and has pointed out that in the current scenario, the role of organisations in the economy is not only to generate revenue but is also expected to integrate various aspects like social, environmental, ethical with the day to day operations.

Shyam, R. (2016) in her article "An Analysis of Corporate Social Responsibility in India", made exploratory research on CSR practices in India and concluded that CSR ensures company grow on a sustainable basis while ensuring fairness to all concerned. CSR has successfully interwoven business with social inclusion & environmental sustainability. Corporates have proved their ability, in terms of man, money, machine and mechanism, to make a significant difference in society and improve the overall quality of life. In the current social situation, it is challenging for one single entity to bring about change, considering its enormous scale. Corporates have the required resources, viz. manpower, money, machine, required expertise, and strategic thinking, to facilitate extensive social change. Effective partnerships between corporate, NGOs and the Government can accelerate India's social development.

From the above research papers, it is understood that the education & skill development system needs complete overhauling and restructuring. The private sector, i.e. corporates & NGOs, needs to shoulder the responsibility and partner with the Government by supporting & supplementing the cause with their expertise, funding, infrastructure, skills, and strategic thinking. In fact, corporates are the biggest

beneficiary of the education & skill development system as the students/trainees passing out of such institutions go to work in these corporates and help them in running their business. The corporates can adopt a balanced approach in selecting their CSR initiatives of high-risk & high-return with low-risk & low-return social programs and accordingly strategically choose education & skill development for their CSR. With the combined efforts of all stakeholders, India can effectively solve its current social issues, bring desired positive change in the socio-economic condition of India & propel itself on the growth trajectory.

2.8 Research Gap

Lot of literature is available on unemployment, training, skill development. The above studies conducted by researchers are primarily to comprehend the current position of India's skill development landscape by critically examining the policy framework & initiatives, evaluating outcomes & challenges and pondering on possibilities & ways forward for the success of the Skill Development Initiative and bridging the skill gaps.

The studies have been made at the macro level, and a general view has been taken. None of the research has been done at the micro-level to see what is the reliability of individual-specific skill development Program/training in meeting the desired outcomes, whether fairness has been adopted in the assessments of the programs, what is the validity of the skill development training curriculum and flexibility of delivery methods in meeting specific needs of skilled manpower, in particular, sector, especially in the hydrocarbon sector. But no literature is available on the assessment of training programs under Skill India Mission conducted at SDIs of Hydrocarbon Sector in terms of Reliability of Assessment, Validity, Flexibility, Fairness in assessment, Assessment Satisfaction. So, it motivated the researcher to carry out the research on assessment of Training Program conducted at SDIs of Hydrocarbon Sector. As the researcher has rich exposure in Hydrocarbon Sector so the research is in Hydrocarbon Sector.

There is a distinct Research Gap and scope of more research to go deeper to have a micro view of the skill development Programs being run at SDIs of the Hydrocarbon Sector.

Hence, this research has been taken to have the micro analysis in assessing the training Programs being conducted at SDIs of the Hydrocarbon Sector so that measures can be suggested to make it more fair, reliable and valid to serve the purpose of the hydrocarbon sector and also meet the national objective of Skill India Mission.

CHAPTER-3
RESEARCH DESIGN & METHODOLOGY

CHAPTER-3

RESEARCH DESIGN & METHODOLOGY

3.0 Introduction

Identification of the Research Gap and formulation of the Research Problem has been described in the previous two chapters respectively. This chapter discusses the Research Objectives, Design of the Research and Methodologies used to attend the Objectives. This chapter also discusses Design, Approach employed, Data Collection Methods used and the Methodology of the analysis. The research methodology used in the study discusses about sampling element, sampling technique, sampling unit, data source, data preparation, validation of research. This research begins with the design of appropriate research plans for studies based on the subject. When selecting the search pattern, the scalability of the variable and the type of data collected were strongly considered. In addition, the chapter contains information on the targeted data, the sampling process and the sample size, the data collection process and the analysis method are also discussed. In the end, with validity and reliability, highlighting the operational definition and presentation of the variable this chapter prepares the base for the data analysis chapter.

3.1 Problem Statement

This research talks about the dominant fundamental issues that has a greater influence on the trainees who undertake the **Training / Skill Development Programs** and the reliability of the Training / Skill Development Programs to test the skill and industry readiness of the trainees. This problem statement section highlights on some of the aspects of the research that is helpful in preparing the breeding ground for development of Research objectives. The review of literature helps in finding out the problem statements and that is numbered as PS-1, PS-2.....PS-5, are as follows.

PS-1: Previously no in-depth research is carried out to explore and identify the dimensions of Training / Skill Development Programs and its reliability for upskilling the

trainees for pursuing their careers in Hydrocarbon Sector. This research tries out to resolve this issue.

PS-2: No satisfactory research is available that could establish the relationship between Training / Skill Development Programs and its reliability for enhancing the competency levels in the students to pursue their careers in Hydrocarbon Sector. Therefore, this research is an approach to study the reliability of Training / Skill Development Programs in enhancing the competency levels in the students and it aims at assessing how far the SDP is helpful for the trainees to pursue their careers in Hydrocarbon Sector.

PS-3: In the process of investigation through the observation it is emerged that the Training / Skill Development Programs is not enough to fulfil the requirements of Hydrocarbon Sector in India. The curriculum is more theoretical and the exposure of the students get in practical field is not enough for giving them the real time information. As on date no accurate research is being carried out to test the validity of the curriculum taught in Training / Skill Development Programs in adopting the present date requirements of the hydrocarbon sector. Therefore, this research is to emphasize on the challenges in curriculum taught in Training / Skill Development Programs. This research tries out to bring out the holistic view to this issue.

PS-4: During my study, I observed that students from various areas are coming to take up the course. They vary from age to gender to educational background, this gives them no level playing field to answer my questions. Thus, this research is an approach to evaluate the fairness adopted in the assessment of the programs based on the demographic characteristics of the students. In this research I tries to evaluate whether the Training / Skill Development Programs have fairness in the assessment of the programs based on the demographic characteristics of the students or not.

PS-5: From my observation I came to know that, the relationship between the flexibility of delivery method in assessing the adoption of fairness is not up to the mark. Therefore, this is considered to be one of the research problems that is undertaken to find out whether the relationship between the flexibility of delivery method in assessing the

adoption of fairness succeeded in assessing the adoption of fairness that has the greater level of reliability and validity.

3.2 Research Objectives

From the above problem statements the following objectives can be brought out that are as follows.

1. The objective is to evaluate the reliability of the Training / Skill Development Program to test the skill and industry readiness of the trainees at SDI.
2. To test the validity of the curriculum taught in Training / Skill Development Program in adopting the present date requirements of the Hydrocarbon sector.
3. The research objective is to find out the relationship between flexibility of delivery method in assessing the adoption of fairness that has the greater level of reliability and validity.
4. To evaluate the fairness adopted in the assessment of the programs based on the demographic characteristics of the students.
5. To develop a model for making the Training / Skill Development Program of SDIs more effective.

3.3 Development of Hypothesis

Development of Null Hypotheses and Alternative Hypotheses from the above research objectives;

Hypothesis-1:

H₀: The Training / Skill Development Program curriculum is not significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector.

H₁: The Training / Skill Development Program curriculum is significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector.

Hypothesis-2:

H₀: The Training / Skill Development Program is not significantly reliable for enhancing the skill levels in the students that help them to pursue their careers in Hydrocarbon Sector.

H₁: The Training / Skill Development Program is significantly reliable for enhancing the skill levels in the students that help them to pursue their careers in Hydrocarbon Sector.

Hypothesis-3:

H₀: The curriculum taught in Training / Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector.

H₁: The curriculum taught in Skill Development Program is significantly valid to meet the present date requirements in Hydrocarbon Sector.

Hypothesis-4:

H₀: The Training / Skill Development Program has no significant relationship between flexibility of delivery method in assessing the adoption of fairness for achieving a greater level of reliability and validity.

H₁: The Training / Skill Development Program has a significant relationship with the flexibility of the delivery method in assessing the adoption of fairness for achieving a greater level of reliability and validity.

Hypothesis-5:

H₀: The Training / Skill Development Program does not have fairness in the assessment of the programs based on the demographic characteristics of the students.

H₁: The Training / Skill Development Program has fairness in the assessment of the programs based on the demographic characteristics of the students.

3.4 Research Design

A research design is a framework or blue print for conducting the research project. It details the procedure necessary for obtaining the information needed to structure and/or solve research problem. A research design lays the foundation for conducting the project.

Bickman & Rog (1998), while describing the research designs, stated that it serves as the "architectural blueprint" for any research, as it involves the research approach to be used and the best methods of collecting and analysing the data. Research design links data collection and analysis activities to the research questions and ensures that all research aspects will be addressed (Bickman & Rog, 1998). Burns & Grove (2005) opined on research design as a blueprint for conducting a study with maximum control over the factors that may interfere with the results' validity. Parahoo (1997) described a research design as a plan explaining how, when and where data will be collected and analysed. Polit & Beck (2004) defined a research design as the researcher's efforts to answer the research question or test the research hypotheses. Punch (1998) suggested that the concerns of research design are to answer the following questions:

- Who & What will be studied?
- What strategies of inquiry will be used?
- What methods will be used for collecting and analysing empirical materials?

A research design is a framework or blue print for conducting the research project. It details the procedure necessary for obtaining the information needed to structure and/or solve research problem. A research design lays the foundation for conducting the project. The cross-sectional descriptive research design is used for conducting this research work because this design enables the researcher to study the problem at given point of time of the population of interest. To identify the problem, to develop and approach to the problem & to formulate an appropriate research design, primary data has been used. To collect information for the study from trainees passed out from Skill Development Institutes of Hydrocarbon Sector. For this the primary research is used. The several strategic locations in all six locations were identified and primary data were

collected from respondents directly using structured questionnaire and observation method.

The research design used by the researcher is in agreement with the empirical study requirements. As such, it covers the type of data collected, the methodology of data collection and the various statistical tools and techniques used for the analysis of data and hypotheses testing.

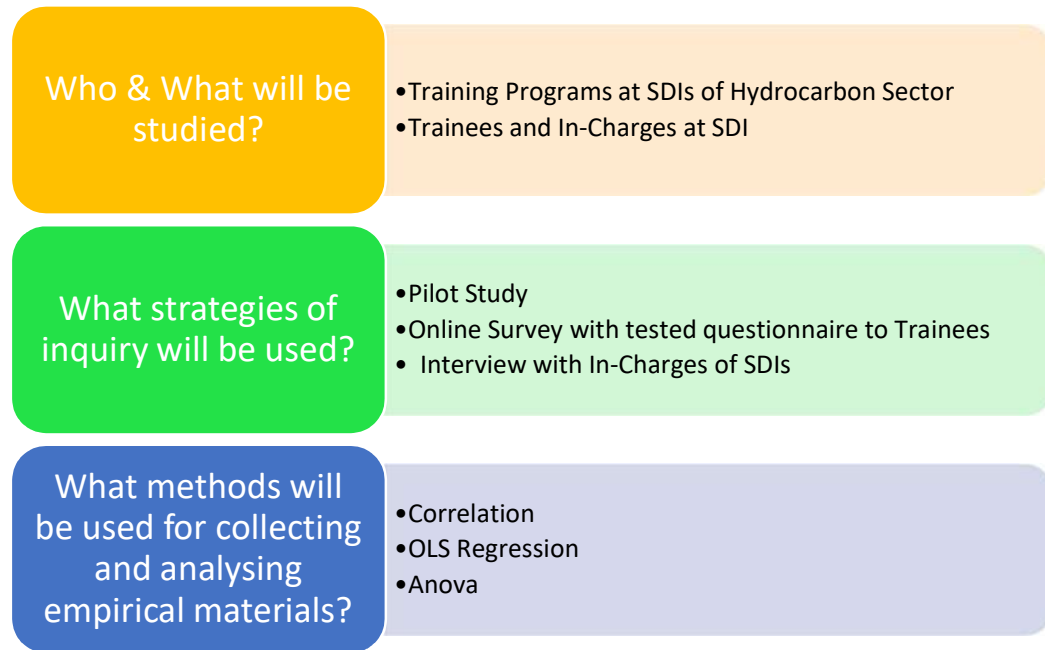


Figure 3.1 Research Design

a. Research Type

According to Ghauri & Gronhaug (2005), depending on the nature of the problem, the research could be exploratory, descriptive or causal.

(i) Exploratory Research

It is used to identify and explain the nature of the problem. It enables a manager to better understand the problem. According to Zikmund (1984), the purpose of exploratory research includes diagnosing a situation, screening alternatives and discovering new ideas. Ghauri & Gronhaug (2005) state that exploratory research is mostly used when the research problem is unstructured, i.e. badly understood, not well

known, or the other knowledge is not absolute. According to Yin (2003) interview is the best method when gathering information in exploratory research. Zikmund (1984) reports that other methods used in exploratory research are experience surveys, secondary data analysis, case studies and pilot studies. He further describes, in his book “Exploring Marketing Research”, that the pilot studies can further be segregated into focus group interviews, projective techniques and depth interviews.

(ii) Descriptive Research

According to Ghauri & Gronhaug (2005), descriptive research is used when the problem is structured, i.e. it gives answers to who, where, what, how and when questions. It is used to make clear the distinctiveness of a population or an observed fact. According to Zinkmund (1984), descriptive research studies are based on some previous understating of the nature of the research problem.

(iii) Casual Research

According to Ghauri & Gronhaug (2005), in causal research, the problems are also structured. Causal research is all about cause and effect relations. The main purpose of such research is to isolate the cause(s) and tell whether and to what extent cause(s) result (s) in effect (s).

This research is a study based empirical research, it is completely based on primary data collected by the researcher through well structured, designed and comprehensive questionnaire. The questionnaire contains scaling questions with five-point scale and some questions are in the form of ranking questions too. The information sought being qualitative, scaling and ranking questions are most appropriate and through such questions, qualitative information has been indirectly quantified. This questionnaire was administered to a sample of 470 respondents only from all categories of society segregated under age, sex, income level, test and preferences to find the accurate result.

The size of the sample was instinctively decided for a large sized finite population. However, in this sample, an effort was made by me to have a representation of students

study different locations located across different areas of India i.e., Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag and Raebareli.

The duly filled in questionnaires were then edited by researcher in accordance with the requirements of the objectives and hypothesis, univariate and bivariate tables were prepared.

b. Research Process

The relationship between the existing body of knowledge and a research process leads to the framework for research. Saunders, Lewis & Thornhill (2007) stated that adopting a research strategy depends on its appropriateness to serve the purpose of research objectives and questions. The research domain (i.e. the subject matter of the study) of the present study the Assessment of Training Programs of Skill Development Institutes (SDIs) under Skill India Mission of Government of India with special reference to Hydrocarbon Sector.

Kraemer (1991) identified the following unique characteristics of survey research

- Survey research is used to describe specific aspects of a given population quantitatively.
- The data required for survey research is subjective as it is collected from people.
- Survey research uses a section of the population from which the findings can be generalized back to the population later.
- Surveys are capable of collecting information from large samples of the population. They are also well suited to gather demographic data that describe the sample's composition (McIntyre, 2006).
- Surveys are inclusive of the types and number of variables that can be studied, require minimal investment to develop & administer, and are relatively easy to make generalizations (Bell, 1996).

- Surveys can provide information on attitudes which is otherwise challenging to measure using observational techniques (McIntyre, 2006).
- Only the actual population and not exact measurements is estimated in the survey (Salant & Dillman, 1994).

E-mail-based surveys are survey instruments delivered through electronic e-mail applications over corporate intranets or the Internet (Kiesler & Sproull, 1986; Sproull, 1986). E-mail-based surveys are provided free and faster than traditional paper-and-pencil surveys. Another form of an electronic survey and technique currently popular with researchers (e.g., Stanton, 1998; Zhang, 2000) is the Web-based survey. The survey instrument physically resides on a network server and can be accessed only through a Web browser (Green, 1995; Stanton; 1998).

Web-based surveys are connected to a database where all completed survey data is categorized and stored for future analysis (Lazar & Preece, 1999; Schmidt, 1997). *(As Reported by Karen Jansen, The Pennsylvania State University, USA, Kevin Corley, Arizona State University, USA and Bernard Jansen, The Pennsylvania State University, USA in E Survey Methodology, Idia Inc. Group).*

In the present work web-based survey method has been used for response collection, considering its advantages like a fast response, better way of data collection, cheaper and more accessible.

3.5 Research Methodology:

When research is based on the primary data collection and analysis based on the information received constitutes the vital part in exploratory research. Field studies and interviews are taken for supporting the hypothesis, based on the objectives conceived for the successful conduction of the research. The interviewing technique provides richer data than can be gained from other kinds of research methodology. The completed transcripts were analysed using the EXCEL and Statistical Package for Social Science (SPSS) version 23.0 computer Program to determine recurring themes.

Quotes gathered from the interviewees during this study have been used to give meaning to the results.

The research was conducted using a combination of qualitative and quantitative data collection methods. A pilot study was launched between February - March 2021 and it was carried out at Skill Development Raebareli. It was suggested that the feedback should also be taken from the In-charges. Hence, 6 number of questions were also framed to be asked to In-charges at SDIs. The main study was undertaken using the survey and interview approach. Both questionnaire and interview techniques were used to examine the key research issues cited in objective section.

For the purpose of analysis, the researcher has used Arithmetic Average and Percentages for studying central tendency and Ranks and Spearman's Coefficient of Correlation for analysing relative ranks and relationships. Apart from this the researcher has tried to use Karl Pearson's coefficient of correlation to highlight the degree of relation demographic profile of the students and their reliability for upskilling them in pursuing their careers in Hydrocarbon Sector. The ANOVA test was carried out to find whether there is an impact on association between increase in the government intervention and its influence in the fairness in the assessment of the programs and check the goodness of fit.

The researcher had also used the logistic ordinal regression model (LOR) to study the qualitative response related to the fairness in the assessment of the programs provided in different locations as well as to test their level of significance as Percentage analysis and frequency distribution. The researcher also used the test of reliability by using Cronbach's Alpha method.

The proportional odds model is also known as the ordered logit model and this can be explained and tested with the help of SPSS. In this research paper the SPSS-23 was used to test the ordinal data collected from the 383 respondents and it is discussed in the data Analysis section.

3.5.1 Sampling Element

The study is carried out in six locations all over across India namely Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag and Raebareli. For this research the samples were collected from students and teachers study and work respectively in different SDP institutes units located across different areas of India i.e., Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag and Raebareli. Total six teaching locations were taken, in the process of collection of data. The respondents were primarily from rural background and vulnerable sections of the society. The researcher has considered to take the sample from all Six SDIs that provide curriculum for Hydrocarbon sector. The researcher used the response from students. The responses gathered were in the form of close ended questionnaires. The researcher has considered to take all six campuses in totality, thus the data obtained holds authenticity to provide point of view of the respondents.

3.5.2 Sampling Technique

The researcher has applied Non-Probability Sampling Methods under which Quota sampling technique was adopted for the purpose of data collection.

Ideally the quotas chosen proportionally represents the characteristics of the underlying population. This definitely has the advantage of being relatively straightforward and potentially representative, at the same time the chosen sample may not be representative of other characteristics that weren't considered (a consequence of the non-random nature of sampling).

The population elements have been selected on the basis of researcher's own judgment; the sample have been selected taking into consideration following factors.

- (i) Respondents should be aware of English and Hindi to certain extent and should have completed at least 2 months of class room education and must complete 200 hours of uninterrupted study hour.
- (ii) The respondents should be at ease and should have sufficient time for responding to the questionnaire of the surveyor.
- (iii) Since the questions were asked to the In-charges of the SDIs the respondents need to have interest and intention to respond the questions with sufficient enthusiasm and conviction.

3.5.3 *Sample size*

There are several methods used to calculate the sample size depending on the type of data or study design. When choosing a sample size, the researcher must consider the following issues:

1. How much is already known
2. What population parameters we want to estimate
3. Cost of sampling
4. Spread or variability of the population
5. Practicality: how hard is it to collect data
6. How precise we want the final estimates to be

The sample size of 470 respondents were selected from students / trainees from different campus units located all across different areas of India i.e., Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag and Raebareli. For populations that are large, Cochran (1963:75) developed the Equation 1 to yield a representative sample for proportions. Hence in total 470 respondents were approached to respond to the questions. The equation is as follows that tells how much of sample size will be used for the study.

$$n_0 = Z^2 pq / e^2 \text{ -----(1)}$$

Which is valid where n_0 is the sample size, Z^2 is the abscissa of the normal curve that cuts off an area α at the tails ($1 - \alpha$ equals the desired confidence level, e.g., 95%), e is the desired level of precision, p is the estimated proportion of an attribute that is present in the population, and q is $1-p$.

The Population Size was 25221. At 95 % confidence Level and +/- 5% Margin of Error, the Sample Size was calculated as 379.

3.5.4 *Sampling unit*

In this research the samples were derived from both the male and female population who take education in SDI as a fulltime student for at least 2 months and having special interest in their respective field. Apart from the students the In-charges were also considered to provide their opinion about the concerned topic. The demographic life of these respondents was observed and data is collected through questionnaire method.

3.5.5 Data Source

Data Collection is a vital aspect of the research study. Inaccurate data collection can negatively impact the investigation results, leading to invalid results. Data collection methods used for impact evaluation vary along the continuum. On one end of this continuum are quantitative methods, while qualitative methods for the data collection are on the other. (Source: www.worldbank.org). Both forms of data collection have been employed in the present study.

Structured questionnaire was used as instrument for collecting the primary data looking into the nature of study the questionnaire mainly contented questions which were closed ended. The response was recorded and measured by using nominal scale and likert scale. To collect qualitative information certain observation were made and data collected were noted. The data collected thus was both qualitative and quantitative in nature. The questionnaire was pre-tested before final use.

3.5.6 Data Preparation

Data preparation begins with preliminary check of the entire questionnaire for its completeness. The collected data was edited, coded, tabulated, grouped and organized according to the requirement of the study and then entered into SPSS (Statistical Package for Social Sciences) for analysis.

3.5.7 Validation of Research

The primary data is used in this research. Thus, it is essential to collect the correct and valid data. The researcher needs to keep mental patience and presence of mind need to be applied while collection of data. Unless patience and presence of mind is applied the correct data can-not be collected the correct assessment of the information gathered can't provide the desired result.

3.6 Limitation of the Study

All efforts have been made to ensure that the research is design and conducted to optimize the ability to achieve the research objective. However, there are some constrains that do not validate the research but made to be acknowledge.

1. This study is restricted to the responses received from SDI students and the teachers only, limited the particular organisation.
2. This evaluation is based on only primary data. The primary data were generated through questionnaire and collected from the respondents studying and working in different campus units located across different areas of India i.e., Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag and Raebareli. and as such its findings depend on accuracy of data.
3. The sample consists of 386 males & females from six campuses located across different areas of India. The sample is selected conveniently and in single phase so as the opinion suggested by the respondents is situation based.
4. As the primary data and observational method of research has its own limitations and based on the respondent the study is limited to six campuses located across different areas of India and it cannot be applicable to other organisations operates in India and/or at International Level.
5. The study is based on the response of the in-charges at the six SDIs, who are highly subjective in nature and hence generalization made may not be totally true.
6. During the course of personal interview, the subjective nature of interviewers might also have influence upon the response-received for the present study.
7. Certain issues in the study concentrate on both perceptions and attitude of respondents.
8. The major tool which is used for evaluation is 5-point, scale known as Likert scale and nominal scale and thus it has its own limitations.

3.7 Questionnaire Format

The questionnaire consists of four sections using a summated rating method, which required respondents to tick mark the number that most accurately reflects their

perception of each statement (see Appendix- II). The respondents were asked to evaluate their overall experiences about the training imparted in different SDI centres. The first, second, third and fourth sections are compulsory. The first section asks about the demographic profile of the respondents. Section Two focuses on the Reliability, Validity, Fairness/Trust and Flexibility.

The design of the questionnaire was based on multiple-item measurement scale. A five-point Likert scale was adopted because the scale is the optimum size compared to five- and ten-point scales. Respondents were asked to assess the items of various constructs on the five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

3.8 Methodology of the Study

For analysing the hypothesis, parametric as well as non-parametric test have been used in this research. Following are the research methodologies which were used in this research:

- Descriptive Statistics
- Ordinal Logistic Regression Model
- ANOVA
- Wilcoxon's Matched - Pairs Test
- Linear probability model (LPM)
- Cronbach Alpha
- Durbin-Watson
- Karl Pearson's coefficient of correlation

3.9 Data analysis

3.9.1 Data Collection Work Experience

In every primary survey process, the data collection is one the tedious and most complex one. The data were collected in the mid of 2021. To collect the data, it took three long months. The collection of data took lots of effort and after approximately 90

days of tiresome work and travel. During the data collection process many hiccups were experienced, are new to me and for the first time the researcher came across people of various mind-set. In the initial days of data collection many people directly denied to replay to my questions. Some felt uncomfortable, specifically the female participants. But after a long through struggle and painstaking journey of 180 days the researcher successfully managed to collect data from 386 students/trainees and 6 In-charges of SDIs.

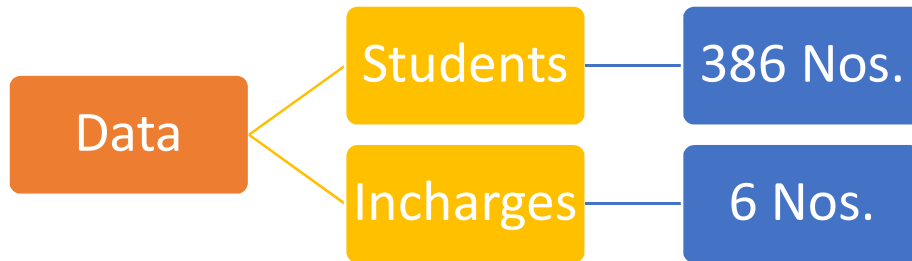


Figure 3.2 Data Collection

3.9.2 Data Analysis and Indicator Development

Indicators are hints, hints or markers that measure an aspect of a program and show how close a program is to the path and desired outcomes. Indicators are realistic and measurable criteria for the progress of the project. They should be defined before the project starts and allow us to monitor or evaluate whether a project indicates what it will do. In project planning Indicators link theory to practice. An indicator is a tool to help you know if your job is making a difference. The indicators generally describe observation changes or incidents related to project interference. They provide evidence that something has happened - whether it's a result, an immediate effect, or a long-term change.

In this research both (1) Quantitative Indicators (2) Qualitative Indicators were used. Age, sex, income level, education level are the quantitative indicators and the level of Reliability, Validity, Fairness/Trust and Flexibility etc. are the qualitative indicators.

3.9.3 Data Cleaning

Before the end of the analysis, the quality of the data collected was evaluated so that the results could be normal. Responses of SDI students and In-charges were reviewed for missing values. To ensure that only the perceived trigger of the scan was taken into account, the data saved in Excel was tested to filter out the clients that did not meet the criteria of the filtering request. External people have been identified by Excel tests. The data was normalized even before the software was analysed.

3.9.4 Validity and Reliability of Data

The results of any research can only be good as measures exploiting the concepts of the theoretical framework. Therefore, it is important to establish the quality of measurements by their reliability and validity. External reliability, which is tested through tested reliability, means that the study variable does not fluctuate over time. This method of measuring reliability was not a tedious and tedious study. A measure of internal reliability indicates the homogeneity of the objects that exploit the construction. In so far as the elements are correlated to each other, they all measure the same construction. The most common test of the reliability of consistency between elements, the Cronbach's coefficient, is used in the study to test the use of alpha (Cronbach's alphabet) and overall reliability, a measure of reliability overall collection of heterogeneous but equal objects.

3.10 Ethical consideration

Most people learn ethical standards at home, at school, in religious places, or in other social contexts. While most people acquire good and bad feelings in childhood, moral development throughout their lives, and the person becomes mature, and it undergoes different stages of development. Moral norms are so ubiquitous that they may be tempted to think of common sense. On the other hand, if ethics is not greater than general knowledge, it is impossible to eliminate the struggle and ethical problems in our society.

The following are some of the ethical principles adopted during data collection and analysis of collected data. The 'subjectivity' principle was given priority in the collection and process of primary data collection, so that unnecessary information can be largely avoided by giving priority to the 'integrity' principle of another, while respecting the principle of objectivity. What was carefully done about the mining process? In this study, two more open scientific principles were considered as "openness" and "integrity" in data collection.

3.11 Conclusion

This chapter represents the description of the procedures used to measure the constructs and collect the data. Throughout the research the researcher has used questionnaire method and the data were collected from respondents who are students / trainees who have undergone Skill Training in different SDI campuses located across different areas of India i.e., Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag and Raebareli. The researcher has taken all the responsibility to spell out the research objectives. Again, as an investigator the researcher further elaborated research design which included the research process and the research plan. A conceptual model has been proposed by the researcher. The sampling plan has been laid down. The researcher has incorporated data collection and data analysis procedures.

CHAPTER-4
ANALYSIS AND INTERPRETATION OF DATA

CHAPTER-4

ANALYSIS AND INTERPRETATION OF DATA

4.0 Introduction

In accordance with the objectives of the study, this study is an attempt to gather the opinions of the students studying in different locations of Skill Development Institutes (SDI). In this research the attempt has been made to take SDI as a prominent source of information to study the students' perception towards Training / Skill Development Program prepared for enhancing the student's ability to work in the petrochemical sector and its role in empowering the employees engaged in petrochemical companies. By using a structured questionnaire information were gathered from the students of SDIs. As a whole, 470 questionnaires were distributed amongst the different age group of people starting from 20 years to above 55 years spreading over diverse service position. Out of 470 distributed questionnaires, total 386 were collected and rest total 83 was not considered to incorporate those responses in the analysis. Out of total 83 rejected responses only 47 were never returned whereas rest 36 responses received were found to be incomplete and thus they were not considered for the study. Hence, a total of 386 responses were taken for analysis. Thus, 82.13% of respondents were responded to the questions asked to them with 100% accuracy without any mistake. In this chapter the data thus collected through questionnaires from different service position holders and from different age group of students studying in different locations of SDIs throughout India. The questionnaires collected further thoroughly scrutinized, tabulated and analyzed with immaculate interpretations.

To justify the responses from the samples, demographic factors have been selected covering different age groups, gender, years of service experience, employee numbers, and educational level.

The entire chapter is divided into two sections i.e. Section-A and Section-B. The Section-A deals with the demographic profile of the respondents and Section-B presents the analysis of correlation and OLS regression based on the responses of the students undergoing Training / Skill Development Program specific to Hydrocarbon

Sector located in different places like Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag and Rae Bareli.

The study covers the trainees undergoing Training at different SDI campuses that are located and spread across six units located at Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag, Rae Bareli under the method of convenience random sampling. For the successful conduction of the research, it was important to become specific in selecting the area of research and in the process of selecting; researcher decided to take samples from students from six SDI locations spread across India to examine the specific objectives of the study.

In pursuance to the objectives of the research an attempt has been made to gather the specific opinion of different age group of students studying in different SDI locations who are engaged in different positions. In the present study, the students studying in different SDI locations were included who were engaged in different positions in their respective organisations. Keeping in mind the nature of data for the study, multi-stage random sampling technique was used. Altogether the researcher has covered total six campuses of SDIs located in different geographic regions of Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag and Rae Bareli which were randomly selected for the study.

Considering the nature of the data, OLS regression method was used along with descriptive statistics. This research has been carried out to assess the students' perception towards assessment practices for successful completion of their Program. For the successful commencement of the research various information were gathered from the respondents to access how far the institute's practices are helpful to enhance the students' perception towards reliability and validity of assessment practices and it is helpful in enhancing the capabilities in them that will bring greater student satisfaction and bring employee empowerment after the successful completion of the Program.

4.1 Background to Statistical and Econometric Methods Used

In this research, the endeavour was to find out the Assessment of Training / Skill Development Programs of Skill development Institutes (SDIs) under Skill India Mission of Government of India with special reference to Hydrocarbon Sector, where student's perception towards Assessment of Skill Development Programs practices adopted in the institute to bring greater students' satisfaction for the Program.

The confidence level for this research was considered was 95%. Since the confidence interval for this research was 95%, the margin of error in this case is +/- 5. In statistical analysis the percentage of accuracy plays an important role the accuracy of response in the population depends on the percentage of sample that picks a particular answer. If 99% of your sample said "Yes" and 1% said "No," the chances of error are remote, irrespective of sample size. However, if the percentages are 51% and 49% the chances of error are much greater. It is easier to be sure of extreme answers than of middle-of-the-road ones. Thus while determining the sample size one need to determine a given level of accuracy. The principle behind taking the percentage accuracy it is always better to use the worst-case percentage (50%). The percentage of accuracy should always lie between; 50% to 55%. It is thus the researcher's interest and ability to detect at what rate the respondents are picking up the answers. In this case the researcher has taken 52% as percentage of accuracy of the response. Taking all these factors into mind 470 has become the sample size. These 386 respondents were taken for the interview to collect the data. But out of the 470, only 47 respondents refused to give any response due to some or other reasons; which counts only less than 10% and 37 responses out of rest of the responses received were either incomplete or partially complete. Thus, finally only 386 complete responses from all respects were left for analysis. The data analysis and interpretation are described as follows:

4.2 Importance of Primary and Secondary Data Collection for this Research

Data is one of the most important and vital aspect of any research studies. Researchers conducted in different fields of study can be different in methodology but every

research is based on data which is analyzed and interpreted to get information. Therefore, Primary data are information collected by a researcher specifically for a research assignment. In other words, primary data are information that a company must gather because no one has compiled and published the information in a forum accessible to the public. Companies generally take the time and allocate the resources required to gather primary data only when a question, issue or problem presents itself that is sufficiently important or unique that it warrants the expenditure necessary to gather the primary data. Primary data are original in nature and directly related to the issue or problem and current data. Primary data are the data which the researcher collects through various methods like interviews, surveys, questionnaires etc.

The following section covers demographic profile of the respondents and the hypothesis testing.

4.3 Detailed Data Analysis and Interpretation

4.3.1 Section A: Demographic Analysis of Responses from SDI Trainees

In this section, the researcher has taken all the steps to test the opinion of the students studying in different locations of SDI campuses and their perception towards assessment practices of Training/Skill Development Programs and its role in empowering the students to perform better in their respective organisations. For this reason, the researcher decided to use the Likert scale and used the primary information received from the employees studying in different locations of SDI campuses. The researcher here under, explains the demographic distribution of the respondents who are primarily the SDI students.

In the process of obtaining the result for the objectives taken by the researcher, he has taken the response from three categories of respondents. The researcher has used the Likert' 5 scale method to bring out his objectives.

Below the researcher has used scales in the following way:

1	2	3	4	5
Strongly Agree	Mostly Agree	Ambivalent	Mostly Disagree	Strongly Disagree

4.3.1.1 Category of Responses

The following Table-4.1 followed by Chart-4.1, reveals that total 470 numbers of questionnaires were actually distributed among the various age group of both male and female respondents.

The Chart-4.1 represents the response status of respondents, which highlights out of total distributed 470 questionnaires only 47 questionnaires were not returned which accounts 10.00%. While rest 423 questionnaires came up with the mix of correct and incorrect information in which 37 were incomplete responses, which count merely 8%. The responses which were valid & useful for further studies are sizable number and accounts 82 % i.e. 386 respondents come up with their responses without any error.

Table-4.1: Category of Responses

Sample Data	Response	Percentage
Never Returned	47	10.0%
Incomplete	37	7.9%
Response Received	386	82.1%
Total Distributed	470	

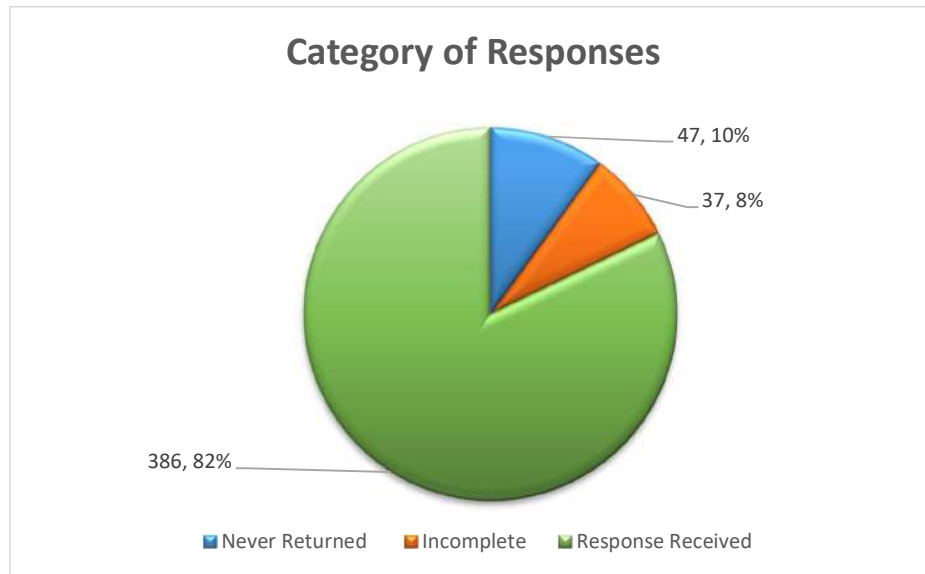


Chart – 4.1: Category of Responses

4.3.1.2 Years of Employment of Respondents

The following Table-4.2 followed by Chart-4.2 reveals that 386 respondents were taken into consideration to find their **responses about their years of employment in their respective organisations**. It is observed that largest of among 386 respondents 157 respondents were have 0.0 - 1.0 years of employment and their percentage is highest amongst all with 40.67%. The respondents those were covered in the research having more than 1 years of employment were of 229 in numbers that count to 59.32%. Next, 32.12% of respondents were of 1.1 - 2.0 years of employment followed by the 2.1 - 3.0 years of employment which constitute 27.20% of the total.

TABLE-4.2: Years of Employment

Years of Employment	Numbers	Percentage	Cumulative %
0 – 1.0 years	157	40.67	40.67
1.1 – 2.0 years	124	32.12	72.80
2.1 – 3.0 years	105	27.20	100.00
Total	386	100	

The following Chart - 4.2 is the pictorial depiction of Table - 4.2.

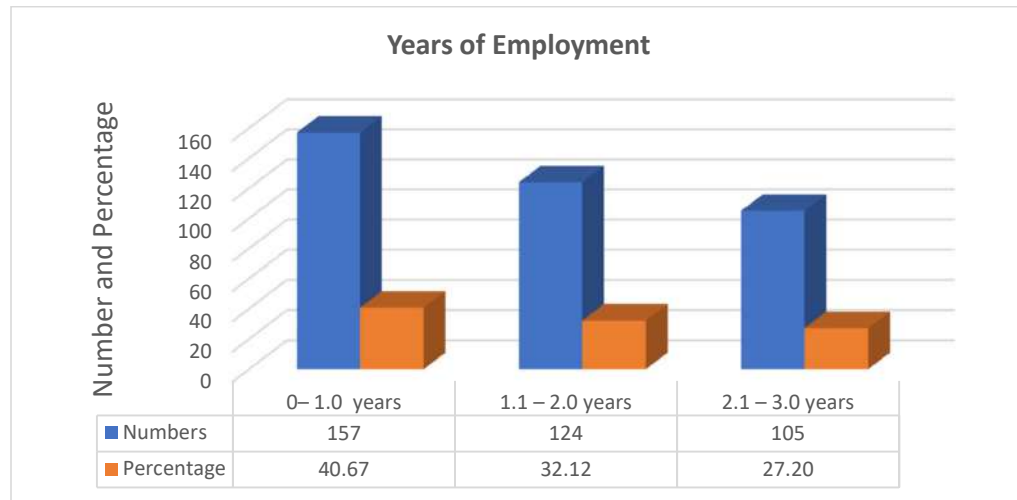


CHART-2: Years of Employment of the Respondents

4.3.1.3 Gender of Respondents

The following Table-4.3 and the Chart-4.3 point out the gender of the employees studying in different business units and shops. It is observed that out of 386 respondents 225 are the males (i.e. 58%) and rest 161 (i.e. 42%) belong to women category. The Chart-4.3 is the pictorial depiction of the Table-4.3.

TABLE- 4.3: Gender of Respondents

Gender	Number	Percentage
Male	225	58%
Female	161	42%
Total	386	100%

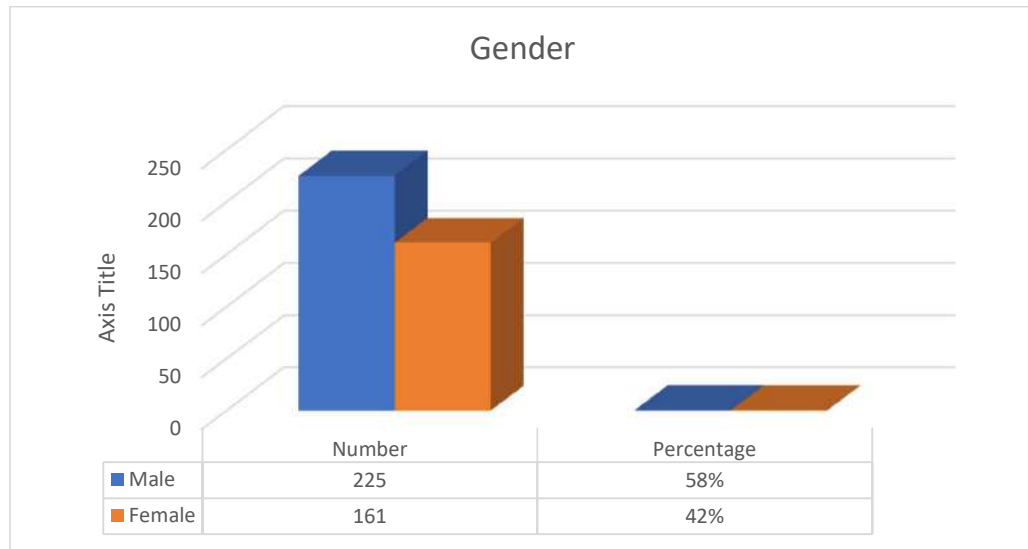


CHART- 4.3: Gender of Respondents

4.3.1.4 Age of Respondents

The Table-4.4 given below describes the age of the respondents who are the researcher's data points. The respondents from different age group from 18 years to above 32 years were collected. Out of 386 total final respondents, 156 were from 18-22 age groups, 125 were from 23-27 years age group and 105 were from 28-32 years age group.

TABLE- 4.4: Age of the Respondents

Age	Number	Percentage	Cumulative %
18-22	156	40.41	40.41
23-27	125	32.38	72.80
28-32	105	27.20	100.00
Total	386	100	

The following Chart-5 provides the information that 40.41% of respondents were from the age group of 18-22 years while 32.38% were from age group of 23-27 years. At the

same time, 27.20% of respondents were from the age group of 28.32 years of age.

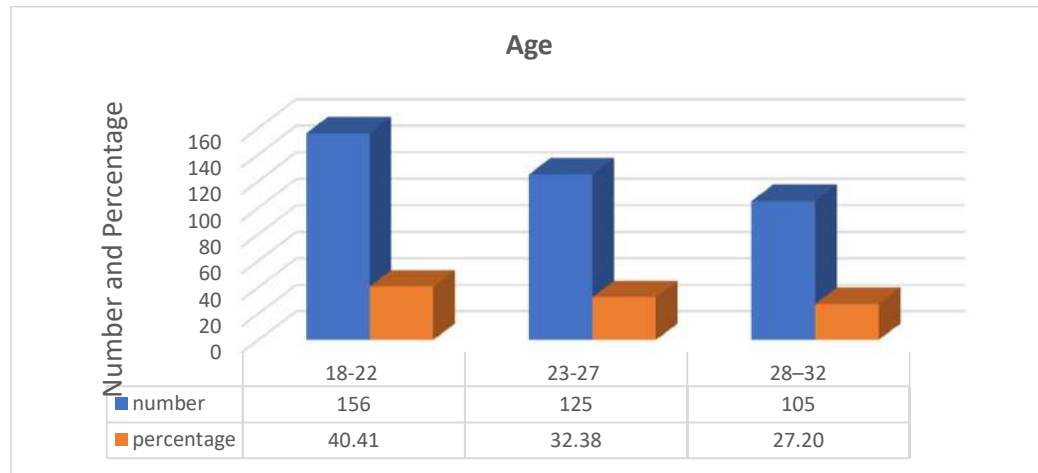


CHART- 4.4: Age of the Respondents

4.3.1.5 Education Level of Respondents

The following Table-5 and the Chart-5 provide the information about the Education level of the respondents. It was observed that out of total sample questionnaires collected 125 respondents were of ITI degree holders, that constitutes 32.38% of total sample collection. 37.05% of total sample collection were of 8th - 12th standards, they accounts to 143 in numbers. Where as 118 students were from Diploma degree holders, constitutes 30.57%. The below chart-5 is the pictorial depiction of the Education level of the respondents.

TABLE- 4.5: Education Level of the Respondents

Level of Education	number	percentage	Cumulative %
8th - 12th	143	37.05	37.05
ITI	125	32.38	69.43
Diploma	118	30.57	100.00
Total	386	100	

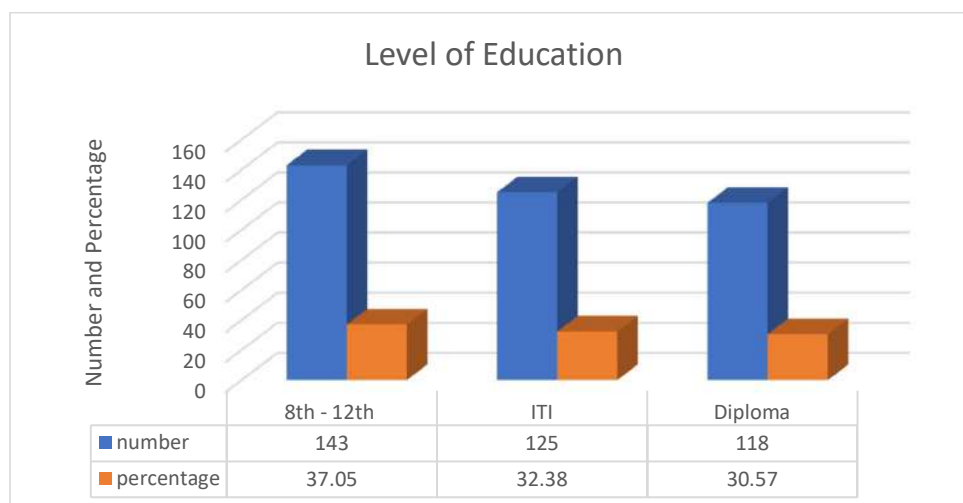


CHART- 4.5: Education Level of the Respondents

4.3.1.6 Income Level of Respondents

The below Table-4.6 depicts the Income level of the respondents who are the prominent constituents in this case. The table reflects that out of 386 sample respondents 56 respondents constituted people belong to Less than Rs.1,00,000 P.A income group these accounts to 15%. The highest is 26% respondents belonging to Rs. 100001-Rs. 150000 P.A income group with 101 number of respondents. Second highest is 24% (92 numbers) belongs to Rs. 150001-Rs. 200000 P.A income group. At the same time, the smallest size of respondents 22 in numbers were found to earn more than Rs. 300,000/- P.A. This group constitutes 6% income group of the total respondents. The Chart-4.6 is the reflection of the Table-4.6.

TABLE- 4.6: Income Level of the Respondents

Income level per annum	Number	Percentage	Cumulative %
< Rs. 100000/-	56	15%	15%
Rs. 100001-Rs. 150000	101	26%	41%
Rs. 150001-Rs. 200000	92	24%	65%
Rs. 200001-Rs. 250000	69	18%	82%
Rs. 250001-Rs. 300000	46	12%	94%
> Rs. 300000	22	6%	100%
Total	386	100%	

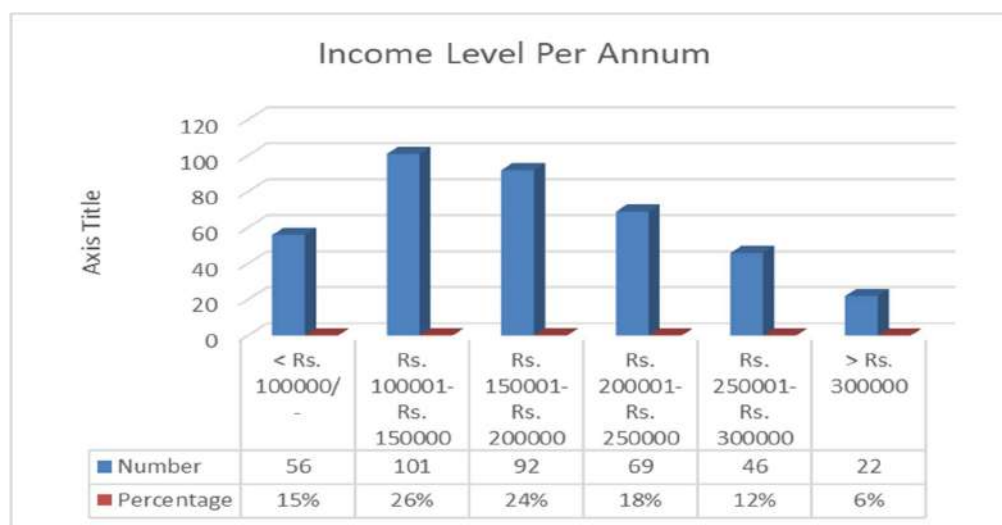


CHART- 4.6: Income Level of the Respondents

4.3.1.7 SDI Location of Respondents

The below Table-4.7 depicts SDI Location of respondents. Out of 386 respondents 89 were belongs to Raebareli Campus that counts 23% highest amongst all. On the contrary same i.e., 54 number of respondents were from both Vizag and Bhubaneswar campus and they individually constitute 14% each. 63 respondents from Ahmedabad campus answered the questionnaire sent to them, which counts 16%. Second highest respondents were belonging to Guwahati that counts 74, which is 19% of total. Chart-4.7 is the reflection of the Table-4.7.

TABLE- 4.7: SDI Locations of the Respondents

SDI locations	Number	Percentage	Cumulative %
Bhubaneswar	54	14%	14%
Ahmedabad	63	16%	30%
Kochi	52	13%	44%
Guwahati	74	19%	63%
Vizag	54	14%	77%
Rae Bareli	89	23%	100%
Total	386	100%	



CHART- 4.7: SDI Locations of the Respondents

The below Table-4.8 depicts Skill Level of respondents. Out of 386 respondents 147 were belongs to semi-skilled category that counts 38.08% highest amongst all. On the contrary i.e., 132 number of respondents were belonging to skilled category and they individually constitute 34.20%. 107 respondents were from Highly-Skilled Category, which counts 27.72%. Chart-4.8 is the reflection of the table-4.8.

TABLE- 4.8: Category of Skill Level of the Respondents

Category of Skill Level	Numbers	Percentage	Cumulative %
Semi-skilled	147	38.08	
Skilled	132	34.20	72.28
Highly- skilled	107	27.72	100.00
Total	386	100	



CHART- 4.8: Category of Skill Level of the Respondents

The following Section-B will discuss in detail on various aspects relating to SDI students' opinion related to the **Assessment of Training /Skill Development Programs of Skill development Institutes (SDIs) under Skill India Mission of Government of India with special reference to Hydrocarbon Sector**. In the following section there are only five (5) hypotheses were tested and those results were elaborately discussed as follows.

4.3.2 Section-B: Correlation Analysis

In this section the questions were asked to the respondents and their viewpoints were collected in the Likert scale format. After that the average score for each respondent for the total questions were calculated. Then this average was considered for correlation with Reliability of Assessment, Validity, Trust, Flexibility, Fairness in assessment, and Assessment Satisfaction. The following table – 4.9 provides the information regarding the abbreviations of the variables taken for the collection of response.

TABLE- 4.9: Abbreviations of the variables taken for data collection

VARIABLES	ABBREVIATIONS
Reliability of Assessment	RA
Validity	VAL
Trust	TRUST
Flexibility	FLE
Fairness in assessment	FA
Assessment Satisfaction	AS

4.3.2.1 Correlation between Age and Variables

TABLE- 4.10: Correlation between Age and Variables

Variables	AGE	RA	VAL	TRUST	FLE	FA	AS
AGE	1.000						
RA	-0.024	1.000					
VAL	-0.017	0.509	1.000				
TRUST	0.067	0.454	0.849	1.000			
FLE	0.113	0.376	0.719	0.739	1.000		
FA	-0.022	0.052	0.015	0.048	0.045	1.000	
AS	-0.026	0.499	0.961	0.816	0.682	-0.007	1.000

From the above Table – 4.10, it is observed that age is negatively correlated with Reliability of Assessment, Validity, Fairness in assessment, Assessment Satisfaction. But when the correlation exists it is significantly correlated but the association is too small to rely on i.e. Trust and Flexibility in assessment where the values are 0.067 and 0.1113.

4.3.2.2 Correlation between Education Level and Variables

TABLE- 4.11: Correlation between Education and Variables

	EDU.	RA	VAL	TRUST	FLE	FA	AS
EDU.	1						
RA	-0.044	1.000					
VAL	-0.019	0.509	1.000				
TRUST	0.014	0.454	0.849	1.000			
FLE	-0.001	0.376	0.719	0.739	1.000		
FA	-0.005	0.052	0.015	0.048	0.045	1.000	
AS	-0.025	0.499	0.961	0.816	0.682	-0.007	1.000

From the above Table – 4.11 it is observed that Education is negatively correlated with all variables i.e. Reliability of Assessment, Validity, Flexibility, Fairness in assessment, and Assessment Satisfaction except Trust. But when the positive correlation exists it is significantly correlated but the association is too small to rely on i.e. Trust where the value is 0.014.

4.3.2.3 Correlation between Gender and Variables

TABLE- 4.12: Correlation between Gender and Variables

	GENDER	RA	VAL	TRUST	FLE	FA	AS
GENDER	1						
RA	-0.020	1.000					
VAL	-0.023	0.509	1.000				
TRUST	-0.001	0.454	0.849	1.000			
FLE	-0.034	0.376	0.719	0.739	1.000		
FA	-0.074	0.052	0.015	0.048	0.045	1.000	
AS	-0.045	0.499	0.961	0.816	0.682	-0.007	1.000

From the Table – 4.12 given below it is observed that gender is negatively correlated with all variables i.e. Reliability of Assessment, Validity, Trust, Flexibility, Fairness in assessment, Assessment Satisfaction.

4.3.2.4 Correlation between Employment Tenure and Variables

TABLE- 4.13: Correlation between Employment and Variables

	EMP.	RA	VAL	TRUST	FLE	FA	AS
EMP.	1.000						
RA	0.021	1.000					
VAL	0.031	0.509	1.000				
TRUST	0.040	0.454	0.849	1.000			
FLE	0.022	0.376	0.719	0.739	1.000		
FA	0.004	0.052	0.015	0.048	0.045	1.000	
AS	0.012	0.499	0.961	0.816	0.682	-0.007	1.000

From the above Table - 4.13 it is observed that employment tenure is positively correlated with all variables Reliability of Assessment, Validity, Trust, Flexibility, Fairness in assessment, Assessment Satisfaction. But the strange fact is that the strength of association is very small.

4.3.2.5 Correlation between Income Level and Variables

TABLE- 4.14: Correlation between Income Level and Variables

	INCOME	RA	VAL	TRUST	FLE	FA	AS
INCOME	1.000						
RA	-0.014	1.000					
VAL	-0.064	0.509	1.000				
TRUST	-0.018	0.454	0.849	1.000			
FLE	0.005	0.376	0.719	0.739	1.000		
FA	-0.048	0.052	0.015	0.048	0.045	1.000	
AS	-0.064	0.499	0.961	0.816	0.682	-0.007	1.000

From the above Table – 4.14 it is observed that the income level is negatively correlated with all variables Reliability of Assessment, Validity, Trust, Fairness in assessment, Assessment Satisfaction except Flexibility, where the relationship is positive. But the strange fact is that the strength of association is very small i.e., 0.005 in case of Flexibility.

4.4 Test of Hypothesis

4.4.1 Hypothesis-1

H₀: The Training/ Skill Development Program curriculum is not significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector.

H₁: The Training/Skill Development Program curriculum is significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector.

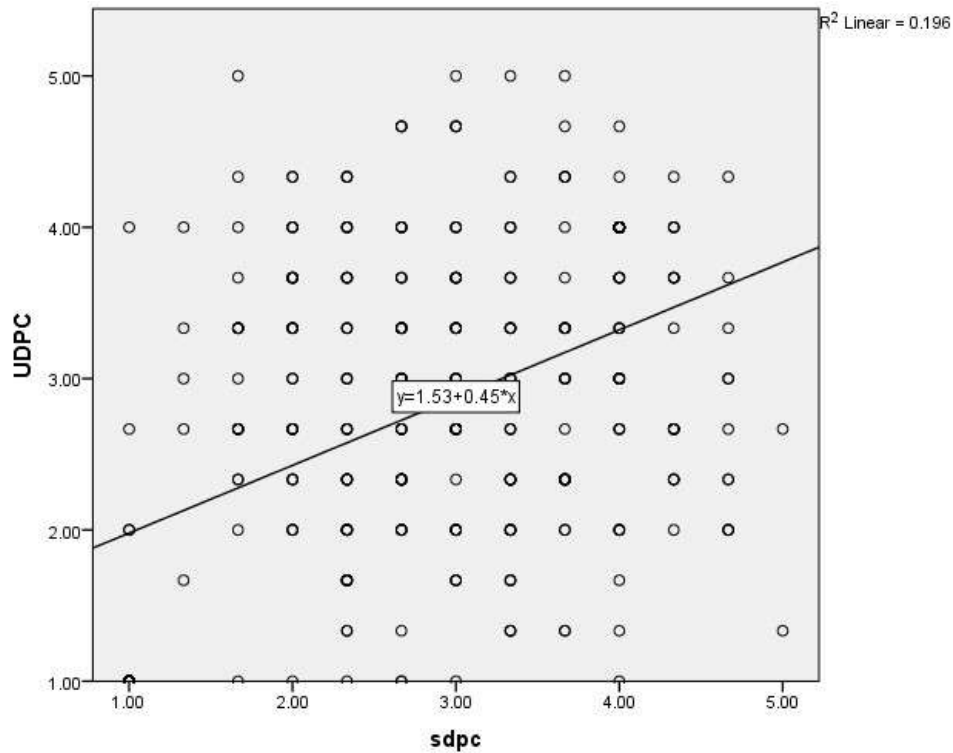


Figure 4.1 GGraph - Hypothesis-1

The above figure shows the regression equation for the Training/Skill Development Program curriculum (SPDC) is not significantly reliable for upskilling the students for pursuing their careers (UPDC) in Hydrocarbon Sector is

$$(UPDC) Y=1.53+0.45X(SDPC).$$

Linear regression was conducted to examine whether the Training/ Skill Development Program curriculum (SPDC) is not significantly reliable for upskilling the students for pursuing their careers (UPDC) in Hydrocarbon Sector. A scatterplot showed that the relationship between the Training/ Skill Development Program curriculum (SPDC) is significantly reliable for upskilling the students for pursuing their careers (UPDC) in Hydrocarbon Sector was positive and linear and did not reveal any bivariate outliers. In the following Table – 4.15 an analysis of standard residuals has been conducted that shows, the data contained no out liers (std. residual Min.= -2.554, Std. Residual max = 2.854). Independence of residual errors was confirmed with a Durban-Watson Test (d=2.101). Residual plots showed homoscedasticity and normality of the residuals.

TABLE- 4.15: Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.9794	3.7694	2.8048	.46975	386
Residual	-2.43608	2.72228	.00000	.95272	386
Std. Predicted Value	-1.757	2.053	.000	1.000	386
Std. Residual	-2.554	2.854	.000	.999	386

a. Dependent Variable: UDPC

TABLE- 4.16: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.442 ^a	.196	.193	.95395	.196	93.357	1	384	.000	2.101

a. Predictors: (Constant), SDPC; b. Dependent Variable: UDPC

In the table – 4.16 model summary, the R value represents the simple correlation and is 0.442 (the "R" Column), which indicates a moderate degree of correlation between the dependent and independent variable. If the R value greater than 0.4, then the data is taken for further analysis. In this case, the value is .442, which is good to be taken for analysis. The R² value (the "R Square" column) indicates how much of the total variation in the dependent variable, UDPC, can be explained by the independent variable, SDPC. In this case, 19.6% can be explained, which is moderate.

The following table – 4.17 is the ANOVA table, which reports how well the regression equation fits the data (i.e., independent variable predicts the dependent variable):

TABLE- 4.17: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	84.957	1	84.957	93.357	.000 ^b
	Residual	349.451	384	.910		
	Total	434.409	385			

a. Dependent Variable: UDPC ; b. Predictors: (Constant), sdpc

Since this p-value is less than .05 ($0.000 < 0.05$), we reject the null hypothesis. In other words, there is a statistically significant relationship between Training/Skill Development Program curriculum (SPDC) and its reliability for upskilling the students for pursuing their careers. Therefore it is to deduce that the Training /Skill Development Program curriculum (SPDC) is not significantly reliable for upskilling the students for pursuing their careers is rejected (UPDC) $F(1,384) = 93.357$, $p < .001$, accounting for 19.6% of the variability with adjusted $R^2 = 19.3\%$. this is a moderately strong relationship (Cohen, 1988).

The F value represents an improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. A value is greater than 1 for F-ratio yield efficient model. In the above table, the value is 93.357, which is good. These results estimate that as the p-value of the ANOVA table is below the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis, i.e., Reject, “The Training/ Skill Development Program curriculum is not significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector”. This leaves to Accept the alternate hypothesis i.e., The Training/Skill Development Program curriculum is significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector. Thus, it is to conclude that here, $p(0.000) < 0.0005$, which is less than 0.05. It indicate that, overall, the regression model statistically predicts the outcome variable significantly (i.e., it is a good fit for the data).

The following Coefficients Table – 4.18 provides us with the necessary information to predict Reliability of the Training/Skill Development Program curriculum for upskilling the students for pursuing their careers in Hydrocarbon Sector, as well as determine whether Training/Skill Development Program curriculum contributes statistically significantly to the model (by looking at the "Sig." column). Furthermore, we can use the values in the "B" column under the "Unstandardized Coefficients" column, as shown below to present the regression equation as:

$$UPDC = 1.532 + 0.45(SDPC)$$

TABLE- 4.18: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std.	Beta			Lower	Upper
		Error				Bound	Bound
1 (Constant)	1.532	.140		10.910	.000	1.256	1.808
SDPC	.448	.046	.442	9.662	.000	.356	.539

a. *Dependent Variable: UDPC*

4.4.2 Hypothesis-2

H₀: The Training/Skill Development Program curriculum is not significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector.

H₁: The Training/Skill Development Program curriculum is significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector.

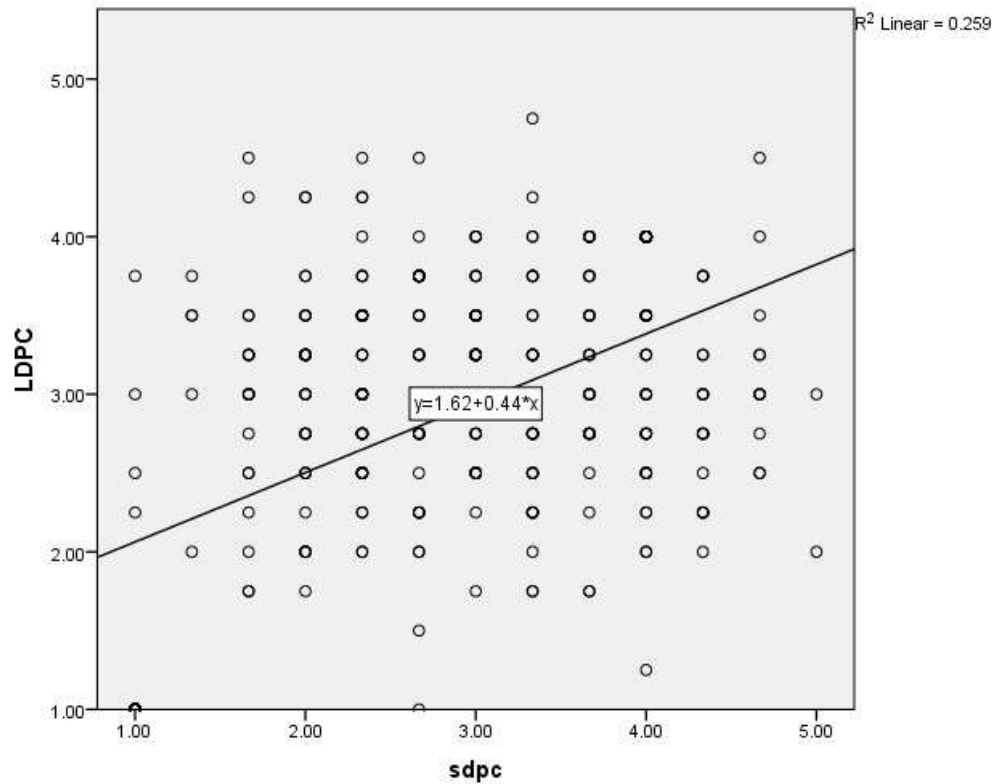


Fig-4.2: GGraph – Hypothesis- 2

The above figure - 4.2 shows the regression equation for the Training/Skill Development Program curriculum is significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector is:

$$(LDPC) Y=1.62+0.44X(SDPC).$$

Linear regression was conducted to examine whether the Training/Skill Development Program curriculum is not significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector. A scatterplot showed that the relationship between the Training/Skill Development Program curriculums is significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector was positive and linear and did not reveal any bivariate outliers.

In the following Table- 4.19 an analysis of standard residuals has been conducted that shows, the data contained no outliers (std. residual Min.= -2.728, Std. Residual max = 2.741). independence of residual errors was confirmed with a Durbin-Watson test (d=2.198). residual plots showed homoscedasticity and normality of the residuals.

TABLE- 4.19: Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.0630	3.8238	2.8750	.46209	386
Residual	-2.13364	2.14352	.00000	.78098	386
Std. Predicted Value	-1.757	2.053	.000	1.000	386
Std. Residual	-2.728	2.741	.000	.999	386

a. Dependent Variable: LDPC

TABLE- 4.20: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.509 ^a	.259	.257	.78199	.259	134.435	1	384	.000	2.198

a. Predictors: (Constant), sdpc; b. Dependent Variable: UDPC

In Table – 4.20 the model summary, the R value represents the simple correlation and is 0.509 (the "R" Column), which indicates a moderate degree of correlation between the dependent and independent variable. If the R value greater than 0.4, then the data is taken for further analysis. In this case, the value is .509, which is good to be taken for analysis. The R² value (the "R Square" column) indicates how much of the total variation in the dependent variable, UDPC, can be explained by the independent variable, SDPC. In this case, 25.9% can be explained, which is moderate.

The following Table - 4.21 is the ANOVA table, which reports how well the regression equation fits the data (i.e., independent variable predicts the dependent variable):

TABLE- 4.21: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	82.209	1	82.209	134.435	.000 ^b
	Residual	234.822	384	.612		
	Total	317.031	385			

a. Dependent Variable: LDPC ; b. Predictors: (Constant), SDPC

Since this p-value is less than .05 ($0.000 < 0.05$), we reject the null hypothesis. In other words, there is a statistically significant relationship between the Trainin/Skill Development Program curriculum and its reliability for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector. The Training/Skill Development Program curriculum (SPDC) and its reliability for enhancing the competency levels in the students. Therefore it is to deduce that the Training/Skill Development Program curriculum is not significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector, is rejected

(LDPC) $F(1,384) = 134.435$, $p < .001$, accounting for 25.9% of the variability with adjusted $R^2 = 25.7\%$. This is a moderately strong relationship (Cohen, 1988). The F value represents an improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. A value is greater than 1 for F-ratio yield efficient model. In the above table, the value is 134.435, which is good. These results estimate that as the p-value of the ANOVA table is below the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis, i.e., Reject, “The Training/Skill Development Program curriculum is not significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector”.

This leaves to **accept the alternate hypothesis** i.e., The Training/Skill Development Program curriculum significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector. Thus, it is to conclude that here, $p(0.000) < 0.0005$, which is less than 0.05. It indicates that, overall, the regression model statistically predicts the outcome variable significantly (i.e., it is a good fit for the data).

The following Coefficients Table - 4.22 provides us with the necessary information to predict Reliability of enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector. Skill Development Program curriculum for enhancing the competency levels in the students in Hydrocarbon Sector, as well as determine whether Skill Development Program curriculum contributes statistically significantly to the model (by looking at the "Sig." column). Furthermore, we can use the values in the "B" column under the "Unstandardized Coefficients" column, as shown below to present the regression equation as:

$$UPDC = 1.623 + 0.44(SDPC)$$

TABLE- 4.22: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	1.623	.115		14.099	.000	1.396	1.849
SDPC	.440	.038	.509	11.595	.000	.366	.515

a. Dependent Variable: LDPC

4.4.3 Hypothesis-3

H₀: The assessment carried out for curriculum taught in Training/Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector.

H₁: The curriculum taught in Training/Skill Development Program is significantly valid to meet the present date requirements in Hydrocarbon Sector.

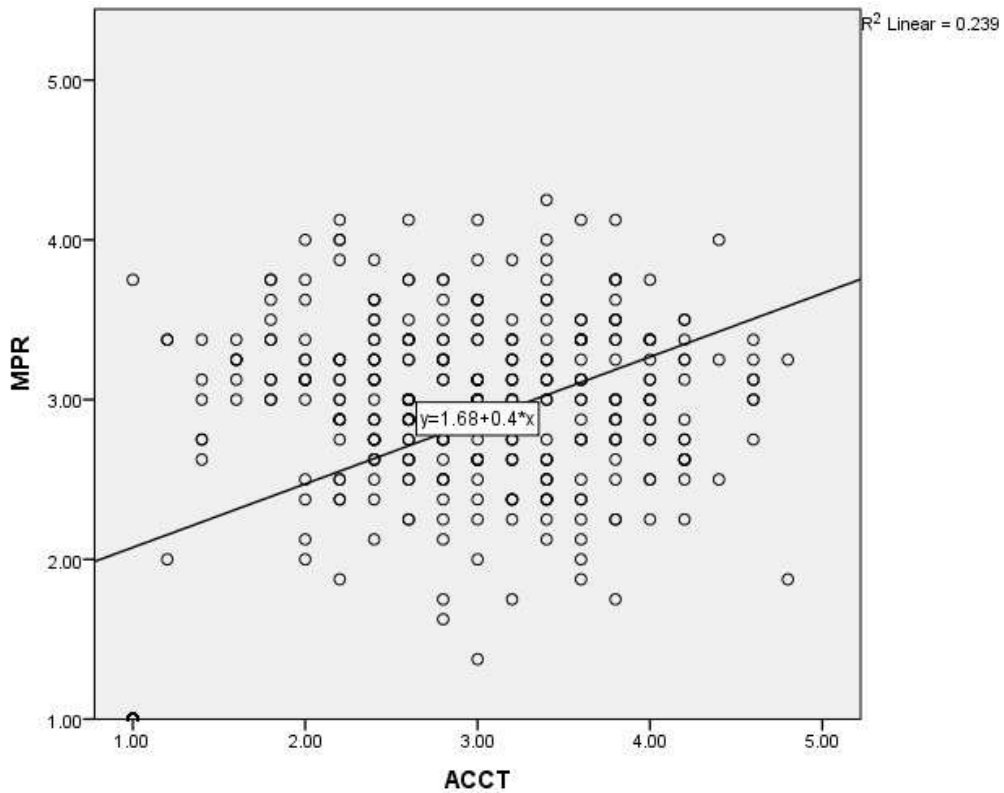


Figure -4.3: GGraph – Hypothesis -3

The above figure -4.3 shows the regression equation for the assessment carried out for curriculum taught in Training/Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector, (MPR) $Y=1.68+0.40X(ACCT)$. linear regression was conducted to examine whether the assessment carried out for curriculum taught in Training/Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector. A scatterplot showed that the relationship between the Assessments carried out for curriculum taught in Training/Skill Development Program is significantly valid to meet the present date requirements in Hydrocarbon Sector was positive and linear and did not reveal any bivariate outliers.

In the following table an analysis of standard residuals has been conducted that shows, the data contained no out liers (std. residual Min.= -2.513, Std. Residual max = 2.461). independence of residual errors was confirmed with a durban-watson test (d=2.059). residual plots showed homoscedasticity and normality of the residuals.

TABLE- 4.23: Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.0750	3.5858	2.7824	.38055	386
Residual	-1.71079	1.67503	.00000	.67977	386
Std. Predicted Value	-1.859	2.111	.000	1.000	386
Std. Residual	-2.513	2.461	.000	.999	386

a. Dependent Variable: ACCT

TABLE- 4.24: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.488 ^a	.239	.237	.68065	.239	120.346	1	384	.000	2.059

a. Predictors: (Constant), ACCT, b. Dependent Variable: MPR

In Table – 4.24 the model summary the R value represents the simple correlation and is 0.488 (the "R" Column), which indicates a moderate degree of correlation between the dependent and independent variable. If the R value greater than 0.4, then the data is taken for further analysis. In this case, the value is .488 which is good to be taken for analysis. The R² value (the "R Square" column) indicates how much of the total variation in the dependent variable, MPR, can be explained by the independent variable, ACCT. In this case, 23.9% can be explained, which is moderate.

The following Table – 4.25 is the ANOVA table, which reports how well the regression equation fits the data (i.e., independent variable predicts the dependent variable):

TABLE- 4.25: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55.755	1	55.755	120.346	.000 ^b
	Residual	177.903	384	.463		
	Total	233.658	385			

a. Dependent Variable: MPR ; b. Predictors: (Constant), ACCT

Since this p-value is less than .05 ($0.000 < 0.05$), we reject the null hypothesis. In other words, there is a statistically significant relationship between the assessment carried out for curriculum taught in Training / Skill Development Program and its validity to meet the present date requirements in Hydrocarbon Sector, Therefore it is to deduce that the assessment carried out for curriculum taught in Training / Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector is rejected (ACCT) $F(1, 384) = 120.346$, $p < .001$, accounting for 23.9% of the variability with adjusted $R^2 = 23.7\%$. this is a moderately strong relationship (Cohen, 1988).

The F value represents an improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. A value is greater than 1 for F-ratio yield efficient model. In the above table, the value is 120.346, which is good. These results estimate that as the p-value of the ANOVA Table – 4.25 is below the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis, i.e., Reject, “the assessment carried out for curriculum taught in Training / Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector”. This leaves to Accept the alternate hypothesis i.e., “the assessment carried out for curriculum taught in Training / Skill Development Program is significantly valid to meet the present date requirements in Hydrocarbon Sector”. Thus, it is to conclude that here, $p(0.000) < 0.0005$, which is less than 0.05. It indicates that, overall, the regression model statistically predicts the outcome variable significantly (i.e., it is a good fit for the data).

The following Coefficients Table – 4.26 provides us with the necessary information to predict validity of assessment carried out for curriculum taught in Training / Skill Development Program to meet the present date requirements in Hydrocarbon Sector, as well as determine whether assessment carried out for curriculum taught in Training / Skill Development Program contributes statistically significantly to the model (by looking at the "Sig." column). Furthermore, we can use the values in the "B" column under the "Unstandardized Coefficients" column, as shown below to present the regression equation as:

$$\text{MPR} = 1.677 + 0.40(\text{ACCT})$$

TABLE- 4.26: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	1.677	.107		15.747	.000	1.468	1.887
ACCT	.398	.036	.488	10.970	.000	.326	.469

a. Dependent Variable: MPR

4.4.4 Hypothesis-4

H₀: The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on the demographic characteristics of the students.

H₁: The Training/Skill Development Program differ in fairness in the assessment of the programs based on the demographic characteristics of the students.

In this case to test the hypothesis the researcher is trying to establish the relationship between fairness in the assessment of the programs based on the demographic characteristics of the students. Therefore, five demographic factors i.e., **Age, Education, Gender, Years of Employment, Location of The Institution** were taken into consideration.

To test the above hypothesis single factor ANOVA method was used differently for different demographic factors.

4.4.4.1 Response based on Age

TABLE- 4.27: Response on Fairness in Assessment of Programs Based on Age

Age	<i>Opinion about fairness in the assessment of the</i>					TOTAL
	1	2	3	4	5	
18-22	32	36	14	21	27	130
23-27	31	27	11	29	21	119
28-32	34	29	15	32	27	137
Total	97	92	40	82	75	386
5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2= Disagree; 1= Strongly						

Source: Researcher's own collection

TABLE- 4.28: Summary Table of ANOVA: Single Factor

Alpha 0.05

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Strongly Agree	3	97	32.333	2.333
Agree	3	92	30.667	22.333
Neutral	3	40	13.333	4.333
Disagree	3	82	27.333	32.333
Strongly Disagree	3	75	25.000	12.000

TABLE- 4.29: ANOVA Table

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	674.2667	4	168.567	11.493	0.001	3.478
Within Groups	146.6667	10	14.667			
Total	820.9333	14				

From the above ANOVA Table- 4.29 it is observed that the F value is 11.493, while F critical value is 3.478. Here, it can be observed that the F-value is smaller than the F-critical value for the alpha level selected (0.05). Therefore, there is evidence to accept the null hypothesis (where $11.493 > 3.478$) i.e., **“The Training /Skill Development Program do not differ in fairness in the assessment of the programs based on Age”**, is rejected.

There is another way to measure the ANOVA, is the p-value. If the p-value is more than the alpha level selected (which it is, in our case), it is advised to reject the Null Hypothesis (i.e., $0.550 > 0.05$). Hence, the **null hypothesis is rejected** i.e., “The Training /Skill Development Program do not differ in fairness in the assessment of the programs based on Age”; hence, the **alternative hypothesis is accepted** i.e., “The Training /Skill Development Program differ in fairness in the assessment of the programs based on Age”.

4.4.4.2 Response based on Level of Education

TABLE- 4.30: Response on Fairness in Assessment of Programs Based on Level of Education

Level of Education	<i>Opinion about fairness in assessment of programs</i>					TOTAL
	1	2	3	4	5	
8th - 12th	26	27	15	30	26	124
ITI	27	29	18	29	33	136
Diploma	31	28	12	24	31	126
Total	84	84	45	83	90	386
5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2= Disagree; 1= Strongly						

Source: Researcher’s own collection

TABLE- 4.31: Summary table of ANOVA: Single Factor

Alpha 0.05

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Strongly Agree	3	84	28	7
Agree	3	84	28	1
Neutral	3	45	15	9
Disagree	3	83	27.667	10.333
Strongly Disagree	3	90	30	13

TABLE- 4.32: ANOVA table

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	442.267	4	110.567	13.707	0.000	3.478
Within Groups	80.667	10	8.067			
Total	522.9333	14				

From the above ANOVA Table- 4.32 it is observed that the F value is 13.707 while F critical value is 3.478. Here, it can be observed that the F-value is smaller than the F-critical value for the alpha level selected (0.05). Therefore, there is evidence to reject the null hypothesis (where $13.707 > 3.478$) i.e., **“The Training /Skill Development Program do not differ in fairness in the assessment of the programs based on Education”, is rejected.**

There is another way to measure the ANOVA, is the p-value. If the p-value is more than the alpha level selected (which it is, in our case), it is advised to reject the Null Hypothesis (i.e., $0.000 < 0.05$). Hence, **the null hypothesis is rejected** i.e., “The Training /Skill Development Program do not differ in fairness in the assessment of the programs based on Education”, hence the **alternative hypothesis is accepted** i.e., “The Training /Skill Development Program differ in fairness in the assessment of the programs based on Education”.

4.4.4.3 Response based on Gender

TABLE- 4.33: Response on fairness in assessment of programs based on Gender

Gender	Opinion about fairness in the assessment of the programs					TOTAL
	1	2	3	4	5	
Male	31	41	29	52	72	226
Female	14	22	14	47	64	161
Total	45	64	43	99	136	386
5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2= Disagree; 1= Strongly						

TABLE- 4.34: SUMMARY table of ANOVA: Single Factor

Alpha 0.05

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Strongly Agree	2	45	22.5	144.5
Agree	2	63	31.5	180.5
Neutral	2	43	21.5	112.5
Disagree	2	99	49.5	12.5
Strongly Disagree	2	136	68	32

TABLE- 4.35: ANOVA table

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	3170.4	4	792.6	8.222	0.020	5.192
Within Groups	482	5	96.4			
Total	3652.4	9				

From the above ANOVA Table- 4.35 it is observed that the F value is 8.222, while F critical value is 5.192. Here, it can be observed that the F-value is greater than the F-critical value for the alpha level selected (0.05). Therefore, there is evidence to reject the **null hypothesis** (where $8.222 > 5.192$) i.e., “The Training /Skill Development Program do not differ in fairness in the assessment of the programs based on Gender”, **is rejected.**

There is another way to measure the ANOVA, is the p-value. If the p-value is more than the alpha level selected (which it is, in our case), it is advised to reject the Null Hypothesis (i.e., $0.020 < 0.05$). Hence, **the null hypothesis is rejected** i.e., “The Training /Skill Development Program do not differ in fairness in the assessment of the programs based on Gender”, hence the **alternative hypothesis is accepted** i.e., “The Training /Skill Development Program differ in fairness in the assessment of the programs based on Gender”.

4.4.4.4 Response based on Years of Employment

TABLE- 4.36: Response on Fairness in the Assessment of the Programs Based on Years of Employment

YEARS OF EMPLOYMENT	<i>Opinion about fairness in the assessment of the programs</i>					TOTAL
	1	2	3	4	5	
0– 1.0 years	31	35	17	28	22	133
1.1 – 2.0 years	36	28	18	21	29	132
2.1 – 3.0 years	32	25	17	28	19	121
Total	39	34	24	89	112	386
5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2= Disagree; 1= Strongly						

TABLE- 4.37: Summary table of ANOVA: Single Factor

Alpha 0.05

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Strongly Agree	3	99	33	7
Agree	3	88	29.33	26.33
Neutral	3	52	17.33	0.33
Disagree	3	77	25.67	16.33
Strongly Disagree	3	70	23.33	26.33

TABLE- 4.38: ANOVA table

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	426.267	4	106.567	6.980	0.006	3.478
Within Groups	152.667	10	15.267			
Total	578.933	14				

From the above ANOVA Table- 4.38, it is observed that the F value is 6.980, while F critical value is 3.478. The F-value is **greater** than the F-critical value for the alpha level selected (0.05). There is evidence to reject the null hypothesis (where $6.980 > 3.478$) i.e., **“The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on Years of Employment.”**, is rejected.

Another way to measure the ANOVA, is the p-value. If the p-value is more than the alpha level selected (which it is, in our case), it is advised to reject the Null Hypothesis (i.e., $0.006 < 0.05$). Hence, the **null hypothesis is rejected** i.e., “The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on Years of Employment”; hence, **the alternative hypothesis is accepted** i.e., “The Training/Skill Development Program differ in fairness in the assessment of the programs based on Years of Employment”.

4.4.4.5 Response based on Location of the Institution

TABLE- 4.39: Response on fairness in the assessment of the programs based on location of the Institution

location of the Institution	Opinion about fairness in the assessment of the programs					TOTAL
	1	2	3	4	5	
Bhubaneswar	7	10	6	16	15	54
Ahmedabad	8	12	7	17	19	63
Kochi	9	8	8	16	12	53
Guwahati	7	10	5	27	24	73
Vizag	11	9	9	11	14	54
Rae Bareli	9	13	10	24	33	89
Total	51	62	45	111	117	386
5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2= Disagree, 1= Strongly Disagree						

TABLE- 4.40: Summary table of ANOVA: Single Factor

Alpha 0.05

Groups	Count	Sum	Average	Variance
Strongly Agree	6	51	8.5	2.3
Agree	6	62	10.3	3.5
Neutral	6	45	7.5	3.5
Disagree	6	111	18.5	34.7
Strongly Disagree	6	117	19.5	61.9

TABLE- 4.41: ANOVA Table

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	775.2	4	193.8	9.150	0.000	2.759
Within Groups	529.5	25	21.18			
Total	1304.7	29				

From the above ANOVA Table- 4.41 it is observed that the F value is 9.150, while F critical value is 2.759. Here, it can be observed that the F-value is higher than the F-critical value for the alpha level selected (0.05). Therefore, there is evidence to reject the null hypothesis (where $9.150 > 2.759$) i.e., **“The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on location of the Institution”, is rejected.**

There is another way to measure the ANOVA, is the p-value. If the p-value is more than the alpha level selected (which it is, in our case), it is advised to reject the Null Hypothesis (i.e., $0.000 < 0.05$). Hence, the null hypothesis is rejected i.e., **“The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on location of the Institution”, hence the alternative hypothesis is accepted i.e., “The Training/Skill Development Program differ in fairness in the assessment of the programs based on location of the Institution”.**

TABLE- 4.42: Summary Table

SL. No.	Types of demographic characteristics of the students	Result (F value Vs. F-critical value)	Accept or Reject the Null Hypothesis
1	Age	$11.493 > 3.478$	Reject
2	Education	$13.707 > 3.478$	Reject
3	Gender	$8.222 > 5.192$	Reject
4	Years of employment	$6.980 > 3.478$	Reject
5	Location of the Institution	$9.211 > 2.759$	Reject

From the above table – 4.42 it can be observed that out of five **demographic characteristics of the students/trainees** four demographic characters indicates enough reasons to reject the null hypothesis only from the age perspective the null hypothesis is accepted. Since majority of characteristics have rejected the null hypothesis, it can be concluded that **“The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on the demographic characteristics of the students”**, is rejected. Thus, the alternate hypothesis is accepted, i.e., **“The Training/Skill Development Program differ in fairness in the assessment of the programs based on the demographic characteristics of the students”**.

4.4.5 Hypothesis-5

H₀: The Training/Skill Development Program has no significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates’ understanding of the subjects taught.

H₁: The Training/Skill Development Program has significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates’ understanding of the subjects taught.

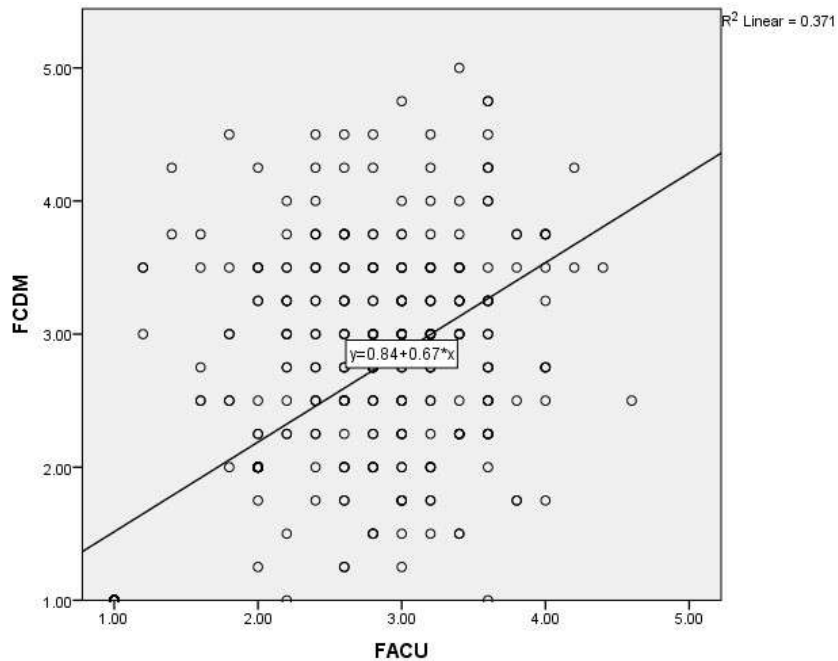


Figure-4.4: GGraph – Hypothesis -5

The above figure 4.4 shows the regression equation for the Training/Skill Development Program has significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates' understanding of the subjects taught is (FCDM) $Y=0.84+0.67X(\text{FACU})$.

Linear regression was conducted to examine whether the Training/Skill Development Program has no significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates' understanding of the subjects taught. A scatterplot showed that the relationship between flexibility of curriculum delivery method of the Training/Skill Development Program and adoption of fairness in assessment of candidates' understanding of the subjects taught was positive and linear and did not reveal any bivariate outliers.

In the following table – 4.43 an analysis of standard residuals has been conducted that shows, the data contained no outliers (std. residual Min.= -2.851, Std. Residual max = 3.100). Independence of residual errors was confirmed with a Durbin-Watson Test (d=1.974). Residual plots showed homoscedasticity and normality of the residuals.

TABLE- 4.43: Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.5155	3.9411	2.5272	.60966	386
Residual	-2.26730	2.46499	.00000	.79424	386
Std. Predicted Value	-1.659	2.319	.000	1.000	386
Std. Residual	-2.851	3.100	.000	.999	386

a. Dependent Variable: FCDM

TABLE- 4.44: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.609 ^a	.371	.369	.79528	.371	226.251	1	384	.000	1.974

a. Predictors: (Constant), FACU, b. Dependent Variable: FCDM

In the Table 4.44 Model summary, the R value represents the simple correlation and is 0.609 (the "R" Column), which indicates a moderate degree of correlation between the dependent and independent variable. If the R value greater than 0.4, then the data is taken for further analysis. In this case, the value is .609, which is good to be taken for analysis. The R² value (the "R Square" column) indicates how much of the total variation in the dependent variable, FCDM, can be explained by the independent variable, FACU. In this case, 37.1% can be explained, which is adequate.

The following Table – 4.45 is the ANOVA table, which reports how well the regression equation fits the data (i.e., independent variable predicts the dependent variable):

TABLE- 4.45: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	143.097	1	143.097	226.251	.000 ^b
	Residual	242.868	384	.632		
	Total	385.964	385			

a. Dependent Variable: FCDM, b. Predictors: (Constant), FACU

Since this p-value is less than .05 ($0.000 < 0.05$), we reject the null hypothesis. In other words, there is a statistically significant relationship between flexibility of curriculum delivery method (independent variable) and adoption of fairness in assessment of candidates' understanding of the subjects taught. Therefore it is to deduce that The Skill Development Program has no significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates' understanding of the subjects taught is rejected (FCDM) $F(1, 384) = 226.251, p < .001$, accounting for 37.1% of the variability with adjusted $R^2 = 36.9\%$, this is an adequate strong relationship (Cohen, 1988).

The F value represents an improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. A value is greater than 1 for F-ratio yield efficient model. In the above table, the value is 226.251, which is good. These results estimate that as the p-value of the ANOVA table is below the tolerable

significance level, thus there is a possibility of rejecting the null hypothesis in further analysis, i.e., Reject, “The Training/Skill Development Program has no significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates’ understanding of the subjects taught”. This leaves to Accept the alternate hypothesis i.e., The Training/Skill Development Program has significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates’ understanding of the subjects taught. Thus, it is to conclude that here, $p(0.000) < 0.0005$, which is less than 0.05. It indicates that, overall, the regression model statistically predicts the outcome variable significantly (i.e., it is a good fit for the data).

The following Coefficients Table – 4.46 provides us with the necessary information to predict relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates’ understanding of the subjects taught, as well as determine whether flexibility of curriculum delivery method contributes statistically significantly to the model (by looking at the "Sig." column). Furthermore, we can use the values in the "B" column under the "Unstandardized Coefficients" column, as shown below to present the regression equation as:

$$FCDM = .842 + 0.674(FACU)$$

TABLE- 4.46: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	.842	.119		7.065	.000	.607	1.076
FACU	.674	.045	.609	15.042	.000	.586	.762

a. Dependent Variable: FCDM

4.4.6 Summary

In this research the correlation and regression methodology were used. From the above section-B it was observed that;

- The Training/Skill Development Program curriculum is significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector
- The Training/Skill Development Program curriculum significantly reliable for enhancing the skill levels in the students that help them to pursue their careers in Hydrocarbon Sector.
- The assessment carried out for curriculum taught in Training/Skill Development Program is significantly valid to meet the present date requirements in Hydrocarbon Sector.
- The Training/Skill Development Program **differ** in fairness in the assessment of the programs based on **Age**.
- The Training/Skill Development Program **differ** in fairness in the assessment of the programs based on **Education**.
- The Training/Skill Development Program **differ** in fairness in the assessment of the programs based on **Gender**.
- The Training/Skill Development Program **differ** in fairness in the assessment of the programs based on **Years of Employment**.
- The Training/Skill Development Program **differ** in fairness in the assessment of the programs based on **location of the Institution**.
- The Training/Skill Development Program **differ** in fairness in the assessment of the programs based on the **demographic characteristics** of the students.
- The Training/Skill Development Program has significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates' understanding of the subjects taught.

4.5 Insight of In-charges of SDIs on Skill Development Training

The In-charges of the Skill Development Institutes (SDIs) were interviewed to understand their opinion about the SDI and the training programs conducted there. Their responses to the questions asked are as under:

Question 1: In your opinion, is the current duration of the training programs (i.e. 3-6 months) sufficient to make the trainees employable?

Respondent 1: No. The training programs being run at the SDIs involve both classroom training and practical classes. Hence, it is definitely not enough. It should be at least 1 year of theoretical training.

Respondent 2: No. The duration of the training program conducted at SDIs are not sufficient to make the trainees at par with technical academic qualifications.

Respondent 3: No. The Training period should be increased to give a better understanding of the theory and practical aspects.

Respondent 4: No. For making the trainees more employable, the training duration should be enhanced.

Respondent 5: The duration is sufficient for some low some low-skilled Training Programs. But, if we really want to make the trainees employable, the training needs more enrichment.

Respondent 6: No. The purpose of the skill development is to make persons better employable than the persons with only academic qualifications. Hence, the level of the training should be at least comparable to the technical academic qualification supplemented with on-job industry experience so that the pass-out trainees are preferred by the industry.

Question 2: In your opinion, what changes would you suggest to make the Skill Development Training program conducted at SDIs more relevant?

Respondent 1: The Training program should be followed by a mandatory on-the-job apprenticeship of 1 year.

Respondent 2: The trainees should be encouraged to take up entrepreneurship. The promoting PSUs can provide the initial assistance/support under their CSR efforts. When a trainee is placed, only he/she is benefited with job. But, when a trainee starts & runs his/her own establishment, he engages few more persons and benefit them too.

Respondent 3: The Training Programs at SDIs should be made equivalent to that of technical education like ITI, Diploma and BE/BTech. These courses should also be recognized by AICTE so that the youths can get a secured job after such training. Even today, society & industry value academic qualifications more. The Training Completion Certificate, despite being recognized by NSDC and HSSC is not given cognizance by the industry.

Respondent 4: There should be greater flexibility to adapt to market changes due to technological advancements and disruptions.

Respondent 5: German Model of Apprenticeship should be adopted blending both academic and technical education.

Respondent 6: Small audio-visuals on various topics should be created and hosted in SDI's websites so that the trainees are encouraged to learn at their own convenience at any time from anywhere. The modules should be followed by some quizzes to understand the understanding of the trainees.

Question 3: Do you think soft skills like communication skills, people skills, and basic knowledge of computers are also required along with the technical skills imparted during the curriculum?

Respondent 1: Yes. Only hard skills are not enough, the passed-out trainees also need soft skills to cope in the real industry environment.

Respondent 2: Yes. Ultimately, the trainees from the SDIs have to work with people, and have to manage people below them, besides them, and above them. Hence, soft skills are very important.

Respondent 3: Yes. Today's world of work is very dynamic and complex. The technical courses imparted during the curriculum would not be sufficient. They should

also be imparted training on soft skills and computers so that they can cope with the industry demands of the 21st century.

Respondent 4: Yes. We have to prepare our youth not only for domestic skill requirements but also for the world. Hence, soft skills training should also be provided by the SDIs alongside the technical training.

Respondent 5: Yes. In a real industry environment, they would require both technical knowledge as well as soft skills to deal with people around them.

Respondent 6: Yes. They would require knowledge of technical skill to get the job. But, to be in the job and excel, they would also require soft skills. Hence, they should be prepared well at the SDIs with both hard and soft skills

Question 4: How the placements can be made more effective?

Respondent 1: The promoting PSUs of the Hydrocarbon Sector should come forward for placement from the SDIs they are promoting. They should engage some of the passed-out trainees on probation and absorb some of them only when they are found suitable. Only funding the SDIs is not enough.

Respondent 2: The SDIs should network with the nearby industries/ factories and design course curricula actually required by them so that the youth can be made ready for these industries' requirements. In such cases, local employment can be ensured and the trainees are not forced to move to other states and face initial financial challenges.

Respondent 3: The promoting PSUs can ask their contractors to meet their requirements from the pool of trainees passed out of the SDIs. A suitable contract clause in this regard may be incorporated in all contracts involving the deployment of contract labor mandating the contractors to give preference to persons who have been skilled in the SDIs of the Hydrocarbon Sector.

Respondent 4: Hydrocarbon Sector Skill Council (HSSC) can develop a repository of the trainees passing out of each SDIs and make it accessible to all prospective employers on its website. Such online portal will be mutually beneficial to both trainees as well as industry as they can contact each other to meet each other's requirements.

Respondent 5: Post-placement support in terms of a portion of the stipend should be provided to the trainees at least for a period of 6 months so that they sustain the initial financial shock. It is being witnessed that most trainees would quit their job after placement and the major reason in such cases is housing/accommodation in a distant location. If at least 6 months' support at the rate of 30 % of their stipend amount is given to the poor trainees they can settle themselves in the new location.

A track should be maintained even after placement till the trainee is actually settled. In case a trainee is not comfortable with the company/industry in which he/she is placed, they should contact the SDI for giving them another chance for appearing in the placement.

Respondent 6: The promoting PSUs of the Hydrocarbon Sector may provide support to the passed out trainees to form a Cooperative Society under the Cooperative Societies Act. 1912 so that the Service Contracts like Maintenance of AC, Electrical Maintenance, Mechanical Maintenance, Instrumentation Maintenance, and Support & Peripheral Assistance, etc. can be directly awarded to such Cooperative Societies without calling for Tender or awarding the work to any Contractor. It will be a self-sustaining model to resolve the placement/employment-related issues.

Entrepreneurship assistance in terms of initial funding or machinery support may be given to the trainees so that they can establish their own establishments to support themselves and others too.

Question 5: Do you think the industry connection at SDIs is sufficient? How it can be bettered?

Respondent 1: There is scope for betterment w.r.t. industry connect. Industry experts should be invited to the SDIs to share their valuable real-life experiences. The SDIs should also create a work culture in line with the industry so that when the trainees pass out from the SDI and join the industry they can quickly adapt themselves.

Respondent 2: No. The industry connect is not sufficient. The promoting PSUs execute a number of contracts and deploy a lot of contract labour. The common job roles should be identified for which the work is generally outsourced. If training is

imparted in these identified job roles, the skill development program would become a success.

Respondent 3: The industry connect is not sufficient. The SDIs should actually perform as a lab where the required skills are nurtured and prepared for the industry. The SDIs are by the PSUs, of the PSUs and should be for the PSUs of the Hydrocarbon Sector. Hence, a greater commitment of industry/PSU is required for the success of this endeavor.

Respondent 4: The industry/promoting PSUs of the Hydrocarbon Sector should provide the latest technological know-how and the same infrastructure/machinery for practical training at the SDIs. Rather, the practical training should be conducted in the factory site so that the trainees have a real hands-on experience of what they are taught in the classroom at SDI.

Respondent 5: The training curriculum should be designed with help of Industry experts to match the dynamic nature of industry requirements. Without the assistance of industry, the trainees cannot be made industry ready or ready for 21st-century jobs.

Respondent 6: The SDIs should arrange more and more industry visits and also arrange for guest lecturers from the Industry who can give the trainees the perspective of the industry.

Question 6: How the Training programs at SDI be made more lucrative and beneficial for females?

Respondent 1: SDIs should strictly adhere to Safety and security norms.

Respondent 2: Separate hostel block should be constructed for the girls.

Respondent 3: Some Training Batches should be designed especially for the girls.

Respondent 4: Co-ed with adequate security measures should be ensured so that the female trainees learn to work shoulder to shoulder with the male trainees as ultimately they have to learn to work together in the industry after their training completion.

Respondent 5: The SDIs should conduct counseling camps in rural areas to counsel family members of girl children so that they allow them to enroll at SDIs for the skill training and be employable.

Respondent 6: Women Entrepreneurship should be promoted so that female trainees are encouraged to start their own enterprises in the local area and are not required to move out for jobs.

CHAPTER - 5
SUMMARY, FINDINGS, AND SUGGESTIONS

CHAPTER - 5

SUMMARY, FINDINGS, AND SUGGESTIONS

5.0 Introduction

In this chapter, the basic aim is to highlight the application of statistical measures to test hypotheses, with special reference to the Assessment of Skill Development Programs of Skill Development Institutes (SDIs) under the Skill India Mission of the Government of India with special reference to Hydrocarbon Sector. In this research, the researcher used ANOVA and OLS method to test the hypothesis. This hypothesis testing was done on the basis of principle of likelihood. The significance level was taken into consideration to test the hypotheses. The research design used by the researcher is in agreement with the empirical study requirements. As such, it covers the type of data collected, the methodology of data collection and the various statistical tools and techniques used for the analysis of data and hypotheses testing. This research is a study based empirical research, it is completely based on primary data collected by the researcher through well structured, designed and comprehensive questionnaire. The questionnaire contains scaling questions with five-point scale and some questions are in the form of ranking questions too. The information sought being qualitative, scaling and ranking questions are most appropriate and through such questions, qualitative information has been indirectly quantified. This questionnaire was administered to a sample of 386 women and men respondents from all categories of students study in SDI segregated under age, gender, income level, test and preferences to find the accurate result.

5.1 Research Methodology

When research is based on the primary data collection and analysis based on the information received constitutes the vital part in exploratory research. Field studies and interviews are taken for supporting the hypothesis, based on the objectives conceived for the successful conduction of the research. The interviewing technique provides

richer data that can be gained from other kinds of research methodology. The completed transcripts were analysed with help of Statistical Package for Social Science (SPSS) version 23.0 computer Program to determine recurring themes. Quotes gathered from the interviewees during this study have been used to give meaning to the results.

The research was conducted using a combination of qualitative and quantitative data collection methods. A pilot study was launched between January - March 2022 and it was carried out in six different located in different places like Bhubaneswar, Ahmedabad, Kochi, Guwahati, Vizag and Raebareli. The main study was undertaken using the survey and interview approach. Both questionnaire and interview techniques were used to examine the key research issues cited in the objective section.

For the purpose of analysis, the researcher has used Arithmetic Average and Percentages. Apart from this the researcher has tried to use Karl Pearson's coefficient of correlation to highlight the degree of relation demographic profile of the student study in six different locations of the institute and level of assessment of Skill Development Programs of Skill Development Institutes (SDIs) with special reference to Hydrocarbon Sector. ANOVA test is used to find whether the Skill Development Program differ in fairness in the assessment of the programs based on the demographic characteristics of the students and check the goodness of fit. The researcher had also used the OLS to study the qualitative response of the students pursuing their Program directed towards taking responsible positions in hydrocarbon-based companies. In this research the students were asked to test assessment related issues that talks about the reliability, validity and flexibility. The researcher also used the test of reliability by using Cronbach's Alpha method.

In research methodology the importance of research design is immense. It is a framework or blueprint for conducting the research project. It details the procedure necessary for obtaining the information needed to structure and/or solve the research problem. A research design lays the foundation for conducting the project. The cross-sectional descriptive research design is used for conducting this research work because this design enables the researcher to study the problem at a given point in time of the

population of interest. To identify the problem, develop an approach to the problem & formulate an appropriate research design, primary data has been used. The size of the sample was instinctively decided for a large-sized finite population. However, in this sample, an effort was made by the researcher to have a representation of people. To collect information for the study from the students and the instructors located in different campuses, primary research is used. All six causes were spread all over India were identified and primary data were collected from respondents directly using a structured questionnaire and observation method.

The duly filled in questionnaires were then edited by the researcher in accordance with the requirements of the objectives and hypothesis, univariate and bivariate tables were prepared.

5.2 Comprehensive Objectives of the Study

From the problem statements mentioned in chapter 3 the following objectives were brought out that are as follows:

1. The objective is to evaluate the reliability of the Training / Skill Development Program to test the skill and industry readiness of the trainees at SDI.
2. To test the validity of the curriculum taught in Training / Skill Development Program in adopting the present date requirements of the hydrocarbon sector.
3. The research objective is to find out the relationship between flexibility of delivery method in assessing the adoption of fairness that has the greater level of reliability and validity.
4. To evaluate the fairness adopted in the assessment of the Training / Skill Development Program based on the demographic characteristics of the students.

5.3 Hypothesis of the Study

The following hypothesis were tested in the previous chapter:

Hypothesis-1

H₀: The Training / Skill Development Program curriculum is not significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector.

Hypothesis-2

H₀: The Training / Skill Development Program curriculum is not significantly reliable for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector.

Hypothesis-3

H₀: The assessment carried out for curriculum taught in Training / Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector.

Hypothesis-4

H₀: The Training / Skill Development Program do not differ in fairness in the assessment of the programs based on the demographic characteristics of the students.

Hypothesis-5

H₀: The Training / Skill Development Program has no significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates' understanding of the subjects taught.

5.4 Limitations of the Study

All efforts have been made to ensure that the research is design and conducted to optimize the ability to achieve the research objective. However, there are some constrains that do not validate the research but made to be acknowledge.

1. This study is restricted to Skill Development Institutes only, limited the geographical area.
2. This evaluation is based on only primary data. The primary data were generated through questionnaire and collected from the respondents visiting at different campuses of Skill Development Institutes.
3. The sample consists of more men than women from six different campuses of Skill Development Institutes. The sample is selected conveniently and in single phase so as the opinion suggested by the respondents is situation based.
4. As the primary data and observational method of research has its own limitations and based on the respondent the study is limited to six Skill Development Institutes only and it cannot be applicable to other students' study in the same institute on different specialized areas.
5. The study is based on the response of the students and In-charges respondents who are highly subjective in nature and hence generalization made may not be totally true.
6. During the course of personal interview, the subjective nature of interviewers might also have influence upon the response-received for the present study.
7. Certain issues in the study concentrate on both perceptions and attitude of respondents.
8. The major tool which is used for evaluation is 5-point, scale known as Likert scale and nominal scale and thus it has its own limitations.

5.5 Summary of Hypothesis Testing

Following is the summary of the hypothesis testing conducted in this research

TABLE – 5.1: Summery Result

SL. NO.	Null Hypothesis	Test Used	Result	Accept or Reject
1	The Training / Skill Development Program curriculum is not significantly reliable for upskilling the trainees/ students for pursuing their careers in Hydrocarbon Sector.	OLS Regression	0.000<0.05	Rejected
2	The Training /Skill Development Program curriculum is not significantly reliable for enhancing the skill levels in the students that help them to pursue their careers in Hydrocarbon.	OLS Regression	0.000<0.05	Rejected
3	The assessment carried out for curriculum taught in Training / Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector.	OLS Regression	0.000<0.05	Rejected
4	The Training /Skill Development Program do not differ in fairness in the assessment of the programs based on the demographic characteristics of the students. (<i>Age, Education, Gender, Years of Employment, location of the Institution</i>)			Rejected

4.1	The Training / Skill Development Program do not differ in fairness in the assessment of the programs based on Age.	ANOVA	11.493>3.478	Rejected
4.2	The Training / Skill Development Program do not differ in fairness in the assessment of the programs based on Education.	ANOVA	13.707>3.478	Rejected
4.3	The Training / Skill Development Program do not differ in fairness in the assessment of the programs based on Gender.	ANOVA	8.222>5.192	Rejected
4.4	The Training / Skill Development Program do not differ in fairness in the assessment of the programs based on Years of Employment.	ANOVA	6.980>3.478	Rejected
4.5	The Training / Skill Development Program do not differ in fairness in the assessment of the programs based on location of the Institution.	ANOVA	9.211>2.759	Rejected
5	The Training / Skill Development Program has no significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates' understanding of the subjects taught.	OLS Regression	0.000<0.05	Rejected

5.6 Major Findings of the Study

5.6.1 Findings based on the responses of Trainees / Students of SDIs

1. In this research by using a structured questionnaire information were gathered from the trainees of SDIs of Hydrocarbon Sector. The Table-4.1 in Chapter-4 depicts the rate of responses of the respondents. As a whole, 470 questionnaires were distributed amongst the different age group of trainees spreading over diverse service position. Out of 470 distributed questionnaires, 47 responses were not received at all. A total of 423 responses were received in which 37 responses were incomplete and was not considered to incorporate in the analysis. Hence, a total of 386 responses were taken for analysis. Thus, 82.1% of respondents were responded to the questions asked to them with 100% accuracy without any mistake. Chart 4.1 of Chapter - 4 is the pictorial representation of the category of respondents.
2. The Table-4.2 & Chart 4.2 in the Chapter-4 depicts the Years of Employment of the respondents. It was observed that out of total 470 numbers of respondents only 386 respondents were taken into consideration to find their opinion about their years of employment in their respective organisations. It is observed that highest in category is the group having 0-1.0 years of employment, with 157 respondents. They constitute 40.67 % of the total responses. Second in the category is the group having 1.1 to 2.0 years of employment, with 124 respondents. They constitute 32.12 %. Last in the category is the group having 2.1 -3.0 years of employment, with 105 respondents. They constitute 27.20 %.
3. The Table-4.3 & Chart 4.3 in the Chapter-4 depicts the Gender of the respondents. It was observed that out of 386 respondents 225 are the males constituting 58% and rest 161 respondents were females constituting 42 %.
4. The Table-4.4 & Chart 4.4 in the Chapter-4 depicts the Age of the respondents. It was observed that age group of 18-22 years with 156 respondents is the highest with 40.41 %. Second was age group of 23-27 years with 125 respondents with 32.38 %. Last was age group of 28-32 years with 105 respondents with 27.20%.

5. The Table-4.5 & Chart 4.5 in the Chapter-4 depicts the Education level of the respondents. It is observed from the same that out of total questionnaires collected, the highest group were with education level of 8th-12th with 143 respondents that constitutes 37.05% of total responses received. Followed by were responses with ITI qualification with 125 responses and constituting 32.38% of total responses. Last in the category was respondents with Diploma qualification with 118 responses, it constitutes 30.57%.
6. The Table-4.6 & Chart 4.6 in the Chapter-4 depicts the Income Level of the respondents. It reflects that out of 386 sample respondents, highest number of responses were in the income level of Rs. 100001 – Rs. 150000 per annum with 101 responses constituting 26 %. Second highest number of responses were in the income level of Rs. 150001 – Rs. 200000 per annum with 92 responses constituting 24 %, followed by 69 respondents with income level of Rs. 200001 – Rs. 250000 per annum constituting 18%. The income level less than Rs. 100000 per annum with 56 responses constituted 15%. The income level of Rs. 250001 – Rs. 300000 per annum with 46 responses constituted 12 %, Last in the category were income level of more than Rs. 300000 per annum constituting only 6%.
7. The Table-4.7 & Chart 4.7 in the Chapter - 4 depicts SDI Location of respondents. Out of 386 respondents, 89 respondents belonged to SDI Raebareli Campus that counts 23% highest amongst all. Second were from SDI Guwahati Campus with 74 responses i.e. 19%. Followed by were 63 respondents from SDI Ahmedabad constituting 16 % of the total responses. Next were from SDI Bhubaneswar and SDI Vizag each with 54 responses i.e. 14 %. Last were from SDI Kochi with 52 responses constituting only 13 % of the total responses.
8. The Table-4.8 & Chart 4.8 in the Chapter-4 depicts Skill Level of respondents. It was observed that out of 386 respondents, highest was 147 respondents who were semi-skilled, followed by 132 respondents who were skilled and last were 107

respondents of highly-skilled category. They constitute 38.08%, 34.20% and 27.72% respectively.

9. Table – 4.10 of Chapter 4 depicted that age is negatively correlated with Reliability of Assessment, Validity, Fairness in assessment and Assessment Satisfaction. But when the correlation exists it is significantly correlated but the association is too small to rely on i.e. Trust and Flexibility in assessment where the values are 0.067 and 0.1113.
10. Table – 4.11 of Chapter 4 depicted that Education is negatively correlated with all variables i.e. Reliability of Assessment, Validity, Flexibility, Fairness in assessment, and Assessment Satisfaction except Trust. But when the positive correlation exists it is significantly correlated but the association is too small to rely on i.e. Trust where the value is 0.014.
11. Table – 4.12 of Chapter 4 depicted that Gender is negatively correlated with all variables i.e. Reliability of Assessment, Validity, Trust, Flexibility, Fairness in assessment, Assessment Satisfaction.
12. Table – 4.13 of Chapter 4 depicted that Employment Tenure is positively correlated with all variables Reliability of Assessment, Validity, Trust, Flexibility, Fairness in assessment, Assessment Satisfaction. But the strange fact is that the strength of association is very small.
13. Table – 4.14 of Chapter 4 depicted that income level is negatively correlated with all variables Reliability of Assessment, Validity, Trust, Fairness in assessment, Assessment Satisfaction except Flexibility, where the relationship is positive. But the strange fact is that the strength of association is very small i.e., 0.005 in case of Flexibility.
14. It was observed from Table-4.16 & Table-4.17 of Chapter-4 that the F value represents an improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. A value is greater than 1 for

F-ratio yield efficient model. In the above table, the value is 93.357, which is good. These results estimate that as the p-value of the ANOVA table is below the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis, i.e., Reject, “The Training/ Skill Development Program curriculum is not significantly reliable for upskilling the trainees/students for pursuing their careers in Hydrocarbon Sector”. This leaves to Accept the alternate hypothesis i.e., The Skill Development Program curriculum is significantly reliable for upskilling the students for pursuing their careers in Hydrocarbon Sector. Thus, it is to conclude that here, $p(0.000) < 0.0005$, which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data).

15. It was observed from Table-4.20 & Table-4.21 of Chapter-4 that since this p-value is less than .05 ($0.000 < 0.05$), we reject the null hypothesis. In other words, there is a statistically significant relationship between Training/Skill Development Program curriculum and its reliability for enhancing the Skill levels in the students that help them to pursue their careers in Hydrocarbon Sector. Training/Skill Development Program curriculum (SPDC) and its reliability for enhancing the Skill levels in the students. Therefore, it is to deduce that the Training/Skill Development Program curriculum is not significantly reliable for enhancing the Skill levels in the students that help them to pursue their careers in Hydrocarbon Sector, is rejected. (LDPC) $F(1,384) = 134.435$, $p < .001$, accounting for 25.9% of the variability with adjusted $R^2 = 25.7\%$. The F value represents an improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. A value is greater than 1 for F-ratio yield efficient model. In the Table – 4.21, the value is 134.435, which is good. These results estimate that as the p-value of the ANOVA table is below the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis, i.e., Reject, “The Training/Skill Development Program curriculum is not significantly reliable for enhancing the Skill levels in the students that help them to pursue their careers in Hydrocarbon Sector. This leaves to accept the alternate hypothesis i.e., The Training/Skill Development Program curriculum significantly reliable for enhancing the Skill

levels in the students that help them to pursue their careers in Hydrocarbon Sector. Thus, it is to conclude that here, $p(0.000) < 0.0005$, which is less than 0.05. It indicates that, overall, the regression model statistically predicts the outcome variable significantly (i.e., it is a good fit for the data).

16. It was observed from Table-4.24 & Table-4.25 of chapter 4 that Since this p-value is less than .05 ($0.000 < 0.05$), we reject the null hypothesis. In other words, there is a statistically significant relationship between the assessment carried out for curriculum taught in Training/Skill Development Program and its validity to meet the present date requirements in Hydrocarbon Sector, Therefore, it is to deduce that the assessment carried out for curriculum taught in Training/Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector is rejected (ACCT) $F(1,384) = 120.346$, $p < .001$, accounting for 23.9% of the variability with adjusted $R^2 = 23.7\%$. It was observed that the F value represents an improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. A value is greater than 1 for F-ratio yield efficient model. In the above table-4.24, the F value is 120.346, which is good. These results estimate that as the p-value of the ANOVA table is below the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis, i.e., Reject, “the assessment carried out for curriculum taught in Training/Skill Development Program is not significantly valid to meet the present date requirements in Hydrocarbon Sector”. This leaves to Accept the alternate hypothesis i.e., “The assessment carried out for curriculum taught in Training/Skill Development Program is significantly valid to meet the present date requirements in Hydrocarbon Sector”. Thus, it is to conclude that here, $p(0.000) < 0.0005$, which is less than 0.05. It indicates that, overall, the regression model statistically predicts the outcome variable significantly (i.e., it is a good fit for the data).

17. From the ANOVA Table- 4.29 of Chapter – 4, it is observed that the F value is 11.493, while F critical value is 3.478. Here, it can be observed that the F-value is greater than the F-critical value for the alpha level selected (0.05). Therefore, there is evidence to reject the null hypothesis (where $11.493 > 3.478$) i.e., “The

Training/Skill Development Program do not differ in fairness in the assessment of the programs based on Age.” is rejected.

18. From the ANOVA Table- 4.32 of Chapter-4, it is observed that the F value is 13.707 while F critical value is 3.478. Here, it can be observed that the F-value is greater than the F-critical value for the alpha level selected (0.05). Therefore, there is evidence to reject the null hypothesis (where $13.707 > 3.478$) i.e., “The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on Education.”, is rejected.
19. From the ANOVA Table- 4.35 it is observed that the F value is 8.222, while F critical value is 5.192. Here, it can be observed that the F-value is greater than the F-critical value for the alpha level selected (0.05). Therefore, there is evidence to reject the null hypothesis (where $8.222 > 5.192$) i.e., “The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on *Gender*”, is rejected.
20. From the ANOVA Table- 4.38 it is observed that the F value is 6.980, while F critical value is 3.478. Here, it can be observed that the F-value is greater than the F-critical value for the alpha level selected (0.05). Therefore, there is evidence to reject the null hypothesis (where $6.980 > 3.478$) i.e., “The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on Years of Employment.”, is rejected.
21. From the ANOVA Table- 4.41, it is observed that the F value is 9.150, while F critical value is 2.759. Here, it can be observed that the F-value is greater than the F-critical value for the alpha level selected (0.05). Therefore, there is evidence to reject the null hypothesis (where $9.150 > 2.759$) i.e., “The Training/Skill Development Program do not differ in fairness in the assessment of the programs based on the location of the Institution”, is rejected.

22. The summary table-4.42 is compendious of table-4.27 to table-4.41. Therefore, it can be concluded that “the Training/Skill Development Program do not differ in fairness in the assessment of the programs based on the demographic characteristics of the students/trainees”, is rejected. Thus, the alternate hypothesis is accepted, i.e., “The Training/Skill Development Program differ in fairness in the assessment of the programs based on the demographic characteristics of the students/trainees”.
23. It was observed from Table-4.44 & Table-4.45 of Chapter-4 that Since this p-value is less than .05 ($0.000 < 0.05$), we reject the null hypothesis. In other words, there is a statistically significant relationship between flexibility of curriculum delivery method (independent variable) and adoption of fairness in assessment of candidates’ understanding of the subjects taught. Therefore it is to deduce that The Skill Development Program has no significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates’ understanding of the subjects taught is rejected (FCDM) $F(1,384) = 226.251$, $p < .001$, accounting for 37.1% of the variability with adjusted $R^2 = 36.9\%$. Here, The F value represents an improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. A value is greater than 1 for F-ratio yield efficient model. In the above table, the value is 226.251, which is good. These results estimate that as the p-value of the ANOVA table is below the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis, i.e., Reject, “the Training/Skill Development Program has no significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates’ understanding of the subjects taught”. This leaves to Accept the alternate hypothesis i.e., The Training/Skill Development Program has significant relationship between flexibility of curriculum delivery method and adoption of fairness in assessment of candidates’ understanding of the subjects taught. Thus, it is to conclude that here, $p(0.000) < 0.0005$, which is less than 0.05. It indicates that, overall, the regression model statistically predicts the outcome variable significantly (i.e., it is a good fit for the data).

5.6.2 Findings based on the insight of in-charges of SDIs

- (i) On the question regarding the sufficiency of the current training duration of the courses offered at SDI, the in-charges of all the six SDIs unanimously disagreed. As per their opinion, the duration of the training program conducted at SDIs are not sufficient to make the trainees at par with technical academic qualifications. The training duration are actually not enough as it involves both classroom training and practical classes. The theoretical training should be at least 1 year to give a better understanding of the theory and practical aspects. The current duration may be sufficient for some low some low-skilled Training Programs. But, if the trainees are to be made better employable, the training needs more enrichment. The purpose of the skill development is to make persons better employable than the persons with only academic qualifications. Hence, the level of the training should be at least comparable to the technical academic qualification supplemented with on-job industry experience so that the pass-out trainees are preferred by the industry.
- (ii) On the question regarding their suggestion for making the Skill Development Training program conducted at SDIs more relevant, the in-charges opined that The Training Programs at SDIs should be made equivalent to that of technical education like ITI, Diploma and BE/BTech as even today, society & industry value academic qualifications more. Hence, the courses should be recognized by AICTE so that the youths can get a secured job after such training. The Training Completion Certificate, despite being recognized by NSDC and HSSC is not given cognizance by the industry. Entrepreneurship should be encouraged. In this regard, the PSUs can provide the initial assistance/support under their CSR efforts. Small audio-visuals on various topics should be created and hosted in SDI's websites to encourage flexi-learning anytime from anywhere. German Model of Apprenticeship should be adopted blending both academic and technical education. Accordingly, the Training program should

be followed by a mandatory on-the-job apprenticeship of 1 year with the promoting PSUs

- (iii) On the question regarding the requirement of soft skills alongside the technical skills imparted during the curriculum, the in-charges opined The Trainees should be prepared well at the SDIs with both hard and soft skills as the current world of work is very dynamic and complex. Only technical courses would not suffice, soft skills and knowledge of computers can help them cope with the industry demands of the 21st century. The youth has to be made ready not only for domestic skill requirements but also for the world. Soft skills are very important because in the world of work, people, and have to manage people below them, besides them, and above them.
- (iv) On the question regarding making placements more effective, the in-charges came up with excellent ideas thinking out of the box. They opined that the promoting PSUs of the Hydrocarbon Sector should come forward for placement from the SDIs they are promoting. They should engage some of the passed-out trainees on probation and absorb some of them only when they are found suitable. Only funding the SDIs with CSR Fund is not enough. The promoting PSUs can ask their contractors to meet their requirements from the pool of trainees passed out of the SDIs. A suitable contract clause in this regard may be incorporated in all contracts involving the deployment of contract labor mandating the contractors to give preference to persons who have been skilled in the SDIs of the Hydrocarbon Sector. The SDIs should network with the nearby industries/ factories and design course curricula actually required by them so that the youth can be made ready for these industries' requirements. In such cases, local employment can be ensured and the trainees are not forced to move to other states and face initial financial challenges. Hydrocarbon Sector Skill Council (HSSC) should develop a repository of the trainees passing out of each SDIs and make it accessible to all prospective employers on its website. The online portal of HSSC can be mutually beneficial to the

industry as well as trainees as they can contact each other to meet their requirements. Post-placement support in terms of a portion of the stipend should be provided to the trainees at least for a period of 6 months so that they sustain the initial financial shock. At least 6 months' support at the rate of 30 % of their stipend amount is given to the poor trainees they can settle themselves in the new location. A track should be maintained even after placement till the trainee is actually settled. In case a trainee is not comfortable with the company/industry in which he/she is placed, they should contact the SDI for giving them another chance for appearing in the placement. The trainees may be encouraged to form Cooperative Society under the Cooperative Societies Act. 1912 so that the Service Contracts like Maintenance of AC, Electrical Maintenance, Mechanical Maintenance, Instrumentation Maintenance, and Support & Peripheral Assistance, etc. can be directly awarded to such Cooperative Societies without calling for Tender or awarding the work to any Contractor. It will be a self-sustaining model to resolve the placement/employment-related issues. Entrepreneurship assistance in terms of initial funding or machinery support may also be given to the trainees so that they can establish their own establishments to support themselves and others too.

- (v) On the question regarding sufficiency of the industry connect, all the in-charges opined that the industry connect can be bettered. The Industry experts should be invited to the SDIs to share their valuable real-life experiences. The SDIs should create a work culture in line with the industry so that when the trainees pass out from the SDI and join the industry they can quickly adapt themselves. The promoting PSUs execute a number of contracts and deploy a lot of contract labour. The common job roles should be identified for which the work is generally outsourced. If training is imparted in these identified job roles, the skill development program would become a success. The SDIs should actually perform as a lab where the required skills are nurtured and prepared for the industry. The SDIs are by the PSUs, of the PSUs and should be for the PSUs of the Hydrocarbon

Sector. Hence, a greater commitment of industry/PSU is required for the success of this endeavour. The industry i.e. promoting PSUs of the Hydrocarbon Sector should provide the latest technological know-how and the same infrastructure/machinery for practical training at the SDIs. The practical training should be conducted at the factory site so that the trainees have a real hands-on experience of what they are taught in the classroom at SDI. The training curriculum should be designed with help of Industry experts to match the dynamic nature of industry requirements. Without the assistance of industry, the trainees cannot be made industry ready or ready for 21st-century jobs. The SDIs should arrange more and more industry visits and also arrange for guest lecturers from the Industry who can give the trainees the perspective of the industry.

- (vi) On the question regarding making the training lucrative to female aspirants, the in-charges came up with praise worthy measures. They expressed that SDIs should strictly adhere to Safety and security norms. Separate hostel block should be constructed for the girls. Some Training Batches should be designed especially for girls. Co-ed mode of training also helps as the female trainees learn to work shoulder to shoulder with the male trainees as ultimately they have to learn to work together in the industry after their training completion. Counselling camps in rural areas should be organised to counsel family members of girl children so that they allow them to enrol at SDIs for skill training and be employable. Women Entrepreneurship should be promoted so that female trainees are encouraged to start their own enterprises in the local area and are not required to move out for jobs.

5.7 Contribution of the study

Any study of evaluation of the status of a particular section of society remains incomplete unless certain solutions are also offered to improve the situation for the concerned section. Hence, on the basis of observations, a few suggestions are made as follows:

5.7.1 For SDIs of Hydrocarbon Sector

- (i) The training hours/duration of the skill development programs at these SDIs are mostly 3 – 6 months, which is not sufficient as it consists of both theory and practical training. It should be increased to at least 1 year of theory classes in the SDI premises and 1 year of practical on-the-job skill training in the industry premises in line with the Germany Model of Apprenticeship so that the trainees first understand the concept and then practically use it in the industry.
- (ii) The training at SDIs should have an industry connect. The infrastructure and machinery should be the latest and as per the requirement of the industry and the technology being used in the industry promoting these SDIs should also be made available for the Trainees of these SDIs so that they are ready to take up the real job in these industries on completion of the Skill Training.
- (iii) Industry work culture should also be developed in the SDIs so that the trainees are acquainted with the industry environment and are ready for the industry.
- (iv) Awareness is required at the ground level i.e. rural level so that the vulnerable youth can be benefited from such skill development training Program and improve their standard of living.
- (v) It was found that each of the 6 SDIs have engaged some reputed Training Partners who provide the trainers for running the training courses at their SDI. This is definitely praiseworthy; but, it would be more beneficial if industry experts from the promoting PSUs of the Hydrocarbon Sector are called to these SDIs as visiting faculties so that the trainees gets real knowledge about the industry and prepare accordingly. The visiting industry experts will also come to know the calibre of the trainees which can help them in recommending them for engagement in their company (at least on contractual / fixed-term basis).
- (vi) The industry i.e. the promoting PSUs of the Hydrocarbon Sector can prepare modules & short audio-visuals on specific topics which can be made available on online library of the SDIs so that the Trainees can learn from them at their

convenience, anywhere and anytime. There can be short quiz after each such module to test the understanding of the Trainee. Specific credits can be given to the number of such modules cleared by the Trainee and such data can be made available to the industry whose modules they have cleared. That way the industry can also know in advance who are ready for their work before actually engaging them.

- (vii) As education is the pre-requisite for any type of development among students, every possible step should be undertaken to benefit more and more female population of the nearby rural communities with the technical education being provided at these SDIs.
- (viii) Sufficient residential facilities, especially for the girls with adequate safety & security measures, may be created at respective SDIs.
- (ix) There is an urgent need to bring about a greater awareness of the importance of reliability in the assessment of subjects taught to students at SDIs

5.7.1 For PSUs of the Hydrocarbon Sector

- (i) The SDIs in the Hydrocarbon Sector are imparting training/skill development in the courses specific to the requirement of the Hydrocarbon Sector. But still, the Training Completion Certificate issued by these SDIs are not recognized for recruitment of these PSUs of the Hydrocarbon Sector and Private Corporates of the Hydrocarbon Sector. They trusts the academic qualification more when going for recruitment. The promoting PSUs of the Hydrocarbon Sector should first take into cognizance the certificates issued at the SDIs promoted by them.
- (ii) Only funding money by the PSUs of the Hydrocarbon Sector for running of training programs at SDIs is not enough, the commitment to the cause should also reflect in their action. The intention towards promoting skill development training would be evident when they also take the responsibility of placement and post-placement of the trainees passed out from their SDIs.

- (iii) The Training / skill development programs run by the SDIs of Hydrocarbon sector are residential and the training, boarding & lodging costs are born by the promoting PSUs of the Hydrocarbon Sector. This is really a boon to the poor youth taking admission in these SDIs. But, when they get placed, it initially gets too hard for them to manage themselves at a far location. It would be great if the promoting PSUs of the Hydrocarbon Sector also provides post-placement assistance services for at least 6 months so that they can settle themselves in the new location of their work.
- (iv) Local employment should be promoted. The nodal PSUs of the Hydrocarbon Sector responsible for the operation of respective SDI should also network with the nearby factories so that the concerned SDI can train as per their industry requirement & prepare a skilled workforce for ready use by those industry / factory. That way the local trainees are engaged locally and are not required to travel far for employment.

5.7.1 For Government

- (i) It was found that the level of awareness of rural students about this kind of Program is at very low level, hampering their intention to study. Thus, the government must take to introduce Programs for perfecting this issue by opening village counselling centres.
- (ii) The government, with help of voluntary organisations, should start a big campaign to educate the students and the trainers in rural areas about various measures that are being taken to improve the employability of students after passing out from SDI.
- (iii) The government Programs launched must be directed to ignite the social mind set of the vulnerable youth towards their rights for better education and these are done through dramas, flock songs, exhibitions, and fairs. And possible audio-visual aides may also be used for this purpose.

- (iv) The Hydrocarbon Sector Skill Council (HSSC), under the Ministry of Petroleum & Natural Gas may have a centralized online data bank of all the trainees passing out of each of the 6 SDIs with complete details like skill development training course attended, online modules cleared, current skill level, work experience and qualification so that the Hydrocarbon Industry can access to that data bank for their skill requirement. The PSUs of the Hydrocarbon Sector can also ask their contractors to access such data bank while engaging contract workers in their premises. That way the talent are not lost after they have been trained but a skill pool is ensured to access by all interested party. The companies in the hydrocarbon sector can also float their requirement in this portal so that the eligible persons come to know of the requirement and approach for work. Hence, it can serve both the industry and the candidates in meeting each other's requirement.
- (v) The government should make further reform in the Apprenticeship Act, 1961 and make it mandatory for all the corporates to engage the passed-out trainees from SDIs of the respective Sector Skill Councils in the range of 1 % - 3 % of the total work strength (including contract workers) of the establishment as apprentices. The minimum stipend should be fixed as minimum wage of semi-skilled workers and the period of such Apprenticeship Training should be at least 1 year.
- (vi) The government has launched several schemes for improving the employable status of youth and has invested huge amounts in these schemes. Still, their impact is negligible or marginal at the most, due to the faulty implementation of these schemes. Efforts should therefore be made to implement the various schemes for ameliorating the conditions of students.

5.8 Conclusion and Suggestions

It was found out from the responses of the Students / Trainees of SDI of Hydrocarbon sector located at Ahmedabad, Bhubaneswar, Guwahati, Raipur, Kochi and Vizag that the training /skill development programs being conducted at the Skill Development Institutes of Hydrocarbon Sector under the Skill India Mission that the is reliable for upskilling the trainees/ students for pursuing their careers and enhancing the skill levels in the students/ trainees that help them to pursue their careers in Hydrocarbon. The Students / Trainees also feel that the curriculum taught is valid to meet the present date requirements in Hydrocarbon Sector and there is adoption of fairness in assessment of candidates' understanding of the subjects taught. The Training /Skill Development Program also differ in fairness in the assessment of the programs based on the demographic characteristics of the students in terms of Age, Education, Gender, Years of Employment, location of the Institution. The students are very much satisfied from the training at SDI and with the enhancement of their skill level which help them in securing a job after training completion.

To cross check the in-charges of SDIs were interacted. During the interview and discussion with them, they shared a better vision on what more can be done so that in future the skill development trainings can actually achieve the real goal of Skill India Mission. The question is not about the present jobs available generally in the market but the future jobs of the 21st Century specific to the requirement of Hydrocarbon Sector not only domestic but even global. To stretch for that ambitious goal the following suggestions evolved out from the research.

a. Redesigning of the Curriculum

The social perception and acceptability of Skill Development Training is way behind compared to Technical academic education. The skill training programs of SDIs need to be reformed / redesigned with support of Industry and also ensured that it is recognised by AICTE.

The Theory Curriculum should be specifically designed with help of Industry Experts and OEM (Original Equipment Manufacturer) consultants to suit the current & future

need of the Hydrocarbon Industry so that they are relevant, contemporary and future focused.

The curriculum should also include soft skills like communication skills, interpersonal skills and basic computer knowledge so that they can also market themselves in the global world of work.

The promoting PSUs of the Hydrocarbon Sector can provide latest infrastructure, machinery and technical knowhow at these SDIs similar to what they use themselves so that they are best suited to fill the skill gap of their industry.

Once the Training Completion Certificates issued by SDIs are made equivalent to academic Technical Education approved by AICTE, it will definitely be preferred by the Hydrocarbon Industry for recruitment as they have themselves prepared them as per their industry requirement. With such specialized technical training, the trainees passing out of these SDIs would be sought after not only domestically but also globally. This will help in meeting the real objective of Skill India Mission.

b. Employment / Entrepreneurship Support

Currently all the six SDIs are providing placement assistance to the trainees passing out of the SDI after completing the Training program. However, it is felt that mere placement assistance to the trainees is not enough as some trainees after they were placed have become jobless. Some had to quit the job and come back to home as they could not adjust the initial cost towards settling at the new location. Taking into practical aspects of the situation, the following options for employment / entrepreneurship support are suggested:

(i) Probation & absorption by promoting Industry

The PSUs of the Hydrocarbon Sector in Hydrocarbon Sector do not recruit the pass-outs from the SDIs promoted by them. They should come forward and formulate some

policy to recruit some of the passed out trainees from the SDIs in Hydrocarbon Sector. They can engage these passed out trainees on probation for at least 1 year after the training completion and absorb some of them who are best suitable. When they start trusting their own product (i.e. passed out from the SDIs promoted by them), the other companies will also start trusting them and start recruiting them. This will also boost confidence of the students and their families. Seeing their success more and more youth would also look forward to these training programs.

(ii) Employment through Contractors

PSUs of the Hydrocarbon Sector and Private Corporates of the Hydrocarbon Sector should advise / instruct the contractors in their organisation to engage or give preference to the passed out trainees from these SDIs, while engaging contract workers in their premises. A suitable tender conditions to give preference to the SDI pass-outs, or specifically local SDI pass-outs, may be incorporated in all contracts issued by these companies. This will go a long way in ameliorating the employment issues of the youth in the locality.

(iii) Entrepreneurship Development

It was observed that a few trainees choose to opt for entrepreneurship after undergoing the training at SDI. More and more trainees should be encouraged to go for entrepreneurship so that they can engage more and more people in their enterprise. The Promoting PSUs of the Hydrocarbon Sector can provide them the initial help by providing them the required machinery, and technical support. If such enterprises are also given some work opportunities they can make it sustainable. This will also reduce a load of unemployment in the locality. The HSSC, as the nodal agency, may also endeavour in creating a network of mentors, business facilitators, and expert pool of resource persons for providing personal guidance and handholding support to trainees who venture for entrepreneurship to help them in setting up/scaling up their enterprises. A separate online platform may also be built on the website of HSSC for the budding entrepreneurs so that they can reach out to mentors and experts. This portal can also be used for business development services such as business modelling, registration of enterprise,

development of business, raw materials sourcing, registration of business, financial management, and marketing.

(iv) Cooperative Societies

The promoting PSUs of the Hydrocarbon Sector can encourage the passed-out trainees to form Cooperative Societies to whom certain operation & maintenance activities like AC maintenance, Mechanical Maintenance, Electrical Maintenance, etc. can be outsourced. Initial hand-holding may be provided to these cooperative societies to register their business for ensuring all statutory compliances. This can be a self-sustaining model which can be mutually beneficial to both the industry and the passed-out trainees. The vicious cartel of contractors can be broken with such model and the workers' interest can be protected by directly extended the wage & social security to them.

5.8.1 Model for Training / Skill Development Program of SDIs

The government already considers the SDI's of Hydrocarbon Sector as 'Centre of Excellence', it should also recognize the Training / Skill Development Program of these SDIs equivalent to ITI / Diploma academic qualifications. Accordingly, a model has been framed which can take the Training / Skill Development at SDIs to the next level where the trainees would be hot cakes in the world of work domestically as well as globally. The Trainees will benefit with from it with better career prospects, the Hydrocarbon Sector would benefit by getting the talent they want and even the country would benefit. The goal of enhancing the employability would be achieved in real sense. The current model and the proposed model is given as figure -5.1 and figure 5.2 respectively.

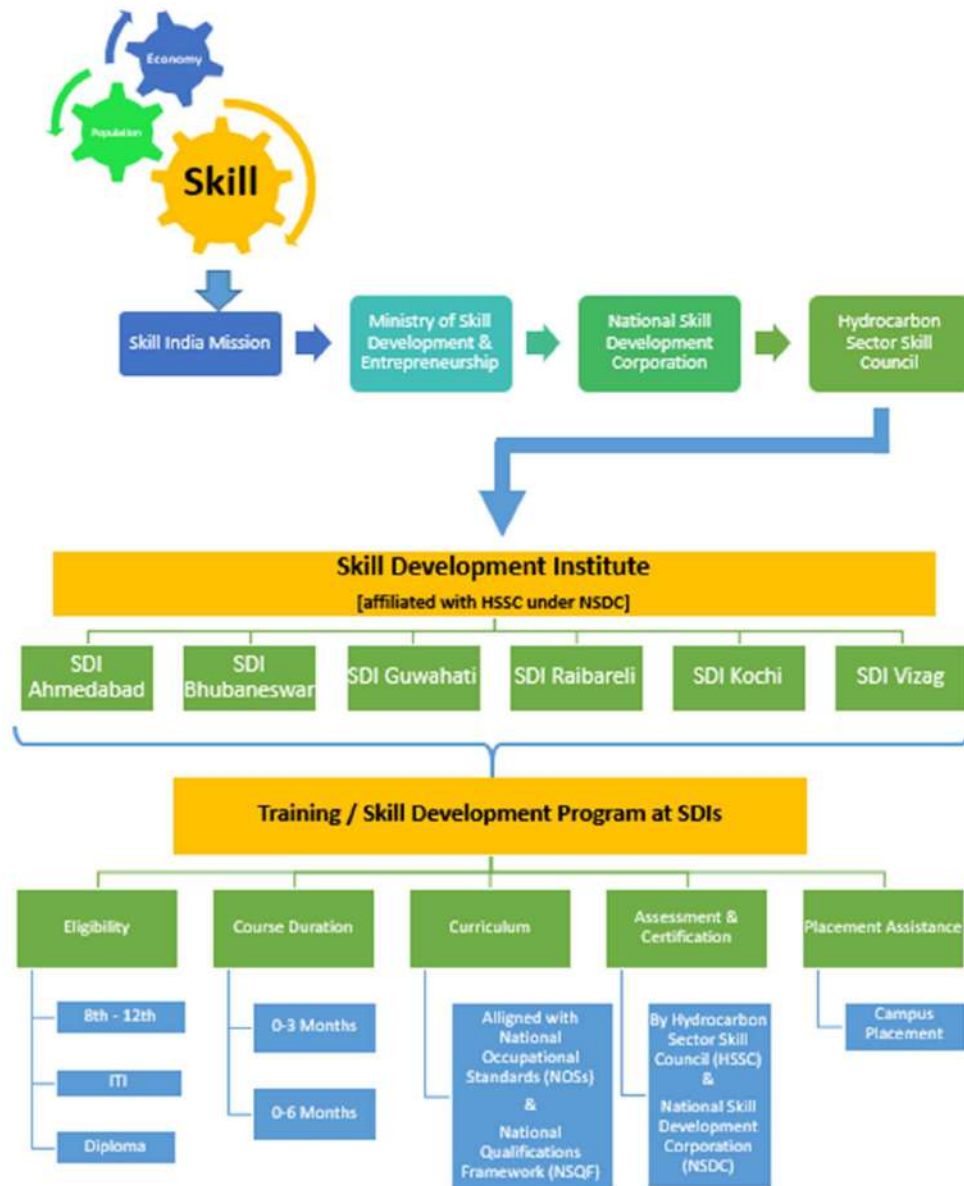


Figure 5.1: Current Model of Skill Development Training at SDIs

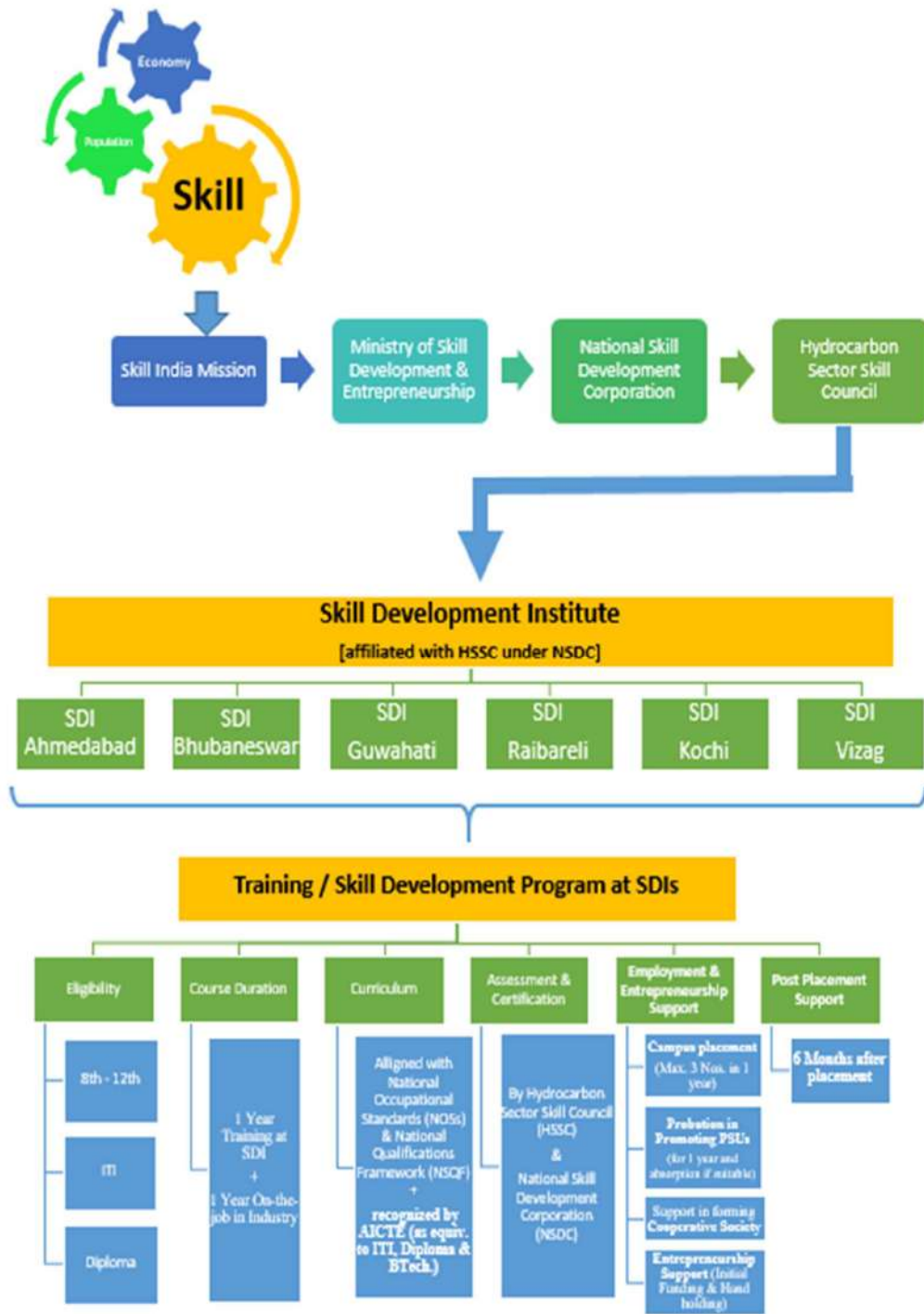


Figure 5.2: Proposed Model of Skill Development Training at SDIs

5.9 Scope of Further Research

This research opens up various fronts for future researches in multiple areas like women studies, social studies, gender equality etc. This research thesis opens following scope for future research, are as follows:

1. The influence of biasness in validity assessment of Skill Development Programs.
2. Influence of government policy for influencing females to take skill-based education.
3. Influence of media that helps in shifting the gear that aims to give girls an equal opportunity to take up technical courses in SDI.
4. The degree of relationship between reliability of assessment and the flexibility in assessment, as well as its influence to take the course seriously.
5. Influence of skill-based Programs in promoting entrepreneurship among the well-trained students.
6. Influence of SDIs in improving the technical skill among the young Indians.
7. Influence of level of educational standard among the industry centered professionals.
8. SDPs effect in improving the skill amongst the industry professionals.

5.10 Statistical Relevance of the Study

This research is an adaptation of following different statistical methods in the real time socio cultural, and social issues.

1. This research validated the use of single factor ANOVA to find out the difference in fairness in the assessment under the Skill Development Program based on the demographic characteristics of the students.
2. OLS regression was used to test the reliability of the Skill Development Program curriculum for upskilling the students for pursuing their careers in Hydrocarbon Sector.

3. OLS regression was used to test the reliability of the Skill Development Program curriculum for enhancing the competency levels in the students that help them to pursue their careers in Hydrocarbon Sector.
4. OLS regression was used to test the validity of the assessment carried out for curriculum taught in Skill Development Program to meet the present date requirements in Hydrocarbon Sector.
5. ANOVA test was used to test the difference in fairness in the assessment of the programs in the Skill Development Program based on Age.
6. ANOVA test was used to test the difference in fairness in the assessment of the programs in the Skill Development Program based on Education.
7. ANOVA test was used to test the difference in fairness in the assessment of the programs in the Skill Development Program based on gender.
8. ANOVA test was used to test the difference in fairness in the assessment of the programs in the Skill Development Program based on Years of Employment.
9. ANOVA test was used to test the difference in fairness in the assessment of the programs in the Skill Development Program based on demographic characteristics of the students.
10. OLS regression was used to test the flexibility of the Skill Development Program that has significant relationship with curriculum delivery method and adoption of fairness in assessment of candidates' understanding of the subjects taught.
11. In this research the responses were categorised under 5-point scale i.e., Strongly Agree, Mostly Agree, Ambivalent, Mostly Disagree and Strongly Disagree.

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APPENDIX – II

Assessment of Training Programs of Skill Development Institutes (SDIs) under Skill India Mission of Government of India with special reference to Hydrocarbon Sector

OBJECTIVES:

1. The objective is to evaluate the reliability of the Training / Skill Development Program to test the skill and industry readiness of the trainees at SDI.
2. To test the validity of the curriculum taught in Training / Skill Development Program in adopting the present date requirements of the Hydrocarbon sector.
3. The research objective is to find out the relationship between flexibility of delivery method in assessing the adoption of fairness that has the greater level of reliability and validity.
4. To evaluate the fairness adopted in the assessment of the programs based on the demographic characteristics of the students.

Questionnaire

Dear Respondent,

I, Biswabhusan Behera, am a PhD student of Galgotias University, Greater Noida. I am currently conducting research into Assessment of Training / Skill Development Programs of Skill development Institutes (SDIs) under Skill India Mission of Government of India with special reference to Hydrocarbon Sector, which is a reference tool used to describe and measure the Assessment of Training / Skill Development Programs of Skill development. This research will form part of my PhD dissertation and your help in completing this questionnaire would be extremely important to me. Responses of this survey is considered confidential and therefore I can assure you that the results from this study will not be released in its raw format. If you need to contact me, please feel free to do so at bb222@rediffmail.com or 9810789064.

Section-A: Demographic Profile

Name of Respondent	
Age	
Gender	
Skill Development Institute	
Training Course Name	
Training Batch	
Current Designation	
Current Skill Level / Category	Semi-skilled / Skilled / Highly skilled
Current Organization	
Numbers of years of experience	
Basic qualification	

INSTRUCTIONS:

This questionnaire is prepared taking above objectives in mind. Kindly circle the number in the response box that describes your reaction to each of the statements below.

Please remember there is no right or wrong answers. You must respond keeping your view, context and situation in mind rather than searching for the ideal responses.

Section-B:

Reliability

Sl. No.	Statement	Response				
1	The home assignment given to is selectively assigned for practice within a new learning target	5	4	3	2	1
2	Trainers provide home assignment with specificness in mind, and provide immediate feedback regarding performance on the homework (Grades are not considered)	5	4	3	2	1
3	Trainers quickly use evidence of your performance gathered from the homework to adjust in final assessment	5	4	3	2	1
4	Trainers use small groups for effective teaching and collecting assignments.	5	4	3	2	1
5	In the assessment, process the Trainers use effective feedback that are not communicated through letter grades, but through verbal and written conversations.	5	4	3	2	1
6	Trainers are constantly tracking and monitoring progress in student learning	5	4	3	2	1
7	Trainers motivate students to constantly work with Trainers in order to overcome the learning gaps	5	4	3	2	1
8	Your assessment practices focus on smaller learning targets and the immediate question.	5	4	3	2	1
9	Your Trainers take various methods to familiarize students with the assessment format, encourage students to read and listen to all of the directions, and review test-taking strategies.	5	4	3	2	1
10	You work to improve your skills by seeking feedback from Trainers and peers before embarking on the summative assessment.	5	4	3	2	1

Validity

Sl. No.	Statement	Response				
1	Assessments done in the institute assesses specific learning targets	5	4	3	2	1
2	Assessments carried out in the institute is based on state standards	5	4	3	2	1
3	Assessments carried out in the institute are designed by Trainers	5	4	3	2	1
4	Assessments Scheduled, administered and reviewed by collaborative efforts	5	4	3	2	1
5	Trainer teams with entire grade level/class	5	4	3	2	1
6	Allows for immediate adjustments to instruction	5	4	3	2	1
7	Trainers elicits evidence of student learning (data)	5	4	3	2	1
8	Trainers informs instruction about the assessment with proper evaluation criteria.	5	4	3	2	1
9	Trainers emphasizes on Timely assessments	5	4	3	2	1
10	In the assessment process the Trainers are encouraged to involves students	5	4	3	2	1
11	Provides data on individual students	5	4	3	2	1
12	Individualizes assessment for learning	5	4	3	2	1
13	Provides personalized feedback	5	4	3	2	1

Fairness/Trust

Sl. No.	Statement	Response				
1	Trainers are encouraged to assess the students' performance based on what has been taught to them in the class	5	4	3	2	1
2	Institutions are engaged in identifying where in the curriculum candidates have had the chance to learn and practice the material being assessed.	5	4	3	2	1
3	Institute emphasizes that the candidates understand what is expected of them on the assessments.	5	4	3	2	1
4	In the institute, instructions and timing of assessments are clearly stated and shared with candidates.	5	4	3	2	1
5	Candidates should be given information on how the assessments are scored and how they count towards the completion of programs.	5	4	3	2	1
6	In the institute Trainers' assessment are lack of every kind of biasness.	5	4	3	2	1
7	In the Institute, Trainers manage to prepare lesson planning within a planned scope and sequence of materials.	5	4	3	2	1
8	Institute adopts equitable treatment in the testing process.	5	4	3	2	1
9	The Institute maintains equality in outcomes of testing.	5	4	3	2	1
10	Results of assessments adequately reflect what candidates know and can do.	5	4	3	2	1
11	Institute takes important steps to remove any contextual distractions and/or problems with the assessment instruments that introduce sources of bias.	5	4	3	2	1

Flexibility

Sl. No.	Statement	Response				
		5	4	3	2	1
1	Trainers use feedback to feed forward into future assessments and careers	5	4	3	2	1
2	Does your immediate supervisor take interest in your career development and growth?	5	4	3	2	1
3	The students do not exploit assessment to improve their learning nor view feedback on their work as helpful, believing criteria to be implicit and unclear.	5	4	3	2	1
4	Institute's assessment practices are inclined towards increased student control of assessment.	5	4	3	2	1
5	Institute's flexibility in the assessment process is one of the good assessment practice principles.	5	4	3	2	1
6	Flexible assessment involves some element of choice on the part of the student.	5	4	3	2	1
7	Institute allows the individual students to decide the weightings applied to each assessment task.	5	4	3	2	1
8	Flexible assessment aligns with a competency-based approach to learning.	5	4	3	2	1
9	The use of flexible assessment strategies can help prepare students for life after university.	5	4	3	2	1
10	A complete theoretical and cultural change in assessment practices will be a difficult task.	5	4	3	2	1

Assessment Satisfaction

5=Very satisfied, 4=Satisfied, 3=Neutral, 2=Dissatisfied, 1=Very dissatisfied

Sl. No.	Statement	Response				
1	Are you satisfied with the time allotted to theory?	5	4	3	2	1
2	Are you satisfied with the time allotted to Practical?	5	4	3	2	1
3	Are you satisfied with the usefulness of the theory?	5	4	3	2	1
4	Are you satisfied with the usefulness of Practical?	5	4	3	2	1
5	Are you satisfied with the usefulness of both theory and Practical?	5	4	3	2	1
6	Are you satisfied with Institute's flexibility in the assessment process?	5	4	3	2	1
7	Are you satisfied with teachers' assessment? Is it lack of every kind of biasness?	5	4	3	2	1
8	Are you satisfied with the assessment process of the teachers?	5	4	3	2	1
9	Are you satisfied with the teacher's effort towards constantly tracking and monitoring progress in student learning?	5	4	3	2	1
10	Are you satisfied with the teacher's emphasis on Timely assessments?	5	4	3	2	1

QUESTIONS ASKED TO SDI IN-CHARGES

1. In your opinion, is the current duration of the training programs (i.e. 3-6 months) sufficient to make the trainees employable?
2. In your opinion, what changes would you suggest to make the Skill Development Training program conducted at SDIs more relevant?
3. Do you think soft skills like communication skills, people skills, and basic knowledge of computers are also required along with the technical skills imparted during the curriculum?
4. How the placements can be made more effective?
5. Do you think the industry connection at SDIs is sufficient? How it can be bettered?
6. How the Training programs at SDI be made more lucrative and beneficial for females?

APPENDIX – III**LIST OF LITERATURE REVIEWED**

S. No	Year	Publication	Topic	Author	Objective	Finding
1	2022	International Journal of Engineering Business Management	The challenges confronting the training needs assessment in Saudi Arabian higher education	Othayman M.B., Mulyata J., Meshari A., & Debrah Y.	To examine the problems encountered by the Training Needs Assessment system in emerging public universities in the Saudi Arabian Higher Education sector and to understand its impact on the success rate of Training and Development curriculums	The study concluded that there is currently unsatisfactory commitment to determining the staff training needs by the HR dept. of Saudi Arabian public universities, which has a negative impact on morale and leads to a lack of faith between HR directors and departmental staff..
2	2021	Munich Personal RePEc Archive	Logic Model Framework for Employability and Skills Development in Vulnerable Youth: evidence from pilot intervention and quasi-experimental research	Pallavi Gupta, Ambarish Datta & Satyanarayan Kothe	Introduce a simple logic model framework to provide role-based vocational training and sustainable placement of vulnerable & disadvantaged students.	The disadvantaged and vulnerable youth enters the world of work either with a lack of sufficient educational qualification or desired employability skills. Hence to ensure their secure future and upward mobility, the required learning skills are introduced progressively at the school level. Flexibility in delivery, mentoring, financial support, and social security helps easily access skill development programs. Skill development framework needs fortification with multi-stakeholder partnership, the curriculum should be relevant & industry-aligned, and programs are sustainable & scalable. Social inclusion of vulnerable youth is an equally important element of such interventions aiming to enhance self-efficacy & overall wellbeing.
3	2021	CESS-RSEPPG Background Paper Series #3, Research Cell on	Skill Development in India - A Conceptual Framework Mapping	V. Motkuri & E. Revathi	Develop a conceptual framework for understanding skill development sector, policy and	Skill shortages in specific sectors /industries are due to skill gaps and graduates, and their employability levels fall short compared to desired levels required for the industry. They

		Education (RSEPPG), Centre for Economic and Social Studies, Hyderabad	Educational (and Training) Outcomes and Occupation- Job-Skills Standards of Industry and Labour Market		relational mapping of the educational learning outcomes and industry-occupation-skill standards of job roles of the labour market.	further observed that the standardisation of training quality of skill development initiatives is a severe concern and highly dependent on the private sector, mainly private training providers and assessors.
4	2021	International Journal of creative Research Thoughts	Employability through Skill Development Programs : overview of significance of Employability skills	S. C. Patil & A.B. Charantimath	Ascertain the need for employability skills and ascertain the skill gap between desired and possessed skills.	Training, education and short-term courses can bridge the skill gap. Despite the efforts, there is still significant scope for transforming abandoned knowledge into skills. Various ambitious missions of the Government of India can come true with collective efforts.
5	2021	International Journal of Livestock Research	Impact of Skill Development Trainings on Poultry Production	Rakesh Thakur, Neetu Sharma & Bhupinder Singh Mankotia	Understand the impact of skill development on poultry farming and how it can address the social and economic conditions of rural youth	Skill development training can be of immense help to unemployed rural youth in alleviating poverty by improving their socio-economic conditions. They highlighted the impact of training on poultry production. They also noticed that majority of trainees (around 80 %) post their training have either fortified their existing poultry firms or have started their new farms. They concluded that rural youth benefited from the said skill development training on poultry farming by enhancing their knowledge & skills. Such training also strengthened the production of poultry in the locality.
6	2021	Amfiteatru Economic	The impact of artificial intelligence on consumers' identity and human skills	Pelau C., Ene I. & Pop M.	To find out the correlation between the influence of efficiency and fascination with AI, the impact of the social circle and the perception of preserving consumers' identity concerning various forms of AI.	The development of Artificial Intelligence can be useful for individuals and humanity only if we understand to make the right use of such robots and intelligent machines for the benefit of humans.

7	2021	MDPI	Analysis of Worldwide Research Trends on the Impact of Artificial Intelligence in Education	Paek S. & Kim N.	To examine the current impact of AI and predict its future impacts on education and deliberate on the global research trends on AIED and collaboration status by countries.	Nowadays, AI is omnipresent, impacting human civilization and is also becoming instrumental in the revolutionary change in the education sector. AI force us to change our perspective of education, starting from its purpose, content and teaching methods. With the advent of AI, the world is gradually upgrading from a knowledge transfer-based public education to a more personalized & creative convergence education. AIED can be witnessed everywhere in the form of AI tutors, chatbots etc., yet a long way to go. We need to define the concept, direction and other related terms of AIED.
8	2021	International Journal of Creative Research Thoughts	A study on the effectiveness of training and development on employee's performance at JK Paper Ltd.	Mrunali T, Pathak A.	The study's endeavour was to ascertain the effectiveness of Training & development on the performance of employees at JK Paper Ltd., Songadh.	They concluded that Training & Development are essential to enhance the performance of employees by creating a highly skilled workforce and impacting employees' personal growth. The Employee's perception of training is very positive, and they get encouraged to perform enthusiastically on their job. There is, however a need for improvisation in training need identification.
9	2020	International Journal of Education, Modern Management , Applied Science & Social Science	A study on skill development Programs for rural youth in India	Banajawad V.T. & Adi M.S.	Ascertain the status and challenges of government initiatives on skill development	The study highlighted the growing momentum of skill development and the role of education & skills in enhancing employment opportunities, eliminating poverty, boosting productivity and promoting rural development in an environmentally sustainable manner. All that is required is assimilating skills, policies and strategies for rural development, and it must also blend education with skill-based training and industry-link placement facility. Skill development is critical to meet rural youth's requirements for rural development in a real sense.

10	2020	International Journal of Innovative Science & Research Technology	Skill Development Mission & Skill Landscape of India: - An Empirical Study	Dash C.S., & Dash S.	Appreciate the skill landscape of India vis-a-vis emerging technological disruptions, global transformation and international mobility of the workforce	Despite commendable features of the Skill India Mission, the challenges of gender inequality, sectoral imbalance in skilling, training, and placements persist.
11	2020	International Journal of Scientific Research and Engineering Development	Skill Development in India: Challenges & Opportunities	Swain A. & Swain S.	Ponder on challenges and opportunities in Skill Development in the country	They figured out that India, with around 60% youth population, has a 'demographic dividend'. It needs to capitalise on this demographic dividend and add value to the country's economy by supporting the 'Make in India' campaign by providing a skilled workforce in the country. The 'Skill India' mission needs to focus more on entrepreneurship skills for enhancing job generation in the country. Government of India has launched numerous schemes for skilling and ensuring employability of the Indian youth. But, Indian youth should also be aware of such schemes, get the required training and be employable.
12	2020	International Journal of Advanced Science and Technology	Women Empowerment : The Role of Education in Women Empowerment	Bhuyan K. S.	Deliberate on the role of education in empowering women, challenges, constitutional provisions and probable solutions to issues w.r.t. women empowerment.	Women empowerment programs should be taken up with the intention of making women more self-confident, more self-reliant and financially independent so that they are filled with a positive attitude in taking decisions and contributing to the economy. The goal can be achieved with the education & skill development of women. India lags in women's literature which negatively impacts the lives & livelihood of women and their families.

13	2020	Journal of Physics	The Impact of Artificial Intelligence on Vocational Education and Counter measures	Feng Hui	Analyse the impact of AI on vocational education and measures for enhancing the standard of vocational education & quality of teaching.	The vocational training institutes are gradually upgrading to smart classes & information-based teaching but still are way behind the pace of growth of AI. They need to cope with the pace of technology by constantly aligning the teaching contents and adapting to the market requirement in terms of talent level & quality demands due to the advent of AI. The shortcomings & gaps in students' skills need to be identified with AIED and work on its solutions. The vocational education tasks need to be integrated with the actual teaching so that the students can improve their overall quality.
14	2020	Journal of Modern Management & Entrepreneurship	Use of Artificial Intelligence in Education	Ashok Panigrahi & Vijay Joshi	To understand the applicability of AI in education and its advantages	Observed that AI has graduated from a simple rule-based system to a data-driven system and not to an advanced context-driven system. They discussed the various approaches in AIED that improves learning outcomes. AIED has literally changed the learning experience with its flexible learning environment and personalised learning experiences. The study concluded that focused & collaborative efforts are required by all the stakeholders of the Education sector so as to comprehend, admit and utilise AI-based products which benefit them and which can be used to create customised, pertinent, appealing, understandable and controllable solutions for every learner.
15	2020	EDAP	Implications of Industry 4.0 on Skills Development	Steven McKee & Danny Gauch	To analyse the impact of technological advancements in Industry 4.0 on skill development	With the help of emerging and converging technologies in various combinations, a new world of possibilities for educational transformation can be opened up. However, as we move towards this educational transformation, we need to ensure that the world too transforms into a more useful, productive, secure place and better place for all.

16	2020	TEM Journal	Managerial Training Effectiveness: An Assessment through Kirkpatrick Framework	Sahni J.	To understand the effectiveness of managerial training using the Kirkpatrick framework.	The findings indicate a high level of training effectiveness at both satisfaction and learning levels. The training success is associated with factors like practical orientation, training environment, the role of the trainer, and training usefulness.
17	2019	ZEF Working Paper Series, 2019	Skill Development in Indian Agriculture and Food Processing Sectors: A Scoping Exercise	Ganguly K, Gulati A. & Braun J.V.	To evaluate the policies and institutions that are operational in the context of skill formation in India, with a focus on the agriculture and food sector.	Skill development has garnered significant relevance over time in India, due to its exploding youth population, expanding workforce and rising sectoral productivity & growth. For achieving the desired results, it is imperative to address the challenges encountered in skill development programs with the help of alternative approaches based on effective program designs, better partnerships and appropriate institutions.
18	2019	International Journal of Scientific & Technology Research	Skill Development - The future of India	Krishnamoorthy A. Srimathi H.	analyse the practices & initiatives of skill-based vocational training and evaluate the skill development policies, plans and practices with the international practices	The global requirements of the workforce require proper study & analysis, including adequate steps in imparting vocational & industry-linked skills. A mixed strategy blending all the global best practices, introspection and periodic review is imperative for improving the skill development landscape in India. The stakeholders have to jointly ensure that our vocational and higher education system possesses the blend of skills required to achieve the target.
19	2019	International Journal of Research and Analytical Reviews	Analysing the impact of skill India - a tool for reshaping Indian economy	Rajni Arora & Manoj Chhadwani	Analyse the role of the Skill India campaign in reshaping Indian economy, the Programs under the Skill India campaign	To expedite the momentum & implementation of the Skill India campaign, the government has an ambitious target to skill 500 million by 2022, but the pace is too slow rate. At this pace, the goal appears challenging considering the low rate of training to job transition and skilling to placement ratio. Currently, India faces a severe shortage of trained workers. Only 2.3% of India's workforce is trained with formal skill training. There is an immediate need to scale up the skill development training and see that in the whole process of the skill India campaign, is undertaken effectively.

20	2019	International Journal of Training Research	Skill development for accelerating the manufacturing sector: the role of 'new-age' skills for 'Make in India'	Chenoy, D., Ghosh, S. M., & Shukla, S. K.	To focus on developing the right skills to address the growing skill gap in manufacturing sector in view of changing industrial landscape defined by new-age technologies.	India's demographic advantages can be realized if the existing workforce is re-skilled and upskilled through lifelong learning initiatives, and new recruits are prepared with twenty-first-century skill sets. The task for the government to develop a skill-based workforce and drive the 'Make in India' initiative is huge.
21	2019	EPRA International Journal of Economic and Business Review	Education for skill development and women empowerment	Shetty S.S. & Hans V. B.	Establish the role & benefits of education & skill development training in empowering women.	Empowerment should bring in better literacy, the realization of rights & responsibilities, socio-economic inclusion & involvement, access to resources and improved living standards for women. Girls/women, if given quality education and skill training, can not only secure livelihood for their families but also partner with their male counterparts in ensuring the progress of the society and ultimately contribute to the development of the Nation.
22	2019	Scholarly Research Journal for Interdisciplinary Studies	Women empowerment through skill development Programs in India	Musharraf Jahan	To comprehend how women can be empowered through skill development in India	The status of women is improving due to technology, and with the help of advanced technology, women have now access to new jobs, professions & occupations. Women also need to master the technology and learn machine design and practice it in workshops as there is ample scope for women technicians in mechanical industries. Women need to be empowered with skill development to make them ready for such industries.
23	2019	IGI Global	AI in Education: Current Insights and Future Perspectives	Nil Goksel & Aras Bozkurt	To understand the key concepts in Artificial Intelligence and possibilities of AI in education & training	Deliberate the vision & viewpoints of AI on various aspects like DL (Deep Learning), ML (Machine learning) and NLP (Natural Language Processing) etc. and identify areas of research like adaptive learning & styles of learning AI-based expert tutoring systems and AI-based educational processes. They concluded that AI indeed is enabling human lives and the advancement of human progress. However, before fully

						integrating AI into educational processes, it is required to develop a serious stance. It is required to develop an ethical policy and define the ethical boundaries for allowing AI to use human-generated data. Secondly, the AI-featured educational processes needs periodic testing to prevent any automated processes and machine learning.
24	2019	EPRA International Journal of Economic and Business Review	Digital Skills, Transmedia and Artificial Intelligence	Gallon Ray	Deliberate the development of communicative competencies and implications of Industry 4.0 on teaching & training.	Innovative strategies need to be synchronised for implementation in academia, training institutions & industries. It requires the partnership of all concerned across the society. Knowledge creation now also involves the contributions of intelligent machines and AI. The students need to be taught to learn to live. In the new world of AI, Policy makers need to accordingly frame policies for implementing initial learning in academia and reskilling/ training in formal and informal environments. He also mentioned that AI and other upcoming technologies should be targeted toward solving human problems; otherwise, it would be another world problem.
25	2019	International Journal of Training Research	The rise of technology and impact on skills	Sungsup Ra, Unika Shrestha, Sameer Khatiwada, Seung Won Yoon & Kibum Kwon	Deliberate on the skill demands of the 4th industrial revolution, the impact of automation on jobs and emerging trends in the education system.	Due to the rise of technology, demand for specialised skills is changing quickly. Adapting to such change requires unlearning old technologies and learning & relearning new ones. Innovative modes of education & learning deliveries can address the changing skills demand. At the same time, new technologies offer creative methods of education and learning and have the potential to address the first implication of rapidly changing skills demand. In short, new technologies can provide an antidote for their challenges. To meet changing demands and maximise technology's full potential, cultivating learnability in the workforce is crucial. Since exponential technological advancements affect current as

						well as future workers, learning needs to be continuous and undertaken by all actors. Moreover, for constant learning, existing education systems alone do not suffice. The creation of a learning society is required.
26	2019	International Journal of Innovative Technology and Exploring Engineering	A Research on Effectiveness of Training and Development in its Solutions	Bharthvajan R, S Fabiyola Kavitha	To testing the effectiveness of employees after the training and development.	They opined that the training frequently needs evaluation, and the employee performance & feedback needs require regular monitoring. The training records need to be maintained & retained properly. Careful selection of Trainers and continuous feedback is important. Personalised care of trainees and interactive & active participation in training is highly imperative.
27	2018	Amity Journal of Entrepreneurship	Skill Development in Punjab : A Critique Study of Initiative, Challenges & Way Forward	Jasveen Kaur & Manu Dogra	Study Punjab Skill Development Mission's financial spending on promotion of skill development, and quality standards maintained at the skill centres in various districts of Punjab, comprehend challenges encountered in execution and ponder on possibilities for continual system improvement.	Backed by globalization, knowledge & competition disruptions, the developing & developed nations want a more and more highly skilled workforce for their economic growth. For meeting global quality standards, adapting to advanced technologies, fostering foreign trade, and ensuring economic development, the nation's skilled workforce is highly imperative. Considering the various challenges encountered in Skill Development Mission in Punjab, especially in attracting students and retention them in them, the Programs need to appropriate & effective implementation. A state-level strategy is required to propel productivity, ensure economic diversification and secure the standard of living of youth.
28	2018	IOSR Journal of Business and Management	A Study on Impact of Skill Development on Entry Level Job Candidates in India	Hansel Furtado	Determine the gap between an individual's performance level and job expectations at various stages of life and their employability chances at an entry-level job	Skill development is becoming crucial considering the transitioning era, technological advent, and organizational advancement. Besides the efforts of government, industry and other stakeholders, it is important to build up the competitiveness of candidates at entry-level jobs, which is missing and resulting in the loss

						of the youth's potential being built for the nation. Before taking up any initiatives on developing human potential, especially for candidates at entry-level jobs, it is important to reconfirm that it has a long-lasting, sustainable effect on the market as it impacts the future of the next generation to lead. Youth need to understand that they should first focus on building their skill sets before applying for any jobs as it would impress the interviewer and increase the chance of being selected.
29	2018	International Journal of Creative Research Thoughts	Skill India (Need, Challenges)	Sneha Vilas Kotawadekar	Appreciate the current skill capacity and the challenges experienced in skill development system.	India has a well-institutionalized vocational training system but, it has yet not prepared its youth with the industry linked skills. Drastic reforms in skill development have been recently introduced to speed the economic growth which have led to significant changes, in the national institutional framework and at institutional level.
30	2018	Journal of Management Research and Analysis	Skill Development: Enhancing Employability in India	Tamanna Joshi and Mukesh Pandey	To appreciate the importance of enhancing employability in India.	India has the potential to be the global hub of skilled workforce. There is a need for mapping manpower requirements in India and globally. It is essential to constantly update training Programs and syllabi to ensure that the youth is exposed to the latest technology & industry environment. The Government needs to promote apprenticeship and entrepreneurs by exploring future possibilities and preparing for them today itself.
31	2018	Asian Journal of Home Science	Obstacles and ways to facilitate skill development among rural women	Manjot Kaur, Sukhdeep Kaur Mann & Kanwaljit Kaur	Comprehend the challenges and possibilities for women's empowerment through skill development.	The country's socio-economic growth depends on its skilled workforce, and hence the concept of "Skill Development" has gained national importance. Women constitute half of the population, but their participation in the workforce & economy is way behind their men counterparts. The issue at the rural level can be directly attributable to their acquired skill sets, forcing women to settle for low-skill and low-paid jobs. Skill development can make the

						rural women self-reliant and self-confident, empower them in taking decisions in the family and outside and thus help in their inclusion in society & economy..
32	2018	International Journal of Advance Research and Development	The impact of skill development on women empowerment	Anjali Vyas	To understand the role of skill development on women empowerment and suggest a way forward.	Argued in favour of gender-responsive skill development strategies for empowerment and inclusive socio-economic development of the nation. All that women require is an opportunity to prove that they are no less than men and are hence equally entitled to dignity, fair treatment, rights and respect in society. Efforts in the right direction can liberate women from all limitations.
33	2018	International Journal of Research in Social Sciences	A study on rural women empowerment in India: through the eyes of entrepreneurship and skill development	MSR Krishna Prasada Rao	To deliberate on the concept, status and government initiatives on rural women empowerment & entrepreneurship and ponder various possible solutions for bettering it.	The hardships women face in rural areas face in terms of socio-economic challenges, cultural norms, inequality, mindset, domestic responsibilities, deprivations, and discrimination are way more severe than their counterparts from cities. The exploitation is inevitable in the face of poverty, restricted mobility, lack of Access and societal limitations. They have no other option but to settle for low-paid & low-skilled jobs. The only hope against all the odds is empowering them through education & skill development.
34	2018	International Journal of Advanced Research	An Overview of Corporate Social Responsibility (CSR) Initiatives in India	Kaur R.	Study the statutory requirement and initiatives taken by Indian companies for CSR	Opined that the challenge for companies is to determine a solid and innovative CSR strategy which should deliver high performance in ethical, environmental and social areas and meet all the stakeholder's objectives. Corporates should together endeavour to bring a positive change in the current social situation in India to have a practical & lasting solution for the social issues.
35	2018	Mayas Publication	CSR Initiatives in Education in India a Critical Review of Initiatives,	Madhu Bala	To understand the concept of Skill Development, challenges encountered in self-employment and	The education system in India needs restructuring even at elementary, secondary and higher education levels. Achieving this goal is possible with the corporates coming forward and shouldering the

			Issues and Challenges		provide befitting suggestions.	responsibilities towards society. In the real sense, the corporates are consumers & users of a trained, skilled workforce graduating from universities. The corporates need to extend support to the educational institutions to produce the required skilled & trained workforce by providing funds for research & development, organizing various workshops, training & development programs, support towards infrastructure, and providing facilities for qualitative education with non-profitereed modes.
36	2018	Hindu Business Line	Why companies prefer CSR in education	Anushree Parekh & Poorvaja Prakash	Deliberate on preference given by corporates to education as their CSR initiative.	Of late, companies have started displaying their strategic thinking by choosing general education and skill development as their CSR initiatives. They opined that Corporate Sector acts as a partner to Government in addressing the issues in the education ecosystem by utilising the mandatory statutory provision for CSR spending. They have concluded that companies should have strategic thinking and follow a balanced approach in creating a portfolio of CSR initiatives of high-risk & high-return social Programs with low-risk & low-return Programs.
37	2018	International Journal of Management Studies	CSR and its Impact on the Profitability of select Private, Public and Multi-National Companies in India: An Empirical Study	Pravin D. Sawant	Make an empirical study on CSR and understand its impact on the profitability of select companies.	If the company spends some percentage of their profit for the betterment of society directly or indirectly, then there is a probability that the society, in return would support its growth.
38	2018	Amity Journal of Training and Development	A Study on Training Need Analysis of Employees	Sharma R.	The aim was to find out which types of training are required for the employees working within an organization, including technical, non-technical or soft skills.	As per the finding, there was a significant need for training among employees in technical and non-technical areas.

39	2018	Open Access Journal of Science	Assessment of training effectiveness: review article	Hasan Tarik	To determine the training effectiveness for achieving the desired training goal.	A comprehensive framework for measuring training effectiveness is required because learning gains are unthinkable without proper evaluation. Every stage of the training cycle required problem diagnosis. While designing practical training the views of the stakeholders should be incorporated. Achieving the training goal requires evaluation of reaction, learning, behaviour and result. Updated tools & techniques should be applied to implement and evaluate the training.
40	2017	International Journal for Rapid Research in Engineering Technology & Applied Science	Skill Development Initiative in India: Need and Challenges	Ankul Pandey & Dr. D. K. Nema	Examine the skill capacity, need & impact of skill development in India, evaluate various skill development initiatives & strategies and challenges being experienced in the skill development system	Focus is required on up-skilling & developing the human resources and making them productive and secure inclusive economic growth of the country. This can be achieved by increasing the knowledge base, improving the skills and modernising the workforce's attitude. The academia needs to take the lead in the skill development Programs and make it its elementary aim & mission to ensure the socio-economic & industrial development of the country.
41	2017	5th Conference of the Regulating for Decent Work Network, at the International Labour Office Geneva, Switzerland	Skills Education and Workforce Preparation: Examining the Disconnects between Policy Intentions and Outcomes in India	R. Maitreyi, Jyotsna Jha, Shruti Padhmanabhan & Niveditha Menon	Analyse the National Skill Policy & National Qualification Framework, highlighting the shortcomings in bringing desired outcomes for vulnerable youth	The study brought out the paradox of skill development that it intends to bring inclusive & equitable development, but it is creating a global poop of cheap labour for industries. The greater emphasis on skilling in the education system is drifting from the real purpose of education, i.e. personal development. With the cafeteria approach of skills education, the onus on gaining the right skills has shifted to the individuals as he/she has to choose the training from the on-demand and user-fee-based training. It has confined individuals to the lower ends of the service economy rather than giving them greater control. The skill education system is moulded according to industry requirements of quantity & quality of manpower, but the industry requirements

						constantly change with the economic cycles.
42	2017	Journal of Engineering Research and Application	Skill Development, Employability & Entrepreneurship through Make in India	Jagdish Prasad & D.G.M. Purohit	To understand the effect of the Make in India initiative on employability, comprehend its status & challenges and analyse various measures for bridging the skill gaps through Skill Development	The success of 'Make in India, the youth needs to be empowered with formal education and technical & vocational training of global standards for meeting the Industrial and Market requirement. Despite the concentrated efforts of the government in shaping the skills of a vast workforce, there is still some lacuna in the system in creating a robust workforce with the right skills. Today the requirement is not only for white-collar and blue-collar but also for the grey-collar and rust-collar-skilled workers at the grass-root level. Government, Industry leaders and stakeholders need to collaborate as they cannot work in isolation. The vocational training involving both soft skills & technical skills should start early from High School so that students can be made industry-ready.
43	2017	International Research Journal of Management Sociology & Humanity	Skill Development in India: Challenges and Opportunities	Anand Prakash	To appreciate the current state of vocational education & training and review various models of the emerging economies	There is a scope for generating a skilled workforce with the "demographic dividend". The branding activities in PPP model can ensure a better supply of skilled workforce.
44	2017	International Journal of Advanced Education and Research	Skill development issues, challenges and strategies in Bihar the vocational education	Rajesh Kumar	Review the status & challenges of education, skill development & employment in Bihar.	A skilled workforce is of utmost importance for making Bihar nationally competitive and putting it on the growth trajectory. In transforming its demographic dividend into a 'Knowledge Economy,' it would be essential to establish a robust & proficient skill development system and concentrate on advancing relevant skills. Piecemeal interventions to tackle challenges would not suffice, but a holistic solution is what is needed.

45	2017	International Journal of Management	Economic prosperity through Skill India -A study of key success factors & challenges	Yathish Kumar & KR Ramya	To appreciate the skill development concept, acknowledge challenges in self-employment and ponder possible solutions.	India is experiencing a huge unemployment problem. The Government is taking due care to address the unemployment issue by promoting self-entrepreneurship and working towards the overall development of youth by providing them with appropriate training. In the study, most respondents were aware of the Skill India Campaign due to publicity by Government. Most respondents were skilled with skill development training, which has benefited them in their overall development. The survey highlighted that the respondents faced problems setting up their enterprise despite training. It needs serious introspection and review. Almost all the respondents were motivated through the Campaign and encouraged others to self-employment. The researchers concluded that the youth needs to shoulder the responsibility and focus on the creation of jobs & social security to make India a developed country.
46	2017	International Journal of Research in Humanities, Arts and Literature	Empowering women through skill development	Pitambara & Bishwa Bhaskar Choudhary	Understand how skill development play a pivotal role in empowering women so that they can participate in local economies.	The goal of skill development is not only to prepare individuals for jobs but also to better their work performance and enhance their quality of work. Certain challenges need to be addressed, the focus needs to be broadened to gender and not limited to women, and the inclusive policies eliminating all discriminatory practices are required for building a favourable skill development ecosystem for women. The employment pool needs to be broadened for encouraging women's participation in local economics. Women empowerment can bring in socio-economic development as when the women are educated they also help in the development of the entire family.

47	2017	OSR Journal of Business and Management	Corporate Social Responsibility : A Comparative study between MCL and NALCO	Abhijit Mohanty, Bidhu Bhusan Mishra	To make a comparative study of CSR initiative of MCL & NALCO	Figured out that the challenge for the companies is to determine a strong and innovative CSR strategy to deliver high performance in ethical, environmental and social areas and meet stakeholder expectations. Incorporating some new activities will help them to ensure social commitment and attend sustainability in long run.
48	2017	Journal of Modern Management & Entrepreneurship	Corporate Social Responsibility Practices in India: A Review of Literature	Ashok Kumar Gupta, Meenu Maheshwari & Pragya Gaur	Make a review of literature on the Corporate Social Responsibility Practices in India	In current scenario the role of organizations in economy is not only to generate revenue but is also expected to integrate various aspects like social, environmental, ethical etc with the day to day operations.
49	2017	International Journal for Research Trends and Innovation	A Study on Training Effectiveness	Gowsalya R S, Asma V.K.M	to review the model of training effectiveness for the adoption by the human resources development executives in their planning, designing and implementation training program	The training effectiveness programs in the organisation is positive in response but still more training effectiveness is needed in the organisation so that the employees are motivated time by time and they should know their strength & weakness so that they can work on it & improve their knowledge & skills for the betterment of their organization
50	2017	World Wide Journal of Multidisciplinary Research and Development	The Importance of Training and Development in Employee Performance and Evaluation	Joel Rodriguez, Kelley Walters	The goal was to have brief information regarding employee training & development during implementation. It ultimately enhances employee performance.	Employees are the most important asset as they take responsibility for customer satisfaction and the quality of products and services. Without proper training & development opportunities, accomplishing tasks to their full potential is unimaginable. Employees who perform well in their job-related duties keep their jobs longer with higher job satisfaction. Training & development is a vital tools used to not only maximise the performance of employees but make them more efficient, productive, satisfied and motivated.
51	2016	International Education and Research Journal	Skill Development Initiatives in India-Some Reflections	Prof. Sujata Srivastava	Analyse the Skill Development initiatives in India	The policies, initiatives & intervention of the government on skill development Programs would not bring the desired result, despite government's effort on skill development, without effective

						implementation & monitoring by stakeholders. Skilling the youth can well address the issues relating to poverty & unemployment.
52	2016	Indian Journal of Science and Technology	Skill Development in India: Challenges and Opportunity	Lavina Sharma & Asha Nagendra	Comprehend the current position of vocational education & training and evaluating various vocational training models of the emerging economies.	The study concluded that the Indian Government's 'Make in India' campaign and the accelerated economic growth have put skilled manpower in the spotlight.
53	2016	IRA- International Journal of Education & Multidisciplinary Studies	Skill Development Landscape	Smita Dayal	Comprehensively view the economy, skill-related statistics, institutional framework, skill development initiatives, challenges, and policy framework.	For the success of the Skill India Mission focus is required on inclusive measures, quality, use of ICT and introduction of industry-linked modular & short-term skill development programs.
54	2016	International Journal of Engineering and Technical Research	Emerging trends in Skill Development for empowering women	Tanu Jain, Dr. Reena Verma, Prof. (Dr.) R.P. Agarwal	Analyse the adequacy of efforts of government & other social organisations to empower women in India, ascertained women's accessibility to and technology especially in rural areas, challenges at the workplace and its probable solutions.	The skill development sector requires a paradigm shift in favour of innovations, improvements and high-quality training. The concept of training and skill development needs to move beyond the conventional goals, and encourage higher self-esteem and overall personality development for effective Skill development.
55	2016	International Journal of Innovative Research in Science, Engineering & Technology	Skill Development & Employability Potential through Higher Education, Research & Innovations	Seema Pandey	Comprehend policies on skills development and identify ways to fill the gaps between government and private programs.	The collaboration of private players can be instrumental in bridging the gaps in Government policies. Innovation should be the order of the day while designing skill development programs to achieve the dual target of environmental protection and livelihood. More trained trainers at different levels are required for imparting the required formal skills providing de proper attention to trainees. The majority of Government

						Schemes are indirectly benefitting partner private enterprises. Despite such a large landscape of skill development with 20 Ministries/Departments running 70 plus skill development Programs, gaps are still evident in terms of capacity & quality of training infrastructure, outcomes, workforce aspirations, certification and standards. Government intervention is imperative to address the issues in skills development.
56	2016	SSRN Electronic Journal	Women Skill Development and Make in India: Opportunities and Challenges	P. T. Dinesha. & C. B. Naveenchan dra	Deliberate on the significance of skill development in informal sectors, and discuss the difficulties faced by women in skilling and ponder on possible policy interventions.	The employment revolution and skill development revolution have to go hand in hand for unlocking the true potential of the women workforce in India. There should be a focus on women-specific policies for their effective participation in the employment market. The skill development process needs to be made more facilitating and flexible to encourage women's enrolment. The skill training needs to assimilate certain basic skills along with deeply impacting skills for improving employment prospects.
57	2016	International Journal in Management and Social Science	Emerging Issues and Options of Skill India	Dr. Nishi Kanta Mishra & Dhyana dipta Panda	Highlight the essence & schemes and deliberate associated issues and challenges of Skill development in India	Skill development is non-negotiable for the employment of educated youth and it will also be instrumental in the social development of the country. The apprenticeship Training Program has the potential to address the requirement of technical manpower. The strategy should be to focus on qualitative skill training through modular skill courses, effective assessment and credible certification for enhancing employability.
58	2016	Bharti Publications	Skill Development: A Pre-Requisite for Job Creation, Economic Growth and Poverty Reduction	Pragalbh Sharma, Ankur Paliwal & Vijay Kumar	Comprehend the issues pertaining to skill development and its role in driving the economic growth and plummeting poverty.	Skill development can eliminate exclusion & poverty and enhance the competitiveness & employability of the working class. Education & skill training can enable the working class & vulnerable youth to move out of the vicious cycle of illiteracy /unsuitable education, low productivity, and low-grade jobs with low wages. It can also

						break the barrier of gender & social inequality.
59	2016	PARIPEX - Indian Journal of Research	Skill Development Training Programs for Reducing Gender Inequality in India	Prof. G. Sandhya Rani	Appreciate the role of skills in the development of the country with special focus on gender inequalities in possessing skills	Skills & knowledge have become more relevant with globalisation and technological disruptions. In pursuit of gradually evolving into a 'knowledge economy' India, need to focus more on development of relevant skills. Skill development initiatives with appropriate training, testing and global certification, backed by a joint effort of government and private partnership, can establish the required skill landscape which is credible, reliable & trustworthy that can meet the skill needs of the industry. It is a great opportunity for Indian Youth but to avail of this opportunity, the role of government & private partners is very critical.
60	2016	SMS Journal of Entrepreneurship & Innovation	Women Empowerment through Skills Development & Vocational Education	Tauffiqu Ahamad, Ambalika Sinha & Rajesh Kumar Shastri	Deliberate on skill development through various national programs of Govt. of India like the National Skill Development Mission, Pradhan Mantri Kaushal Vikas Yojana etc.	Highlight the plight women have faced due to discrimination & inequalities through ages and to bring them back to the mainstream they should be empowered and encouraged to participate in the economy. Govt. of India has been giving special attention to the skilling of women as per world standards to bridge the gap between the Female Labour Workforce and their employment.
61	2016	International Journal of Education & Applied Sciences Research	Study of women empowerment through skill development & vocational education in India	Shailendra Kumar Gupta	Determine the impact of Skill Development & Vocational Education Training on the empowerment of women and highlighted the effort of government and challenges on the way to skill development.	In the era of globalisation & liberalization, the horizon of policy makers & industry has expanded to extend vocational training, skill development and entrepreneurship opportunities to women. Steps are being taken to promote women's entrepreneurship. Women are willing to take up business as entrepreneurs and contribute to the growth of the nation. Appropriate training policies need to be formulated for empowering women so as help them earn a sustainable livelihood for themselves.

62	2016	International Journal of Home Science	Impact of skill development training among rural women for entrepreneurship development	Babel S. & Surbhi Sharma	To formulate a skill & entrepreneurship development intervention package to train rural women and assess its effectiveness.	Respondents had a positive perspective about the training as it allows them to start up their establishment using the value-added jute products for producing Decorative handicraft products. The innovative idea of the usage of jute for producing commercially demanded handicraft products was well appreciated by all respondents as otherwise it was not utilised properly. They recommended that Cooperatives, DRDA, DIC, Government and NGOs should conduct specialised skills-oriented trainings exclusively targeted at the empowerment of women.
63	2016	International Journal of Research - GRANTHA ALAYAH	An Analysis of Corporate Social Responsibility in India	Shyam R.	Make an exploratory research on CSR practices in India	CSR is about ensuring that the company can grow on a sustainable basis, while ensuring fairness to all concerned. CSR has successfully interwoven business with social inclusion & environment sustainability. Corporates have proved their ability, in terms of man, money, machine and mechanism, to make a significant difference in the society and improve the overall quality of life. Effective partnerships between corporate, NGOs and the government can accelerate India's social development.
64	2015	Institutions and Economies	Skills Development for SMEs: Mapping of Key Initiatives in Indigo	Das A.K.	Critically examine national skills development initiatives in India and their effectiveness in meeting the future demand of SME sectors	Most missions or national Programs of the government of India fail in reaching the targeted beneficiaries owing to absence/deficit in awareness and monitoring mechanisms. With augmented awareness amongst aimed audience/beneficiaries and effective ICT-enabled monitoring mechanisms. The National Rural Livelihoods Mission (NRLM) & the National Skill Development Mission (NSDM) have successfully attracted ample enrolment from targeted communities especially economically weaker sections & marginal communities and benefited them.

65	2015	International Journal of Human Resource Management and Research	Bridging skill gaps through vocational education	Gill M.	Appreciate the unemployment situation vis-à-vis academic outcomes of our education institutes and identify the gaps in supply & demand of skills and Explore the significance of vocational education to improve the employability skills of the youth.	Emphasised on the criticality of reform in current vocational education system in bridging the skills gap in the Indian youth.
66	2015	Asian Journal of Management Research	Skill development initiatives and strategies	Kanchan S. & Varshney S.	To understand the present status, challenges, initiatives and strategies of skill development in India.	Majority of the workforce in India lacks identifiable & marketable skills. It is highly critical to bridge the skill gap through skill development initiatives so as to transform India not only to a global hub for skilled manpower, but also create a surplus skilled manpower of around 47 million. Despite all efforts by government in shaping the skill landscape there are many lacunae in the system. Many skill development initiatives are being launched both by government and corporates but unfortunately it is not benefiting the casual workers who form a major chunk of the work-force. Government, industry partners and other stakeholders need to join hands and work together considering the high stake involved.
67	2015	GSTF Journal on Business Review	Skill Development - A way to leverage demographic dividend in India	Misra S. K.	To appreciate the skill development initiatives and way forward in domestically producing world-class skilled manpower through effective skill development schemes	India can capitalise its demographic dividend and supply skilled workforce for the domestic and global market. The government with its National Policy on Skill Development aims ambitiously to skill 500 million by 2022 despite all challenges not limiting to training quality, curriculum standards, global accredited courses etc. Skill Development efforts of the government is laudable but still, a lot is yet to be done in terms of policy framework and implementation

						of the initiatives/schemes for which adoption of a robust approach is imperative.
68	2015	Abhinav National Monthly Refereed Journal of Research in Arts & Education	Skill development in India: need, challenges and ways forward	Saini V.	Study the present skill capacity and challenges being faced by and suggest solutions or ways forward.	India has remarkably evolved as one of the biggest & fastest-growing economies. But, to keep up with this growth trajectory and capitalise on the demographic dividend, it is imperative to equip & empower its workforce with the right skills through a continuous & efficient skill development system. Unfortunately, the educational institutions face a very high rate of drop-out. On a contrary, the Workforce participation rate rises rapidly beyond 14 years of age resulting in a huge semi-literate workforce incapable of acquiring any higher skills. and remaining. To make it worse, 80% of the Indian workforce lacks marketable skills, only about 2% have formal vocational training and 8% have non-formal vocational training.
69	2015	Journal of Rural and Industrial Development	Towards Enhancing Employability of Young Indians	Nayak P.	Analyse the requirements, approaches, prospects, and difficulties in enhancing the employability of young Indians (especially in the age bracket of 14-35 years).	There is huge potential for boosting employability through education & skill development. Efforts of Govt. of India in this direction are laudable but nascent. Concrete results are yet to be realised. It requires awareness at the ground level, a changed mind-set, a focus on contemporary & future skillsets and a new identity of the skill eco-system with collaboration from all stakeholders including academia, industry, government, NGOs and financial institutions.
70	2014	Indian Institute of Management Kozhikode	A Qualitative Study of Training Effectiveness	Dhal M.	To explore the measures of effectiveness of training and investigate the difference between the measures (if any) between the sectors	Program design, faculty/trainer, pedagogy, course content design, scheduling, non-academic infrastructural support, learning outcome, classroom environment, Program objective are vital and relevant factors which influence the effectiveness of any training Program.

PUBLICATIONS

Skill Development in India – A Literature Review

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Abstract:

The era is marked with a paradoxical situation wherein the students blooming out of academia finds themselves ultimately unfit for industry. The workforce is under constant stress in the dynamic, disruptive and VUCA world of work. The need of the hour is skill development to bridge the skill gap and be future ready. The researchers have made a literature review of skill development in India and identified that skill gaps are a pressing and critical issue. The need to resolve the skill gaps is evident across industries and is more relevant than ever before. The demographic advantage of India can be capitalised only when the workforce is trained and prepared with contemporary and future skill-sets. It is extremely important to focus on advancement of skills that are relevant to the emerging economic development so that India can transform into a Knowledge Economy and can also meet the global skill demands.

Key words:

Skill Development, training, skill-gap, disruption, demographic advantage, knowledge economy

Introduction:

Skill is generally construed as one's ability, competence, proficiency and talent to execute a given job/task successfully. One may either possess it naturally or develops gradually over time. It may be soft skills that signify one's personal traits & attributes like people skill, communicating skill, leadership skills etc or hard skills that is honed with education/ training and experience. An employer wants both hard skills and soft skills in his workforce so that the required work can be done effectively and efficiently in his organisation. Hence, the employer tests these skills during the recruitment process to find out the right candidates and later tries to enhance their skills through training & development. In recent years it is being witnessed that the students passing out of their academia are ill-equipped with required skills to match the expectation of the industry. The need of the hour is skill development to bridge the skill gap and prepare the prospective workforce to be industry fit.

The world of work is dynamic and ever evolving impacted by technological advancements and disruptions. To match the pace of change, the workforce needs to be constantly updated, upskilled and upgraded failing which they would be soon be obscure, obsolete and ultimately omitted out from their work place. This endeavour in eradicating elimination and extinction emanates the emphasis on skill development so as to prepare workforce to face the future.

Adapting skills and attitudes has always been and will always be inevitable & critical for any success. One need to know his/her natural strengths over that the initial impetus is provided by academic qualification. Subsequently, he/she need to understand the impact of technology and accordingly upgrade himself/herself. Simultaneously, he/she also need to invest on behavioural readiness & development so as to achieve behavioural excellence alongside honing technical expertise.

History of Skill Development in India:

In India, the concept of Skill Development was introduced post-independence in 1956 with the first Industrial Policy which had an initial focus on formal Technical and Vocational Training Education and Training (TVET) sector with dedicated institutions for technical and vocational education. In 1961, the Apprenticeship Act was framed for providing practical training to technically qualified persons in various trades and promoting new skilled manpower. The Indian Education Commission (Kothari Commission) was appointed in 1964 to overhaul the Indian Education Sector by providing policies & guidelines for the development of education in India. The National Labour Policy was framed in 1966. In 1968, the first National Policy on Education was framed. The first Industrial Training Institute (ITI) was set up in 1969 by the Ministry of Labour & Employment (MoLE), Government of India. New National Policy of Education was framed in 1986. The All-India Council of Technical Education (AICTE) was formed in 1987, as the official regulator and funder for polytechnics and technical colleges. The National Policy of Education was modified in 1992. 1990s witnessed the opening up of the economy with substantial growth in IT industry and service sector and relative slowdown in manufacturing and engineering sector. It was felt that a considerable amount of employment for skilled and semi-skilled category workers was to be explored outside the traditional trades. With this objective, the National Development Corporation (NSDC) was established in 2008. This paradigm shift resulted in framing of the first National Policy on Skill Development in 2009 and effort was made to enhance the private partnership to expand the capacity of skills training sector. The National Skills Development Agency (NSDA) was established in 2013 and a vision was casted for a National Qualification Framework (NQF). In 2014, the Apprenticeship Act was amended to include non-engineering as optional trades and Ministry of Skill Development and Entrepreneurship (MSDE) was established. In 2015, the Skill India Mission was launched, the National Policy on Skill Development and Entrepreneurship was framed and the Training and Apprenticeship Division was moved from MoLE to MSDE.

Skill Development - The need of the hour of India

Skill Development is the need of the hour of India, as it has a large un-employed / under employed population and even the Indian students are considered being unemployable by most companies especially MNCs and many are migrating abroad in search of better opportunities. If, their potential is not harnessed they may fall prey to drug addiction and other anti-social activities, which the nation cannot afford.

The skilled workforce is crucial for the success of recently launched national missions viz Make in India, Digital India, and Smart Cities etc. To convert this vision into reality, India needs to create a skilled and productive workforce matching international standards of quality and productivity through integration of skills and training along with education.

Giving due importance to Skill Development, Ministry for Skill Development and Entrepreneurship have been established in 2014 to coordinate with other Ministries and Departments to achieve the goals of Skill India Mission. Government aims to skill 40 crore population by 2022. Various Sector Skill Councils have been formed to identify the required skills in various sectors, design Skill Development Training Programmes for respective Sectors and monitor such skill development trainings conducted through various agencies and corporates in that sector so that both the industry in that sector as well as population looking for jobs in that sector are both mutually benefited.

Objective of the Study:

The objective of the study is to understand through the review of literature the Skill development movement in India and to understand the research gap for conducting further study on the skill development trainings being imparted through various skill development Institutes / agencies in India.

Literature review:

The researchers have made an extensive review of literature to understand the importance of skill development in India.

Dr. S. C. Patil & Prof. Amaresh B Charantimath (2021) conducted a study on "Employability through Skill Development Programmes - an overview of significance of Employability skills". The objective of the study was to comprehend the need of employability skills and to study the skill gap - desired vs possessed. The study concluded that the skill gaps can be bridged with training, education and short-term courses. In spite of the efforts there is still a great scope in transformation of abandoned knowledge into skills. Various ambitious missions of Government of India i.e. Make in India, Atmanirbhar Bharat, 5 trillion economy dreams etc can come true with collective efforts.

Vidhyadhar T. Banajawad & Dr. Mukta S. Adi(2020) conducted a study on "A study on skill development programmes for rural youth in India" with the objective to ascertain the current status, challenges and the Government initiatives for the skill development in India. The study concluded that skill development is currently gathering momentum and it is now evident that education and skills are fundamental in bettering employment opportunities, shrinking poverty, boosting productivity, and promoting environmentally sustainable rural development. The immediate need is assimilating skills, policies and strategies on rural development. Incorporation of skill-based training and industry link placement facility in education is indispensable. Skill development is need of the hour to adapt and match the current requirements for youth in rural India for rural development in real sense. Thus, education / skill development is an immediate and important requirement for developing countries with large youth population such as India.

Anita Swain & Sunita Swain (2020) conducted a study on "Skill Development in India: Challenges & Opportunities". The study intended to analyse the data sourced from National Skill Development Corporation. It concluded that India, the 2nd populous country in the world with around 60% youth population, has a 'demographic dividend' and need capitalise on it for reaping the benefit which can add value to the economy of the country and also support 'Make in India' campaign by providing the skilled workforce in the country. The 'Skill India' mission requires more focus on entrepreneurship skills for enhancing job generation in the country. Various schemes like PMKVY, DDU-GKY etc. have been launched by Government of India for making Indian youth skilled and employable. Indian youth should be aware of such schemes, get required training and make themselves employable.

Dr. Chandra Sekhar Dash, Shilpa Dash (2020) conducted a study on "Skill Development Mission and the Skill Landscape of India: - An Empirical Study". The study aimed to assess the skill landscape of India in the wake of emerging technological disruptions, global transformation and international mobility of workforce. The findings of the study indicate that despite the laudable and commendable features of the 'Skill India Mission', the challenges of gender inequality, sectorial imbalance in skilling, training and placements still persists.

Rajni Singh (2019), conducted a study on "Research - based learning on skill development of engineering graduates: An empirical study". The study made an effort to explore the role of thesis/dissertation in engineering education for skill development and based on the empirical study of Indian engineering graduates, the study concluded that Research Based Learning contributes to the development of problem solving, domain knowledge, language and communication, communication & IT, general learning, academic knowledge, attitude and ethics skills. The study also brought out that Research Based Learning is best fit and improves problem solving more than other skills as Indian engineers lack those skills. The study proposes the necessity of incorporation of Research Based Learning using labs such as learning factory for re-engineering the engineering education to meet the increasing revolutions in industrial era and promote the required skills of engineering graduate.

Dilip Chenoy (2019) conducted a study on "Skill development for accelerating the manufacturing sector: the role of 'new-age' skills for 'Make in India'". The aim of the study was to focus on developing right skills to address the growing skill gap in various manufacturing sectors in the context of changing industrial landscape defined by new-age technologies. The study concluded that that India's demographic advantages can be realized only if the existing workforce is re-skilled and upskilled through lifelong learning initiatives, and new recruits are prepared with twenty-first-century skill sets. It is a mammoth task for the government alone to develop a skill-based workforce and drive the 'Make in India' initiative. Therefore, it is imperative that government and industry partner and take collective actions to develop the skilled workforce.

Kavery Ganguly, Ashok Gulati & Joachim Von Braun(2019) conducted a research on "Skill Development in Indian Agriculture and Food Processing Sectors: A Scoping Exercise". The objective of the research was to study the policies and institutions that are operational in this context of skill formation in India, with a focus on the agriculture and food sector. The study concluded that skill development has gained significant relevance over time in India owing to a large pool of young people; bulging workforce and the general scope of improving sectorial productivity and growth manifold. The commonly observed challenges related to skill development programs need to be addressed with an alternative approach based on better partnerships, institutions, and program designs to achieve the desired outcomes.

Krishnamoorthy A. Srimathi H. (2019) conducted a study on "Skill Development - The Future of India". The study analysed the practices of skill-based vocational and higher education initiatives and concluded that the global requirements of work force have to be carefully studied and analysed and adequate steps have to be taken to impart the vocational and related skills mandated by the industries. This shall ensure a strong hold for the Indians in the global work force and sustain the development and growth of the country. The factors that improve skill development will be a mixed strategy of all the best practices on need-based analysis and requires introspections and revisions periodically. The cohesive contribution of all stake holders will ensure that our vocational and higher education system possess the perfect blend of necessary skills required to achieve the targeted goals.

Dr. Rajni Arora & Manoj Chhadwani (2019) conducted a study on "Analysing the impact of skill India as a tool for reshaping Indian economy". The objective of the study was to analyse the need of skill India campaign in reshaping Indian economy, the programmes under skill India campaign in reshaping Indian economy and the impact of skill India campaign in reshaping Indian economy. The study concluded that to further increase the momentum and ensure proper implementation of the skill India campaign the government set a target of skilling 400 million persons by 2022, but its pace is in slow rate than the set target. At this pace, the 2022 target

appears to be very difficult. And training to job transition rate is very low than the expectation. In its first phase, the government trained some 1.97 million people against a target of 2.4 million. And the skilling to placement ratio is low. Skill India is aspiring programme of Government of India. At present, India faces a severe shortage of trained workers. Only 2.3% of India's work force has formal skill training compared to 68% in the UK, 75% in Germany, 52% in USA, 80% in Japan and 96% in South Korea. Hence there is an urgent need to impart skills in more efficient way. For contribution in growth in Indian economy to compete with other developed countries of world it is necessary to note that in the whole process of skill India campaign, training to job transmission rate, proper skill acquisition & implementation rate is undertaken in an effective manner.

Mr. Hansel Furtado (2018) conducted a study on "A study on impact of skill development at entry level job candidates in India". The objective of the study was to understand the gap between the job applicant's performance level & job expectation at multiple stage of one's life and to understand employability of candidates at entry level of job. The study concluded that the most essential aspect for every citizen of the nation is with booming technologies, organizations up-scaling & a transitioning era as of such today. The conversion rate in with long-lasting sustainable effect on the market in a structured analytical way and it is important to consider before providing any initiative relating to developing human potential especially for candidates at entry level jobs because it is directly dealing with building the future of the next generation to lead.

Jasmeen Kaur & Manu Dogra (2018) conducted a study on "Skill Development in Punjab: A Critique Study of Initiative, Challenges and Way Forward". The objective of the study was to assess the financial spending of Punjab skill development mission for promoting skill development, quality standards maintained at the skill centres in Amritsar, Jalandhar and Ludhiana districts of Punjab and understand the challenges faced by the centre heads in the smooth functioning of skill centres, thereby, eliciting suggestions from them for an improvement in the system. The study concluded that globalization, knowledge and competition have intensified the need for highly skilled workforce in both the developing and developed nations as it enables them to accelerate the growth rate of their economy towards higher trajectory. Today, all economies need skilled workforce so as to meet global standards of quality, to increase their foreign trade, to bring advanced technologies to their domestic industries and to boost their industrial and economic development. Considering the problems faced in acquisition and retention of students, by the skill development mission in Punjab, similar initiatives implemented in a suitable manner can prove to be quite useful. A state-level strategy based on quality training and effective measures of improvement will certainly lead to an increase in productivity and diversification of the economy, thereby improving the standard of living.

Ms. Sneha Vilas Kotawadekar (2018) made a study on "SKILL INDIA (NEED, CHALLENGES)". The objective of the study as to study the present skill capacity and challenges faced by skill development system in India and suggest possible solutions or ways forward. The study concluded that while India has a well-institutionalized system of vocational training, it has not sufficiently prepared its youth with the skills that today's industries require. Thus, to speed its economic growth the country has recently embarked on drastic policy reforms to accelerate skills development. These reforms have led to important changes, both in the national institutional framework and at the institutional level.

Pao-Nan Chou (2018) made a study on "Skill Development and Knowledge Acquisition Cultivated by Maker Education: Evidence from Arduino-based Educational Robotics" Observations on the evidence showed that maker education training significantly improved students content knowledge and might cultivate students problem-solving skill development. Providing a new instructional

strategy for implementing a maker education program and identified that students in the maker group required considerable learning support and continual encouragement from the instructor.

Tamanna Joshi and Mukesh Pandey (2018) conducted a study on "Skill Development: Enhancing Employability In India" The objective of the study was to observe and understand the importance of enhancing employability in India. The study concluded that India can become the world's largest provider of skilled workforce for the world. In order to prepare for this, there is a need for mapping of manpower requirements, not just in India, but globally as well. It is important to call for constant updating of training programmes and syllabi to ensure that the youth is exposed to latest technology and industry environment. The Government would work to promote both apprenticeship and entrepreneurs. It is important to predict the possibilities of the future, and prepare for them today itself.

Hansel Furtado (2018), conducted a study entitled "A Study on Impact of Skill Development at Entry Level Job Candidates in India". The objective of the study was to understand the gap between the job applicant's performance level & job expectation at multiple stages of one's Life and understand employability of candidates at entry level job. The study concluded that irrespective of the various initiatives taken by the government & other organizations as well, the conversion rate is with long-lasting sustainable effect on the market in a structured analytical way, it is important to consider before providing any initiative relating to developing human potential especially for candidates at entry level jobs because it is directly dealing with building the future of the next generation to lead. Students and candidates, prior to applying for jobs must work on building their set skills as this would not only ensure in impressing the interviewer but also result in having been selected, thus attaining your dream job.

Dr. Yathish Kumar & Ramya K R (2017), conducted a study entitled "A research paper on - Economic prosperity through Skill India: A study of key success factors and challenges". The objectives of the study were to know the awareness of skill development concept, the problems faced in self-employment and provide some suggestions based on the observations and findings. The study brought out how Government is caring to abolish unemployment problem. Majority of the respondents were aware of the Skill India Campaign due to various publicity schemes of Government which is highly commendable. Out of the respondents selected for survey majority have undergone the skill development training under different areas and have benefited them in their overall development. This shows the popularity of the schemes and good response from the youth. The survey reveals that even after the training the respondents had faced some major problems while setting up their own business, which need to be tackled. Almost all the respondents were motivated through Skill India Campaign and have encouraged others for self-employment.

Dr. Jagdish Prasad & Dr. D.G.M. Purohit (2017), conducted a study entitled "Skill Development, Employability and Entrepreneurship through Make in India: A Study". The objectives of the study were to understand the effect of Make in India initiative on employability, the present status of skill development in India and to analyse if the Skill Development measures will help to bridge the gap of existing skills and required skills of workforce and Labour force in India and to understand the Challenges in Skill Development Initiatives in India. The study concluded that to make the 'Make in India' project successful, youth of the Nation should be empowered with Formal Education, Technical and Vocational training to meet the Industrial and Market requirement as per global standard. The vocational training should start from High School. Students should be made industry ready by making the curriculum for professional courses such as Engineering and MBA in a way that provides complete on the job training. The standard and quality of training need to be upgraded. Soft skills training along with technical skills will bring desired results. It is

important that the intended beneficiaries of the skill development program join training programs with an inspiration to learn and make them self-reliant to live a better life.

Dr. Anand Prakash (2017) made a study on "Skill Development in India: Challenges and Opportunities". The objective of the study was to understand the current state of vocational education and training and review the vocational training models of the emerging economies. The study concluded that there is a huge scope of generating skilled workforce in the country and utilize the "demographic dividend". The branding activities and active involvement of Public Private Partnership ensure a better supply of skilled workforce.

Seema Pandey (2016) conducted a study on "Improvising skill development & employability potential through higher education, research & innovations in India". The objective of the study was to collect lessons learned from past policy interventions, how higher education institutes can contribute in successful skill development of the country which is the flagship programme of the government and observed that in India, both the government sector and the private sector have realized the critical role education plays in building skilled manpower and in turn boosting economic growth.

Lavina Sharma & Asha Nagendra (2016) made a study on "Skill Development in India: Challenges and Opportunities" The objective of this article to understand the current state of vocational education and training and review the vocational training models of the emerging economies. The study concluded that the Indian government's 'Make in India' campaign and the accelerated growth in the economy has highlighted the demand for skilled manpower in the country and understood the current state of vocational education and training and reviewed the vocational training models of the emerging economies.

Mrs. Smita Dayal (2016) conducted a study on "Skill Development Landscape in India". The objective of the study was to understand the existing skill development landscape in India by having a bird's eye view of the importance of skill development for the economy, skill related statistics, institutional frame work in skill development, skill development initiatives running in the country currently, major challenges, policy framework and the road head for meeting the government's aim to train 500 million people by 2022 by empowering all individuals with improved skills, knowledge and nationally and internationally recognised qualifications to gain access to decent employment and ensure India's competitiveness in the global market. The study concluded that in order to make the skill development mission a success it is important for the government to focus on inclusive measures, quality and delivery, use of information and communication technology to meet salacity and speed of delivery, introduction of modular and short term programs to meet industry specific needs etc.

Prof. G. Sandhya Rani (2016), conducted a study entitled "Skill Development Training Programmes for Reducing Gender Inequality in India". The main objectives of the study were to highlight the importance of skills for the development of country, focus on gender inequalities in possessing skills in rural and urban India among women and study the programmes providing skill Training for both women and men. The study brought out that skills and knowledge as driving forces of economic growth & social development of any country have become even more important given the increasing pace of globalisation and technological changes provide both challenges that is taking place in the world. As India moves progressively towards becoming a 'knowledge economy' it becomes increasingly important to focus on advancement of skills that are relevant to the emerging economic development.

Seema Pandey (2016), conducted a study entitled "Improvising Skill Development & Employability Potential through Higher Education, Research & Innovations in India". The objectives of the study were to look in to the current policies supporting skills development programme, identify the gaps between government and private programs that need to be filled. The aim was to collect lessons learned from past policy interventions, how higher education institutes can contribute in successful skill development of the country which is the flagship programme of the government. The findings of the study indicated that the Private sector plays a major role in overcoming the gaps in Government policies. However, their motive is to expand and scale up their very own enterprises. Thus, their process of skill development may vary. There is a lack of innovation in Skill development programmes. Almost all courses and curriculums are catering to industrial needs. It is the time when at one side employment opportunities are being created in industries, on the other hand Climate and environment is severely getting affected by fast industrialization, besides other factors. Therefore, skill development programs must be framed innovatively such that there is environment protection, optimal utilization of bio-waste and earning of livelihood can happen, all at same time.

Vandana Saini (2015), conducted a study entitled "Skill development in India: need, challenges and ways forward". The main objectives of the study were to study the present skill capacity of India, study the challenges faced by skill development system in India and suggest possible solutions or ways forward. The study concluded that "India's transition to one of the largest and fastest growing global economies during the last decade has been a remarkable phenomenon. In order to sustain its growth trajectory, an efficient and continuous system of skill development for its workforce is critically imperative for India. In order to capitalize the demographic dividend, India will need to empower its workers with the right type of skills. There is a need for increasing capacity and capability of skill development programs.

Dr. Sushendra Kumar Misra (2015), conducted a study entitled "Skill Development: A way to leverage the demographic dividend in India". The objectives of the study were to understand the present skill development policy initiatives in India and find out the ways and means to produce world-class skilled manpower domestically through effective use of skill development schemes of Government of India. The study concluded that the adoption of a much more robust approach is essential for putting in place a quality skill education and training framework in the country. The existing skill development policy should be modified in accordance with the need of the industry and global market. By establishment of Skill Development University in every state will fulfil the need of academic curriculum design, assessment and certification as per the global standard. Private participation will be more appropriate in infrastructure development and training to the participants. Target to train 500 million people by 2022 can be achieved through effective use of schemes by proposed restructuring of Skill Development Mission.

Anup Kumar Das (2015), conducted a study entitled "Skills Development for SMEs: Mapping of Key Initiatives in India". The main objective of the study was to critically examine national skills development initiatives in India as the country embarks on building skilled manpower to meet the demand of SME sectors in the coming decade. The study concluded that many of the government missions or national programmes fail to reach out to the targeted beneficiaries due to lack of awareness and monitoring mechanisms. However, the National Rural Livelihoods Mission (NRLM) and to some extent the National Skill Development Mission (NSDM), have increased awareness among their targeted beneficiaries. They have also established ICT-enabled monitoring mechanisms that help in quick identification of gaps in implementation. Data presented in this paper also indicate that these missions have attained good enrolment from targeted communities. In some SD centres, economically weaker sections, but not part of the marginal communities, also

benefitted. Economic prosperity is linked to equitable access to vocational and professional skills enrichment training in all industrial sectors including informal sectors.

Sonali Kanchan & Sakshi Varshney (2015), conducted a study on "Skill development initiatives and strategies". The main objectives of the study were to understand the present status of skill development in India, the challenges in skill development in India, Skill development initiatives and strategies in India and its impact on India. The study concluded that presently 80% of the workforce in India (rural and urban) doesn't possess any identifiable and marketable skills. Therefore, bridging this gap through various skill development initiatives could make India the global hub for skilled manpower, and also result in a surplus of skilled manpower. Despite various efforts and investments in shaping the skills of a huge labour force there are grave drawbacks in the system. Even after the government investing a lot in training costs and infrastructure, creation of robust workforce for the industry is still a fantasy. Government, industry leaders are constantly from time to time launching new skill development initiatives but somehow it is not reaching the casual workers who dominate the Indian work-force. Stakeholders (Industry leaders, Government etc) have realized that none of them can work in isolation. They will need to collaborate as the stake involved is huge.

Mukti Gill (2015) conducted a study on "Bridging the skills gap through vocational education". The paper analyses the current scenario of unemployment in the country with respect to the academic outcome of our education institutes. The study concluded that the skills supply gaps with respect to the demands of the industry. It further explores the significance of vocational education to improve the employability skills of the youth. The paper concludes with emphasis on the need to reform the current vocational education system to bridge the skills gap in the Indian youth and suggests certain reforms in vocational education to plug this gap.

Research Gap:

Many researchers have attempted to understand the skill development movement in India, ascertain the genesis, identified the need, put light on the various challenges being faced and highlighted the benefits & scope of skill development. More studies had been done on understanding the overall concept of skill development and employability. The literature leaves the scope of having an exploratory study on various sectors especially Hydrocarbon Sector.

Future Scope of Study

There is scope for research in having detail analysis of impact & effectiveness of various skill development trainings conducted through Skill Development Institutes of Hydrocarbon Sector can be done, the demand and supply of the skills in Hydrocarbon Sector can be studied to fill the gap so that it can be beneficial to both industry as well as society/ trainees / workforce seeking training can be mutually benefited.

Conclusion:

The present era has witnessed rapid technological advancement, the covid19 pandemic has also intensified the disruption in the world of work. At the same time the skill gap between the industry expectation and the availability of skill has also widened which calls for skill development of the present and prospective workforce. To match the pace of change, many new and different skills are required to remain competent and future ready. Skill gaps are a pressing and critical issue. The need to resolve the skill gaps is evident across industries and is more relevant than ever before.

Skill building is the best way to close those gaps compared to hiring, contracting, or redeploying employees. In this post pandemic scenario industries require to scale up their efforts to reskill or upskill employees. The most important skills to develop is social and emotional in nature: for example, empathy, leadership, and adaptability. For success with skill transformations, programmatic efforts are needed to support skill building so that the workforce can adapt to change in their current role or upgrade to newer ones.

The strength of India is its youth population. This demographic advantages can be capitalised only when the existing workforce is re-skilled and upskilled through lifelong learning initiatives, and new entrants in the workforce are prepared with twenty-first-century skill-sets. As India marches towards becoming a 'knowledge economy' it is extremely important to focus on advancement of skills that are relevant to the emerging economic development. There is also a need for increasing capacity and capability of skill development programs. The skill development programs must also be framed innovatively and needs to evolve to match the need of the industry and global market.

The success of skill development can be ensured if industries follow skill transformation practices like skill assessment, future skill need identification, designing initiatives to bridge skill gaps, and launching learning based organizational structure.

Skill transformations can bring positive impact on company in terms of ability to realize company strategy, employees' performance & satisfaction, and goodwill as an employer. Moreover, Skilling the workforce can also results in increased productivity and improved employee morale.

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Skill Development Training Fueling Employability in India

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Abstract:

Globalization and technological disruption put challenges as well as offer opportunities for economic expansion and job creation. The Nation can transform into a productive, innovative and competitive economy with skilled human potential. Skill Development can expand one's horizon and chances of his employability by nurturing talents and honing skills and knowledge. It is instrument for improving effectiveness and enables a person to perform with greater efficiency. The researchers have tried to understand how Skill development trainings is impacting the employability in the country. The researchers concluded that focus on education alone, ignoring the skills and career counselling, or on jobs ignoring the skill education, would not suffice to yield desired results. Endeavour to develop technical skills and transferable skills is very much required. The skills training should be built on an indispensable level of basic education but cannot compensate it.

Key words: Skill Development, Training, Employability, Demographic Dividend, Labour Market, Entrepreneurship

Introduction:

Employment structure of an economy is the normal instrument that can either increase or a decrease the prevailing inequality. The redistribution through employment is sustainable. It is essential to understand employment situation of the country for ascertaining the directions for future improvisation.

As per a report of the Centre for Monitoring Indian Economy (CMIE), India's unemployment stands at around 53 million in 2021 of which women proportion was considerably high. The current unemployment rate of India is 6.7 % (Urban – 8.0 % and Rural 6.0 %). Out of this around 35 million (including 8 million women) are un-employed actively seeking work and 17 million (including 9 million women) are passively unemployed who are just willing but not actively seeking any work. Majority of the employed population are poor and engaged in subsistence employment. Around 8 % are engaged in organized sector and more than 90 % in informal sector.

The World Bank had reported that the global employment rate was 58% in 2019 and 55% in 2020. But, India's employment rate is 38%. India's unemployment problem is due to low employment rate and the low participation of young female in labour force. India can be back on track of prosperity by ensuring employment for majority of the population (i.e. 1.87.5 billion people around 60%).

The work force of India has a very poor picture in terms of education and skill. The skill development expands one's horizons and chances of his employability by nurturing talents and honing skills and knowledge. Skill training focuses on providing the required training for supporting & leading people in their desired sector. Various methods of training like case studies, practical experiences, brainstorming sessions, group discussions, games etc. are used for developing the hard and soft skills. Possessing employability skills, personality traits, personality development skills, management skills, ability to think positively, conflict resolution and critical thinking abilities are technical skills, ability to communicate, organize time are some skills that organisations tend to focus on to enhance the resource quality of their company. Through Skill training, specific training is imparted to the workforce to equip him for a certain job requirement. It is intended for training newly hired personnel as well as for re-training and re-educating the existing workforce with new procedure or technology for preparing them for the future requirement.

Skill development helps in improving the effectiveness and empowering people for performing more efficiently. The Nation transforms into a productive, innovative and competitive economy with skilled human potential. Globalization and technological disruption put challenges as well as offer opportunities for economic expansion and job creation.

Objective of the Study:

The objective of the study is to find out how the Skill development trainings in India is impacting the employability and to ascertain the research gap for conducting further study on the effectiveness of the skill development trainings.

Literature review:

The researchers have made an extensive review of literature for appreciating the significance of skill development trainings in India and realize its correlation with employability.

Dr. S. C. Patil & Prof. Amaresh B. Charantimath (2021) conducted a study on “Employability through Skill Development Programmes - an overview of significance of Employability skills” with the objective to understand the importance of employability skills and ascertain the gap between Expected Skills and Skills inculcated. The study concluded that the rate of employability can be bettered with effective involvement of the stakeholders such as candidates, Governments, Education Institutes and Training Partners. Focus is required on improving the infrastructure facilities, curriculum upgradation with industry-institute interface. The public-private-partnership can ensure proper funding, controlling and reviewing of the skill development programs.

Anita Swain & Sunita Swain (2020), conducted a research on “Skill Development in India: Challenges & Opportunities” with aim of highlighting various challenges encountered by Indian youth as well as various Government schemes like Pradhan Mantri Kaushal Vikas Yojna, Deen Dayal Upadhyaya Grameen Kaushalya Yojana etc and analysing the data sourced from National Skill Development Corporation. The study concluded that India is blessed with a ‘demographic dividend’ but it has to utilise it for reaping the benefits. It can add value to the economy and also support the ‘Make in India’ drive by ensuring more skilled workforce. The Skill India initiatives needs focus on developing more entrepreneurship skills amongst the workforce for greater job generation in the country. Awareness of various government schemes like PMKVY, DDU-GKY, skill India is required to draw attention of the youth & the target audience for benefiting from such skill trainings and being more employable.

Dr. Rajni Arora & Manoj Chhadwani (2019) conducted a study on “Analysing the impact of skill India as a tool for reshaping Indian economy” for analysing the essence and impact of skill India mission in reshaping the economy of the country. The study concluded that to enhance the momentum proper implementation of the Skill India Mission is required. The government has set an ambitious target of skilling around 400 million people by 2022, but it has been seen that the pace is much slower and the training/skilling to job/placement transition rate is not meeting expectation. In its first phase, the target was to train 2.4 million but only 1.97 million people were trained. There is acute shortage of trained workers in India with just 2.3% of workforce having formal skill training compared to South Korea (96%), Japan (80%), Germany (75%), United Kingdom (68%), and United States of America (52%). This emphasises an immediate focus on skilling people and effective implementation of the entire process of skill India Mission.

A. Krishnamoorthy & H. Srimathi (2019) conducted a study on “Skill Development - The Future of India” with an aim of reviewing the prevailing practices in various available skill sets and suggesting way forward. The study concluded that India would possibly have the best young workforce in next two decades but this alone would not be sufficient. This feat cannot be achieved through arbitrary governance. It requires careful analysis of global requirements of workforce, and adequate steps needs to be undertaken for imparting vocational and related skills as per industry requirement. Indians can have a strong hold in the global workforce and also sustain growth & development with a mixed strategy of all the best practices in skill

development on need-based analysis, introspections, periodic revisions and cohesive contribution of all stake holders.

Dilip Chenoy, Shobha Mishra Ghosh & Shiv Kumar Shukla (2019) conducted a study on “Skill development for accelerating the manufacturing sector: the role of ‘new-age’ skills for ‘Make in India’ ” and concluded that due to Industry 4.0 many benefits including reduced cost, enhanced efficiencies, safety, faster delivery etc. can be reaped which can boost the manufacturing sector and increase competitiveness in the global market. ‘Make in India’ Initiatives and ‘National Policy for Advanced Manufacturing’ is of great help in implementation of Industry 4.0. However, the success of ‘Make in India’ goes hand in hand with that of ‘Skill India Mission’. Convergence of all key ministries viz Ministry of Skill Development & Entrepreneurship, Ministry of Human Resource Development, Ministry of labour & Employment etc. can ensure better implementation of Programs like Apprenticeship and ‘Recognition of Prior Learning’. It is a huge challenge for develop a skill-based workforce and driving the Make in India initiative so collective action of government and industry partners is imperative.

Hansel Furtado (2018) conducted a study on “Impact of Skill Development at Entry Level Job Candidates in India” with the objective to understand the gap between the job applicants’ performance level & job expectation at multiple stage of one’s life and employability of candidates at entry level job. The study concluded that in spite of many services offered by the government, it also needs to be seen that the competitiveness is built along its actual reach to candidates at entry level jobs. But the same is missing and resulting to a loss on the youth’s potential.

S. Srivathsani & S. Vasantha (2018) conducted a study on “Review of the Skill Development Initiatives and its Effect on the Indian Economy” for discovering the need for skill gap analysis and understanding the role of NSDC, NSDA, SSC and DGT bodies. The study concluded that with effective implementation of the “Skill India” mission by implementing agencies like Ministry of Skill Development & Entrepreneurship, National Skill Development Corporation and Sector Skill Councils etc., the gap between supply and demand of skilled workers can be easily met. It is important to understand that Skill Development and formal education has to go hand in hand and is instrumental in the progress of the nation’s economy.

Dr. Yathish Kumar & K R Ramya (2017) conducted a study on “Review of the Skill Development Initiatives and its Effect on the Indian Economy” for understanding the concept of skill development, challenges being encountered in self-employment and provide suggestions on basis of observations. It was arrived that the Skill India concept is a great move in transforming India into a developed country by motivating its talents and making a bright future for its youth. The youth needs to come up and accept responsibility, not remain idle in the society and focus on job creation & social security. With this new approach India can definitely march towards its goal.

Ankul Pandey & Prof. D. K. Nema (2017) conducted a study on “Skill development strategy and employability of workforce in India (Make-in-India movement)” to ascertain the employment potential of the ‘Make in India’ and ‘Skill India’ initiative, analysing the role of Skill Development programme in bridging the skill-gap and ascertain the impact on the Indian Economy. It was arrived that in any business both man and money are of paramount competitive advantage. It is imperative to upgrade quality and enhance the performance management of organization to monitor, guide and boost the skill capability of its workforce.

Seema Pandey (2016) conducted a study on “Improvising Skill Development & Employability Potential through Higher Education, Research & Innovations in India” with the aim of revisiting the current policies on skills development, identify the gaps that need to be filled and collect lessons learned from earlier policies and understand the role of higher education institutes in skill development. It was figured out that private sector companies play a major role is overcoming the gaps in Government policies in spite of their selfish motive of benefiting their own business. Employment opportunities are being created in industries but at the same time there is serious impact on climate and environment due to industrialisation. Skill development

programs needs to be creatively designed with concurrent emphasis on environment protection, utilisation of bio-waste and producing livelihood etc.

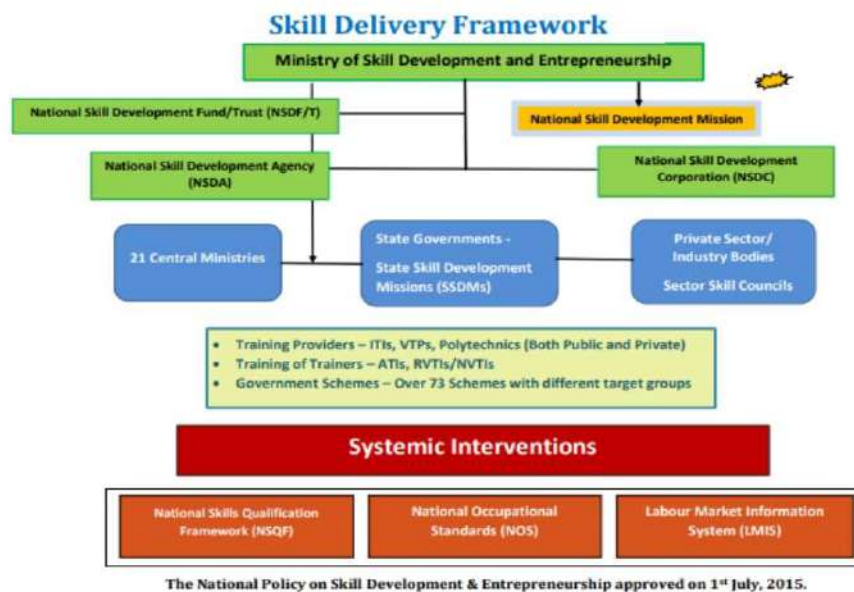
Sonali Kanchan & Sakshi Varshney (2015) conducted a study on “Skill development initiatives and strategies” with the objective to understand the present status and challenges of skill development in India and the impact of Skill development initiatives and strategies in India. The study concluded that curriculum for professional courses such as Engineering and MBA needs to be innovatively designed incorporating on-the-job training so that students are industry ready while they pass out of the academia.

Sunita Sanghi & A. Srija (2015) presented a paper on “Skill Development and Productivity of the Workforce” at Confederation of Indian Industries and highlighted that Skill development needs to be inter-linked with the employment policies. The full value of a policy can be realised when it supports objectives of other policies. For investments in skill development in yielding utmost benefit to workforce, industry and economy, the country’s capacity for coordination is most important in areas like connecting basic education with that of technical training, technical training with labour market, and labour market with workplace & lifelong learning, ensuring continuous communication between employers and training providers to ensure that the training meets the needs and aspirations of workers and industry; and integrating skill development policies with other policies such as social securities, investment policies, trade & technology policies, and regional development policies, labour market policies etc.

Skill Development in India

India is one of the world's youngest country with around 60 % of the population under the age of 25 years. The workforce of India is world's second biggest just behind China but, while China's demographic dividend has begun to wane since 2015, India will continue to reap the benefits until 2040. Supply and demand concerns have an impact on livelihood prospects. On the supply side, India is unable to produce enough employment opportunities but, on the demand side, professionals entering the job market are weak in skill sets which results a growing unemployment rates and poor employability condition in the market. Three most important aspects due to which there is a shear need of Skill Development are Job Skilling, Youth skilling and demand for skilled Workforce.

In India, the ecosystem of skill development is very intricate, vast & diversified giving a wide range of talents to a population that is highly diverse. Education and Vocational Training are the two main categories of skill development in India. Both formal and informal routes are used to gain skills. The government organisations, private sector companies as well as NGOs provide formal vocational trainings for skill development. Industrial Training Institutes being run by government, Industrial Training Centres being managed privately, vocational schools and specialised institutes for technical training are some of the primary avenues for formal vocation training. The Director General of Employment and Training, Ministry of Labour & Employment, is the nodal organisation for vocational training at the national level. The Director General of Employment and Training is in charge of developing policies, setting standards, awarding affiliation, trade testing and certification, as well as issues relating to vocational training and employment services. Efforts to improve skills in India are now divided among various ministries, state governments & union territories and the industry partners. The Ministry of Skills Development and Entrepreneurship, established in 2014, coordinates with all stakeholders during the development of an appropriate skills delivery framework, the elimination of the gap between demand and supply of skilled manpower, skill up gradation, the development of new skills, innovative thinking, ensuring talent availability, guiding the Skill India initiative and evolving ecosystem of youth employability efforts in India. The National Skills Qualification Framework supports skills efforts by Ministry of Skills Development and Entrepreneurship and other ministries. The National Skill Development Corporation (NSDC) and Sector Skills Councils (SSCs), as coordinators of private sector, also plays an important role. The following Table -1 illustrates the National Skills Delivery Framework:

Table-1

Source : Report published by Niti Aayog

Programs enhancing employability in India:

The main objective of various programs on skills development, employment and entrepreneurship development is to reduce unemployment & under-employment, by empowering youth in leveraging opportunities and engaging in work that is adequately productive and appropriately remunerated. The following programs enhance the employability situation in the country.

- a) **Skills development** – It helps in imparting job-specific skills, business skills and transferable skills / life skills / soft skills that arise on-the-job, basic cognitive skills, technology skills etc. Skills training are generally delivered through skills development courses and on-the-job trainings viz. apprenticeships and internships.
- b) **Recruitment services** – It help youth in finding jobs through improved job search efforts, job placement and employer-matching etc.
- c) **Career counselling** – It helps in assessing one's interests, abilities and available tools for better career prospects, enrolling in skills development programs and includes one-on-one consultations, mentoring and coaching.
- d) **Entrepreneurship promotion** – It helps participants in starting or expanding a small business by providing technical support and facilitating access to financing.

Labour Market Demand and Aspirations of Youth

The 'National Skill Development Policy – 2015' has identified various sectors (24 nos.) which requires more skilled workers. Construction, transportation/logistics beauty & wellness and retail sectors tops the list and

sectors like infrastructure, information technology, tourism & hospitality, and healthcare are growing rapidly in contributing to employment generation in India. There is a very high need of various skill. New skills would be required for jobs across various skill levels. Around 110 million skilled workers would be required additionally, and around 50 percent of workers would be employed in jobs that do not even exist today or will require entirely different skills. Skill gap is being witnessed in higher-level cognitive skills and soft skills. Apart from technical, sector-specific skills, employers generally look for communication skills, adaptability and reachability /learning agility. The aim of skill training efforts is to enhance access for employment, growth in productivity and better the wage potential of workforce. Due to market changes, disruption and technological advancements, youth have to be on a continuous learning curve and continual skill development for remaining employable. The following Table-2 shows how the employability in India has changed over the years, from 2015 to 2021:

Table-2

**Source: India Skills Report 2021*

Youth in India aspire for stable, secured & meaningful jobs, values skill trainings, seeks career guidance and ponders over entrepreneurship opportunities. But these aspirations are often challenged by reality. The top considerations of youth while selecting a job are better pay, scope for career advancement and job-security. These factors also impact increasing job turnover and higher demand for government services/ jobs. The following Table-3 shows the domains which have more employable talents:

Table-3

	2015	2016	2017	2018	2019	2020	2021
B.E./B.Tech	54.00%	52.58%	50.69%	51.52%	57.09%	49%	46.82%
MBA	43.99%	44.56%	42.28%	39.4%	36.44%	54%	46.59%
B.Arts	29.82%	27.11%	35.66%	37.39%	29.3%	48%	42.72%
B.Com	26.45%	20.58%	37.98%	33.93%	30.06%	47%	40.3%
B.Sc	38.41%	35.24%	31.76%	33.62%	47.37%	34%	30.34%
MCA	45.00%	39.81%	31.36%	43.85%	43.19%	25%	22.42%
ITI	44.00%	40.90%	42.22%	29.46%	NA	NA	NA
Polytechnic	10.14%	15.89%	25.77%	32.67%	18.05%	32%	25.02%
B.Pharma	56.00%	40.62%	42.30%	47.78%	36.29%	45%	37.24%

**Source: India Skills Report 2021*

Government Programs to Improve Employability

There are diverse set of programs across various Ministries, including Ministry of Skill Development and Entrepreneurship, Ministry of Rural Development, Ministry of Minority Affairs, and Ministry of Human Resource Development (now Ministry of Education) etc. Most skill development programs, with a focus on employment of youth, focuses on employment in entry-level jobs.

The following Table -4 illustrates programs of Government of India primarily targeted to enhance employability:

Table-4

Sl. No.	Ministry	Government Programs	Accomplishments
1	Ministry of Skill Development & Entrepreneurship	Pradhan Mantri Kaushal Vikas Yojana	8.70 lakh trained and 3.80 lakh employed
2		National Apprenticeship Promotion Scheme	6.00 lakh Apprentices engaged
3		Jan Shikshan Sansthan	1.60 lakh trained and 20,000 oriented as entrepreneurs
4		Pradhan Mantri Yuva Yojana	11,154 trained and 6,000 oriented as entrepreneurs
5		Skill Saathi	counselling done to 10 lakh
6	Ministry of Rural Development	Deendayal Upadhyaya-Grameen Kaushalya Yojana	2.30 lakh trained and 1.30 lakh employed
7		Rural Self Employment Training Institutes	41,323 trained and 8,776 connected to credit, 2,238 employed and 20,714 settled in self-employment
8		Deendayal Antyodaya Yojana - National Rural Livelihoods Mission	42,572 trained and 40,000 employed
9	Ministry of Human Resource Development	Saakshar Bharat/Padhna Likhna Abhiyan	66.90 million benefited
10		National Apprenticeship Training Scheme	4.20 lakh trained
11	Ministry of Minority Affairs	Seekho aur Kamao	67,000 trained and employed
12		Nai Roshni	59,400 women benefited
13		Upgrading Skills & Training in Traditional Arts/ Crafts for Development	16,200 trained
14		Nai Manzil	20,100 trained
15		Gharib Nawaz Skill Development Training for Minorities	11,930 trained
16	Ministry of Housing & Urban Affairs	Deendayal Antyodaya Yojana	1.10 lakh employed
17	Ministry of Textiles	Integrated Skill Development Scheme	2.80 lakh trained and 1.70 lakh employed
18	Ministry of Electronics & Information Technology	Skill Development in Electronics System Design & Manufacturing	96,477 trained and 66,261 employed

*Source: JustJobs Network, Ministry websites, reports, and information released by Press Information Bureau.

Skill Development by Private Sector & Civil Society:

Some of the Skill Development Programmes being run by various reputed Private Sector that is directly impacting employability is tabulated in Table -5 as under:

Table-5

Sl. No.	Program /Organisation	Implementing Agency	Target Area / Group	Accomplishments
1	IL&FS Skills Development Corporation	IL&FS Skills	School drop-outs, 10 th /12 th / ITI / graduate students / pass outs	1.6 million skilled with 75 % placement. 48% are women and 3,000 differently abled
2	Project Disha	Jindal Stainless Steel Lifestyle Limited and UNDP	Underprivileged Girls / Women	3 batches out of 6 trained in JSL plant, Rohad. 75 girls trained and employed.
3	IBM Teachers Tryscience Program	IBM India Technology Pvt. Ltd	Students & Teachers	Impacted 30,000 schools, 20,000 government teachers Addressed the Science, Technology, Engineering and Mathematics Skill gap with teacher capacity building.
4	Earthy Goods Foundation	Earthy Goods Foundation	Artisans & rural micro-entrepreneurs	Impacted 24550 beneficiaries, 568 independent artisan members, 102 NGO affiliates.
5	Wadhvani Foundation	Wadhvani Foundation	Students & Teachers	Impacted 2.00 lakh Students in 3000 Secondary & Post-Secondary Institutes, 3200 Vocational Teachers trained. 40,000 Jobs and 2000 New start-up assisted
6	Yuva Parivartan Movement	Kherwadi Social Welfare Association	School dropouts and prisoners	Benefited 6.50 lakh youth in 3000 villages across 18 states. 2000 Prisoners trained in vocational training
7	Anudip Foundation	Anudip Foundation	disadvantaged groups	Impacted 150 skill development centres in 7 States, 60,000 trained, 80% Employed
8	Tamana	Tamana	cognitively impaired, intellectually challenged and autistic children	The 3 centres accommodate more than 300 special students and 200 students from EWS for skill based training and assisted in employment.

9	Eye Mitra	2.5 NVG - Essilor Group's inclusive arm	12th Pass rural youth	2643 Eye Mitras across India. Screened more than 48 lakh people and more than 10 Lakh people provided spectacles.
10	Careerguide.Com	Catalog Educational Services Pvt. Ltd.	students	Impacted 5.31 lakh students and assisted with career planning / career-counselling
11	Butterflies India	Butterflies India	slum and destitute children	Impacted 1333 students. Annually around 400 slum and destitute children are benefited with education, knowledge and skills for self-reliance
12	Maruti Suzuki India Ltd.	Maruti Suzuki India Ltd.	instructors and trainees	Supported 141 ITIs in 27 states. Set up 52 Automobile Skill Enhancement centres at adopted ITIs. Over 3600 students from these ITIs employed in service workshops / dealers. placements around 80%, rest assisted for self-employment or higher studies.
13	ICICI Foundation	ICICI Foundation	Underprivileged youth	Set up 24 centres, tied up with over 800 and 100% placement. Impacted 10,000 youth in 119 villages with ICICI Academy - Digital Village Programme. 49000 youth (women-48%) trained under ICICI RSETI
14	Society For Rural Industrialisation, JHARKHAND	Society for Rural Industrialisation	Rural youth	Imparted training 18000 youths in various skills related to Engineering Technology. About 50-60% employed and 2000 established own service centres. Livelihood Promotional support to 720 families.
15	Mobile Vocational Education, AMMACHI Labs	Amrita Multi Modal Applications Using Computer Human Interaction Labs, of Amrita University	Tribal women	Mobile vocational training to around 500 women in the tribal belt of Kerala and the Tsunami affected areas in Nagapatinam, Tamil Nadu

16	Ador Welding Academy Pvt. Ltd	Ador Welding Academy Pvt. Ltd.	Youth	40000 trained and employed in careers in welding.
17	L&T Construction Skill Training Institute	L&T Construction	Youth & workmen	50,000 trained from Construction Skills Training Institutes, 1.25 lakh workmen through MoUs & tie-ups trained, 1.50 lakh workmen of sub-contractors trained and over 2.00 lakh workmen trained through e-learning modules
18	Centurion University & Gram Tarang, Odisha	Centurion University & Gram Tarang, Odisha	Youth	Trained 90,000 youth across various industry sectors with a placement assistance to 74%
19	Confederation Of Indian Industries (CII)	Confederation of Indian Industry (CII)	Marginalised and under-privileged Youth	22 Skill Gurukuls operational and train 6,600 students per annum. Operationalized 2 centres in Gurugram and conducts mega job fairs 20,000 marginalised youth trained in 16 trades under Project Swavalamban in 17 states through 36 centres. 2000 underprivileged Youth per annum trained in 10 trades under Project Kaushalya through 10 centres
20	Pratham Education Foundation	Pratham Education Foundation	youth from rural areas, urban slums, and minority communities	60,000 trained, Placement assistance to 75-85%, 1,000 Entrepreneurs supported in 16 States

**Source: Report published by NITI Aayog.*

The following Table-6 shows which sectors contributes the most to employability in India:

Table-6



*Source: India Skills Report 2021

Youth Employability Programs run by various non-governmental organizations (NGOs)

In addition to public participation in skilling, NGOs play a vital role in inculcating & employability among the nation's youth, often reaching vulnerable populations that may otherwise fall through the cracks. The following Table is an effort to highlight a sampling of NGO programs working toward this end in India. The programs as cited in Table – 7 below is not an exhaustive list, but it illustrates a range of youth employability programs and non-profit providers.

Table-7

Sl. No.	NGO	Target Group	Program Description
1	Aditya Birla Skills Foundation	Low income group, Not in Education, Employment or Training and PwD	vocational training, Soft skills training, Entrepreneurship training and Career counselling
2	Aga Khan Rural Support Program	Low income group and PwD	Soft skills and vocational training with placement assistance
3	Antarang	Low income group	Soft skills training, career counselling 8 th -10 th class student, with placement assistance and higher education and vocational training
4	Don Bosco Tech Society	Low income, Not in Education, Employment or Training and PwD	Soft skills training, career counselling with placement assistance and post placement support
5	Dr. Reddy's Foundation	Low income group and Persons with Disabilities	Soft skills training, career counselling with placement assistance in inclusive workspaces for PwD
6	Dream a Dream	Low income group	Career awareness workshops, short-term modules for soft skill training with access of internships, scholarships, vocational training and placement assistance

7	Etasha Society	Low income group, women and mothers	Career counselling and life skills, vocational and soft skills training for Middle & High School adolescents and youth with placement assistance, entrepreneurship training and enterprise management support
8	Lend-a-Hand India	Low income group	Career counselling, vocational training for secondary school students with capital & mentorship support for entrepreneurs
9	Magic Bus Foundation	Low income group teens	Life-skills training and vocational training with placement/post-placement assistance
10	Medha	Low income group college students	career counselling with placement assistance
11	Mentor Together	Urban youth and students	Connect with professional mentors and create awareness on job opportunities
12	Naandi Foundation	SC, ST & OBC	Life skills and soft skills training with placement assistance in IT enabled Services, Hospitality, Retail Sales and Auto sectors.
13	Salaam Bombay	Urban youth and adolescents	Career guidance, vocational training and high-quality training in the areas of sports, arts and media for adolescents from poor schools
14	Smile Foundation	Urban youth	Skill enhancement, career counselling, exposure visits and placement assistance
15	Swades Foundation	Rural youth	Skills training, placement assistance, exposure visits and best practices for enterprise development
16	Udyogini	Low-income and illiterate women	Skill Training, Entrepreneurship Training, Functional literacy, Grass-root Management Trainings that assesses attitude, aptitude, knowledge and skill needs of women producers, Business Development Service Provider and entrepreneurs
17	Vidya	Urban youth and dropped out of school	Life skills training & vocational trainings for school dropouts for passing 10th and 12th standard exams and further career guidance
18	Youth4Jobs Foundation	PwD	Life skills, sector specific training, skill assessment and placement assistance for engineers and graduates for jobs in MNCs & large IT companies
19	Yuva Parivartan by Kherwadi Social Welfare Organization	Youth, school dropped outs, girls and STs	Livelihood & Skill Training with placement assistance and financial literacy.

* Source: Information from NGO websites

Gaps in Skills, Employment and Entrepreneurship Programs

Over the years, challenge has been witnessed, especially for girls and vulnerable youth, in progressing to secondary school levels and beyond. In spite of high enrolment rates and gender parity in enrolment at the primary and upper primary school levels, the learning outcomes are far below expectations and there is increasing drop-out incidences especially at the secondary school level. The drop-out situation is more evident in case of vulnerable youth and girls of low income groups. Hence, poor school-to-work transitions and labour market outcomes. Girls' school enrolment rates and performance are undoubtedly better as

compared to boys but still they lag behind when it comes to skills training as a result women labour market outcomes are too low. Interestingly, it has been seen that majority of girls & young women want to pursue skills training but very few of them take up the same.

Labour market performance cannot be comprehended only from the employment /unemployment situation, it is also important to consider the kind of jobs available in the market for assessing upward mobility in career advancement by vulnerable youth and girls. It is important to understand the skills an employer seeks while employing a person and how to improve the hiring practices and working conditions. An evidence-based, demand-driven approach is required for skills training and job placement. Job opportunities can be further enhanced by supporting entrepreneurs, business owner and their future employees by leveraging the resources and assets of the area.

Integrating Future Employment Needs in General Education

A very vital outcome of schooling system in India is Employability of youth. Skills should be integrated into various curriculum of school education to develop home and should not be left on its own on a separate track. Opportunities for developing employability skills and crucial skills should be well integrated in the school's general curriculum.

Conclusion and Recommendations

The vulnerabilities and restrictive social norms that vulnerable youth (SC, ST, OBC, PwD and girls), are born into needs to be addressed for ensuring a successful growth trajectories of vulnerable youth of the country. A systems approach rather than an ad-hoc approach would be required which addresses the root cause and not just symptoms. The employment situation can be improvised by a persistent and lasting commitment. Focus on education alone would not be sufficient it is also required to pay attention on skills and career counselling. Similarly, focus only on jobs and labour market outcomes would not suffice, it is required to monitor the education to skills continuum. Hence, skill training programs must develop not only technical skills, but also transferable skills. The skills training only builds on a requisite level of basic education and do not compensate it entirely.

The following recommendations are worth consideration for dealing with skill development related issues and improvising the employment situation:

- 1) The education level of the workforce and youth needs to be bettered through the secondary education system.
- 2) The skills training and job potential for women youth needs to be upgraded.
- 3) The access to quality training needs to be enhanced for better employment options
- 4) The Skill Delivery Framework needs to be strengthened
- 5) Focus on Outcome and determining key performance indicators
- 6) Private sector participation needs to be encouraged
- 7) More data needs to be gathered for finding appropriate indicators for progress monitoring
- 8) Coordination amongst various Stakeholders is required for matching the demand and supply of skills
- 9) Ensure availability of financial resources and systemic reforms

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Skill Development a Preferred CSR Initiative: A Comparative study of select Oil & Gas Central Public Sector Enterprises

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Abstract

Corporate Social Responsibility (CSR) is a company's commitment to operating in a sustainable manner in the best interests of its stakeholders in its immediate environment and community. A company meets all its requirement including land, air, water, and personnel from the society and its environment. Hence, it strives to give back to people & planet from its profit through CSR.

The industrial jobs are shrinking in India due to automation and other reasons. The pass-outs from school / colleges finds themselves unemployable as they are not being considered industry fit due to lack of required skills. To make the youth employable, Skill development can play a crucial role. CSR can act as a win-win opportunity for companies to invest in skilling for creating sustainability for their stakeholders.

The objective of this paper is to understand (i) the initiatives of some select Oil & Gas Central Public Sector Enterprises (CPSEs) under CSR and (ii) their preference given to Skill Development as CSR initiative. A descriptive type research design has been employed and exploratory research has been done considering the requirement of the study.

A comparative analysis has been made of various skill development programmes undertaken as CSR initiative by select Oil & Gas CPSEs to understand the reason for such preference given to education and skill development by such CPSEs.

The researchers made an effort to understand how the skill development Programmes are being undertaken by the selected CPSEs of Oil & Gas Sector, whether they ensure the skill development through Education, Women Empowerment or through various skill trainings / vocational trainings. Effort was also made to understand the correlation of the expenses made in various Skill Development Programmes and their overall CSR expenses made in FY 2019-20.

The study concluded that skill development is increasingly becoming the preferred choice for corporates especially Oil & Gas CPSEs to ensure compliance of Companies Act, 2013, partner in Skill India Mission and also reap the benefits of skill development as a win-win proposition.

Keywords: *Corporate Social Responsibility, Skill Development, skill training, Education, vocational training, empowerment, Oil & Gas Sector, Central Public Sector Enterprise*

1 Introduction

CSR is the responsibility of society taken up by a corporate. It is the commitment of the Corporate towards its surrounding environment and community in the vicinity to operate in a sustainable manner in the best interests of its stakeholders. The corporates derive all its requirement from the society and surrounding. It endeavors, under CSR, to giving back to the society from its profit and takes responsibility of activities that affects the people & planet.

As per the Companies Act 2013, it is mandatory for companies, including Central Public Sector Enterprises (CPSEs), to meet certain criteria and spend at least two per cent of their net profits annually on CSR. The allocated CSR fund for a particular Financial Year does not lapse but taken forward to subsequent year. As per the annual Memorandum of Understanding (MoU) signed with the Government, the Board of a CPSE is answerable for the implementation of their CSR activity to their concerned Ministry. The CSR projects / activities are generally undertaken in nearby localities of the plant or area of operation. The society also expects the CPSEs to take up the social & moral responsibility of the displaced project affected people (PAPs) i.e., the son of the soil and provide employment to these PAPs or at least make them employable through Skill Development Training Programmes to help them lead a dignified life.

Now a days, adapting skills and attitude is also inevitable to succeed in the dynamic VUCA world and the years to come. Skill development could mean the natural behavioral strengths, the skills or knowledge acquired as a part of academic qualification, skills invested in to stay future-ready and skills pursued as a passion.

According to World Bank's report, India's work force would be added by around 12 million youth in the age group of 15 - 29 year every year in next two decades. As per a recent skill gap analysis of Government of India, additional 109 million approx. skilled workers would be required by 2022.

Giving due importance to Skill Development, Ministry for Skill Development and Entrepreneurship (MSDE) has been established in 2014, to coordinate with other Ministries and Departments to achieve the goals of Skill India Mission of Government of India. The mission has an ambitious target to skill 40 crore population by 2022. Companies, especially CPSEs play a major role in this area by utilizing CSR funds in a planned way in Skill Development Programmes.

Of late it is being witnessed that Skill Development is emerging as one of the most preferred choices for CSR initiatives in CPSEs. As per a report, the Oil & Gas companies contribute around 1/4th of the CSR fund of India, which is Rs 2,092 crore and over one-third of the said CSR fund is utilized for education and skill development (*Sonal Khetarpal, 2018*).

In India, the industrial jobs are shrinking due to technological advancement, automation and other reasons. The pass-outs from school / colleges find themselves unemployable as they are not being considered industry ready or fit due to lack of the required skills. To make the youth employable, Skill development can play a crucial role. CSR can act as a win-win opportunity for companies to invest in skilling for creating sustainability for their stakeholders. The CSR funds can be used by corporates to directly skill the youth by establishing their own training centers or they can also donate funds to NGOs to run various skill development Programmes.

2. Literature Review

The investigators have reviewed following literature on skill development and CSR initiatives of Corporates in India which will give an understanding about the research conducted in the field and identify the research gaps.

R. K. Mishra, Punam Singh, Shulagna Sarkar (2013) made exploratory research on major oil & gas companies of India to identify their social & environmental CSR initiatives and emphasized that if the companies have will they can reduce their CSR challenge to a great extent and convert it to distinct and quantifiable technical & managerial tasks. This would enable them to perform their CSR tasks better.

Jitender Loura (2014) conducted a comparative study on CSR initiatives by select public sector undertakings (PSUs) and concluded that CSR remains their significant business issue irrespective of their size, sector, business goal and geographic locations. It is unimaginable to compete with the global market, maintaining the stability and sustainability, if the local communities are not developed socio-economically.

Tanu Sharma (2014) in her study, examined the CSR initiatives of M/s. Tata and M/s. Aditya Birla Groups and opined that CSR creates a better public image and goodwill for the company which projects the company as a socially responsible corporate citizen. Ultimately it impacts the business positively to a great extent.

Reena Shyam (2016) in her exploratory research on CSR practices in India concluded that CSR is all about enabling the sustainable growth of a company, without compromising fairness to all concerned. CSR has wonderfully interwoven environment sustainability and business with social inclusion. Through CSR, companies have proved their ability to make significant difference in the society and improve the quality of life of all concerned. In the current dynamics, it is extremely challenging for any entity to bring about considerable change. Companies have the required resources viz. manpower, money, machine, mastery and mindset to enable extensive change in society. India's social development can be accelerated due to companies' partnerships with NGOs and Government.

Abhijit Mohanty, BidhuBhusan Mishra (2017) in their comparative study of various CSR activities carried out by M/s. Mahanadi Coal Fields Ltd and M/s. National Aluminum Company Ltd and found out that it's a great challenge for the companies to form a robust innovative CSR strategy for meeting stakeholder expectations and delivering high ethical, environmental and social performance. Incorporating new activities in the long run can greatly help in ensuring social commitment and sustainability.

Ashok Kumar Gupta, Meenu Maheshwari & Pragya Gaur (2017) made a review of literature on the CSR Practices of India and has pointed out that in current scenario the role of corporates in economy is not only to generate revenue but also to integrate the social, environmental, ethical aspects with the daily operations.

Pravin Sawant (2018) in his empirical study on CSR & its impact on the profitability of select Private, Public and Multi-National Companies in India and brought out that if the company spends some portion of its profit on betterment of the society directly or indirectly, the society in return would probably support its growth.

Ramandeep Kaur (2018) studied the statutory requirement and initiatives of Indian companies in CSR and opined that Government need to partner with corporates and NGOs so that their combined

skills can be channelized to initiate extensive social change for ensuring fast-track socio-economic development of India.

Anushree Parekh & Poorvaja Prakash (2018) concluded that that with the mandatory statutory provision w.r.t CSR expenditure under Section 135 of the Companies Act, 2013 companies can play a crucial role in addressing the issues of ecosystem of education in the country.

Madhu Bala (2018) in her research paper studied the Initiatives, Issues & Challenges of CSR Initiatives in Education in India and concluded that India has to restructure the education system at all levels. This is possible only when the corporates also shoulder its responsibilities towards society. The Corporates are also the consumers and users of trained skilled manpower produced by the universities. In order to reap the real benefits, the companies have to extend support to the educational institutions to produce the required skilled and trained manpower by providing funds for research & development, organizing workshops and other training & development programs, infrastructural support and last but not least providing facilities for qualitative education with non-profit oriented modes.

3 Research Gap

From the literature review it is understood that researchers have covered various aspects of CSR initiatives and skill development but no prior work has been done on CSR Initiatives of Oil & Gas CPSEs and why & how they give preference to Skill development as their CSR initiative.

3.1 Objective of the Study

The main objectives of the study are:

- To understand the CSR Initiatives of select Oil & Gas CPSEs.
- To understand the preference given by select Oil & Gas CPSEs to Skill development as their CSR initiative

3.2 Research Methodology

The study in this paper is based on exploratory research based on the secondary data and information sourced from internet, relevant books, journals, magazines, articles, media reports and websites of select CPSEs of Oil & Gas Sector. The research design employed for the study is of descriptive type. An in-depth analysis of the research study has been adopted.

4. Data Collection

Secondary Data has been collected from websites and annual report of sampled select Oil & Gas CPSEs for the study.

5. Findings

5.1 Skill Development through Corporate Social Responsibility (CSR) initiatives of select Oil & Gas CPSEs

The Oil & Gas sector in India has immensely contributed in development of India, at the same

time it has also adversely impacted the society and environment like air pollution, oil spills, injuries and deaths. It is also associated with second order costs like social dislocation and conflict. Thus, societies look to Oil & Gas companies for self-regulation and guard against risks to societies than merely comply with the law. CSR initiatives of some select Oil & Gas CPSEs in Skill Development are as under:

5.2 Skill Development Institutes (SDIs) of Oil & Gas CPSEs

The Skill Development Institutes (SDI's) are state-of-the-art Institutes promoted by Oil & Gas CPSEs under aegis of Ministry of Petroleum & Natural Gas and for catering the requirement of skilled manpower in Hydrocarbon sector. Companies like M/s. Indian Oil Corporation Limited, M/s. Hindustan Petroleum Corporation Limited, M/s. Bharat Petroleum Corporation Limited, M/s. Oil and Natural Gas Corporation Limited, M/s. Oil India Limited and M/s. GAIL (India) Limited, partnering the Skill India Mission of Government of India, have established six SDIs as their pooled CSR initiatives. Short-term vocational skill training programs are conducted at such SDIs to enhance the livelihood of unemployed & underprivileged youth of marginalized section of society and to provide skilled manpower for the hydrocarbon sector.

The SDI's have been set up at the following locations:

S No.	SDI / Location	Focus Area	Promoting CPSE	Highlights
1	SDI, Bhubaneswar	Downstream Sector	IOCL	Started in May, 2016. Till date, around 800 underprivileged youth have been skilled and certified with over 85% placements. Around 250 students per batch are being skilled in 8 trades of 3 to 6 months duration each.
2	SDI, Vizag	Downstream Sector	HPCL	Started in October, 2016. Till date 12236 Trained, 8621 placed and 289 undergoing training
3	SDI, Kochi	Overseas placement	BPCL	Started in December, 2016. Till date, 755 students in 6 batches have been trained and certified. 95% of certified students have been placed in leading companies in India and abroad.
4	SDI, Ahmedabad	Upstream Sector	ONGC	Started in September, 2017. The entire batch of 90 youth trained under this program were gainfully employed. Currently, around 800 youth are currently undergoing training in 9

				different trades.
5	SDI, Guwahati	North Eastern Region	OIL	Started in August 2017. Till date around 600 youth have been trained out of which more than 70% have been successfully placed
6	SDI, Rae Bareli	Midstream & Gas	GAIL	Started in November 2017. It conducts certificate courses in 4 trades such as Pipe Fitter - City Gas Distribution, Pipe Fitter - Oil & Gas, Industrial Welder and Process Instrument Technician

The courses conducted at SDIs are as per the National Skills Qualification Framework (NSQF) of the Central Government are affiliated to Hydrocarbon Sector Skill Council (HSSC) under National Skill Development Corporation (NSDC). Certificates are issued at the end of the course after external evaluation and certification by HSSC/ NSDC.

As per MOPNG, till March, 2020, around 16,000 trainees have been trained at these SDIs.

5.3 CSR Initiatives of ONGC Limited in Skill Development:

As an endeavor for promoting Skill Development and Enhancing Livelihood 3,783 youth have been benefitted through major, ongoing CSR initiatives in FY2020-21. The details of some skill development CSR projects promoted by ONGC are as under:

Sl. No.	CSR Project	Impact
1	Skill development projects for youth with active support from Indian Army at Baramulla in Jammu & Kashmir	Around 300 boys have been trained in retail sales and hospitality and around 60 girls have been trained in fashion designing and cutting & sewing
2	Project Green Hub	Around 20 youth are trained every year in wildlife videography and documentation. In the last three years, around 60 youth have been trained under this program and gainfully engaged in the field of wildlife and environment conservation
3	Skill development projects in Sivasagar,	Around 50 women have been trained in water Hyacinth craft out of which 20 women have become trainers and 5 have become

	Assam	master trainers with further training in advance design from National Institute of Design, Ahmedabad.
4	Specialized residential training program at Delhi	Around 40 economically weaker section youth from Assam and Uttarakhand have been trained and employed in various hotels
5	Skill development training at Central Institute of Petrochemicals Engineering & Technology (CIPET)	Around 500 socially & economically weaker section youth of Tripura, West Bengal, Odisha, Rajasthan and Delhi have been trained in plastic technology and 95% of them have been gainfully employed
6	Skill development training at Welding Institute of India at Sivasagar	Around 120 youth have been trained in Welding and Gas cutting and assisted with gainful employment in reputed companies after completion of the course. Others have been successfully engaged in local industry.

5.4 CSR Initiatives of Indian Oil Corporation Limited in Skill Development

The details of some skill development CSR projects promoted by IOCL are as under:

Sl. No.	CSR Project	Impact
1	Indian Oil Vidushi	<p>Under privileged girls have been assisted in getting admission in prestigious Engineering colleges like IITs, NITs, IIITs, etc. by giving them specialized coaching and mentoring after class 12th for JEE main, JEE advanced & other central / state engineering entrance preparations.</p> <p>The Bhubaneswar center facilitates the students of Odisha, Jharkhand & Chhattisgarh and the Noida center helps the students from J&K, Uttarakhand, Himachal Pradesh and Punjab. Maximum 30 girls are selected on merit-cum-means basis for each center. The cost towards specialized coaching, study materials, boarding & lodging, food & other consumables, blanket, hygiene kit, uniform, health insurance etc. are all borne by IOCL.</p>
2	Indian Oil Gyanodaya	Around 50 students per batch are selected from around 18 ITIs and 18 Polytechnics near 9 IndianOil Refinery locations every year and provided with scholarships @ Rs.1000/- per student per month for

		the entire course duration.
3	Assam Oil School of Nursing (AOSN)	It offers 3-year Diploma in General Nursing and Midwifery (GNM) course to young girls and 4-year B.Sc. (Nursing) course to 30 students per year in each course. Till date, around 410 students have successfully completed and gainfully employed
4	Skill development centers across the country under the Kaushal Vikas initiatives	Benefitted around 15,000 unemployed youth

5.5 CSR Initiatives of GAIL (India) Limited in Skill Development

The details of some skill development CSR projects promoted by GAIL are as under:

Sl. No.	CSR Project	Impact
1	GAIL Institute of Skills (GIS) at Nagaram of East Godavari District, Andhra Pradesh and Guna District of Madhya Pradesh	Around 90 students have been trained in trades of Industrial Electrician (Oil & Gas), Industrial Welder (Oil & Gas) and Draughtsman Mechanical. Out of them, around 70 have been successfully employed. Skill trainings have also been provided to around 350 trainees in various trades like welding technician, industrial electrician, CNC machining technician and customer-care executive etc. out of which around 70% have been gainfully engaged.
2	Skill development training at Central Institute of Petrochemicals Engineering & Technology (CIPET)	Around 250 candidates have been trained as 'Plastic Products manufacturing Operators'
3	GAIL Utkarsh Project	Around 160 underprivileged students per year are being provided with free residential coaching, boarding and lodging for 11 months at Kanpur (Uttar Pradesh), Dwarahat (Uttarakhand) and Srinagar (Uttarakhand) to nurture and prepare them for engineering entrances exams. Till date, 1139 students have been trained. Out of which 797 students (i.e. 223

		in IITs and 574 in NITs and other engineering colleges) have been selected.
4	Project Avant	Around 200 Govt. Schools in District Auraiya, Uttar Pradesh now uses solar powered smart classes impacting a total of 6,000 children and 100 teachers.
5	Project Bhavishya	Around 150 Smart classes have been set up in Asasm, Dharwad (Karnataka), Khunti and Giridih (Jharkhand), and Rudraprayag (Uttarakhand).

5.6 CSR Initiatives of Bharat Petroleum Corporation Limited in Skill Development

BPCL under its CSR focuses on imparting quality all round education, through use of technology. It also partners with required infrastructural facilities, access to education and improvement of education systems. The details of some skill development CSR projects promoted by BPCL are as under:

Sl. No.	CSR Project	Impact
1	Vivekananda- a BPCL Skill Development Center	Around 400 students are provided with diploma education in Automobile, mechanical & Computer courses every year
2	Saksham Project	Through this project, BPCL impacts individual classrooms as well as entire school environment. Around 1,000 teachers including primary, upper primary and Head Masters of around 350 low-income Govt. recognized private / BMC, have graduated from this program. Teachers / trainers are developed to be in sync with the new education paradigm adapting to new techniques for teaching / managing classroom. High quality teaching materials are also developed leveraging digital technologies to meet specific needs.
3	'Computer Aided Learning' (CAL) and 'Digital Literacy as Life Skill' (DLLS)	Under this initiative students up to 10th standard from low-income schools in Mumbai, Jaipur, Lucknow, Uran and Solapur are imparted training in digital learning. At Mumbai, the project has been implemented in around 50 schools of Municipal Corporation of Greater Mumbai (MCGM) benefiting around 55,000 students.

5.7 CSR Initiatives of Hindustan Petroleum Corporation Limited in Skill Development

The details of some skill development CSR projects promoted by HPCL are as under:

Sl. No.	CSR Project	Impact
1	Project Agastya	Practical science education is promoted under this initiative in remote locations with help of Mobile Science Labs which reach the doorstep of schools for developing interest about in science subjects viz Physics, Chemistry and Biology to students of Class 5th to 10th. Under the project 23 schools have been benefited.
2	Project Unnati	Computer training program have been imparted and personal computers have also been provided to semi-urban and rural school students. The students are provided free trainings in computer basics. The teachers of these schools are also trained to ensure sustainability of the project.
3	Project Swavalamban	Skill training is provided to unemployed youth including school dropouts in trades like Basic Electricals, Refrigeration, AC, Fabrication, Plumbing, Basic IT, Retail, Construction and Beauty Culture & Skin care. Some centers are also has residential training facility for remote / rural areas youth.
4	Project Nanhi Kali	Around 13,000 young girls have been supported in their education
5	Project ADAPT	Focuses on education and therapy of children with special needs
6	Project Unnati	Free computer education has been provided to around 12,000 students

5.8 CSR Initiatives of Oil India Limited in Skill Development

The details of some skill development CSR projects promoted by OIL are as under:

Sl. No.	CSR Project	Impact
1	Residential coaching centerat Guwahati, Jorhat Dibrugarh and Nogaon in Assam, Jodhpur in Rajasthan	Annual intake of 30 students per center and with success rate of over 90%. Students from marginalized section of society, in Assam, Arunachal Pradesh and Rajasthan are provided with 11-month free residential coaching for entrance examination for admission into IITs and other reputed engineering colleges as well as medical colleges.

	and Itanagar in Arunachal Pradesh	
2	Project Dikhya	Computer education has been imparted to around 35000 students of 30 rural minor schools via custom designed and mobile vans equipped with laptops and children friendly delightful teaching atmosphere. Adult education classes are also conducted under this project in 36 locations targeting illiterate and semiliterate people of rural areas and tea gardens. The course module is designed as per SarvaShikshya Abhiyan of Government of Assam. Around 2000 elderly persons have benefitted from the program
3	Knowledge –Yan (K-Yan) with K-class	OIL has distributed audio-visual education devices like high end computer, advanced projection system, DVD Player and in-built audio system called Knowledge Yan in OIL operational areas of Assam and Arunachal Pradesh. Till date, K-Yan has benefited around 4,65,000 students.
4	Primary school teacher Training Programme	Around 1000 primary school teachers of rural schools have been trained on innovative teaching methodologies
5	Life skill education	Implemented selectively in 75 Girls' schools
6	Financial literacy Programme for rural community	Benefitted around 10,000 persons in 30 locations
7	Project OIL-Jeevika	Skill development and upgradation training is being imparted to the targeted beneficiaries on beekeeping & honey processing, mustard buckwheat and local pulses processing for generating alternate source of income through formation of self-sustainable livelihood clusters. Apart from trainings on mustard, buckwheat & local pulse processing, the beneficiaries are also being trained on packaging and marketing techniques.
8	Project Swabalamban	Skill training is being provided to unemployed youth / women under which around 15000 youth /women of Assam and Arunachal Pradesh have been trained in various trades and 12000 of them have placed in different organizations successfully

6. Analysis

The select CPSEs of Oil & Gas Sector were contacted and their published data available on their website was studied to understand their practice of conducting various skill development Programmes under CSR initiatives and understand its correlation. The researchers made an effort to understand how the skill development Programmes are undertaken by these select CPSEs of Oil & Gas Sector, whether they ensure the skill development through Education, Women Empowerment or through various skill trainings / vocational trainings. The comparative statement in this regard is placed as Table- 1.

Table – 1

Sr. No.	Name of CPSE	Skill Development through education	Skill Development through Women Empowerment	Skill Development through Vocational Trainings
1	ONGC	Yes	Yes	Yes
2	IOCL	Yes	Yes	Yes
3	HPCL	Yes	Yes	Yes
4	BPCL	Yes	Yes	Yes
5	GAIL	Yes	Yes	Yes
6	OIL	Yes	Yes	Yes

**The data is based on information gathered from respective websites of the selected Oil & Gas CPSEs.*

It is understood from the above table that all the above-mentioned select Oil & Gas CPSEs are undertaking skill development through education, women empowerment as well as through various skill trainings / vocational training modes.

An effort was also made to understand the correlation of the expenses made in various Skill Development Programmes and their overall CSR expenses made in FY 2019-20. The comparative statement in this regard is placed as Table- 2.

Table - 2

Sr. No.	Name of CPSE	Total Expenditure by CSR V/s Expenditure in Skill Development		
		FY 2019-20		
		CSR Expenditure	Exp. in Skill Development	Percentage of exp. in Skill Development to total CSR exp.

1	ONGC	6,06,96,67,000.00	1,10,94,00,000.00	18.28%
2	IOCL	5,43,37,58,000.00	1,74,15,62,000.00	32.05%
3	HPCL	1,82,24,00,000.00	41,27,00,000.00	22.65%
4	BPCL	3,44,93,66,665.00	1,00,66,63,270.00	29.18%
5	GAIL	1,25,30,00,000.00	40,95,00,000.00	32.68%
6	OIL	1,25,41,00,000.00	27,83,00,000.00	22.19%

**The data is based on information obtained through RTI from the selected Oil & Gas CPSEs also their respective websites.*

It is understood from the above table that these Oil & Gas CPSEs spend around 20-30 percent of the CSR budget in various skill development Programmes.

7. Conclusion

Skill development is increasingly becoming the preferred choice for corporates especially Oil & Gas CPSEs for the following reasons:

- It helps as an affirmative action to provide opportunities to marginalized communities
- It shows commitment of the Organization towards gender inclusiveness
- It encourages community participation, ownership and voluntary participation of prospective workforce.
- It enhances the visibility of CSR.
- It helps in capacity building for the weaker sections of the society.
- It ensures empowerment of women
- Helping the displaced project affected people (PAPs) i.e., the son of the soil getting skilled and providing them with employment or making them employable through Skill Development Training Programmes to helps them lead a dignified life and it promotes a sense of gratitude and acceptability of the CPSE in that locality.
- It is also beneficial to the organization as it prepares its prospective workforce with the required skill to take up current / future jobs in that Organization.
- It is a win-win opportunity for organizations to invest in skilling for creates sustainability for the stakeholders.
- Vide Notification number S.O. 582(E) dated 27.02.2014 of Ministry of Corporate Affairs has introduced Schedule VII for CSR activities and Skill development activities like promoting education, employment enhancing vocational skills etc have been included in the said schedule.
- CPSEs are mandated under Companies Act 2013 for spending in CSR and they are also required to ensure compliance under Skill India Mission. Hence, taking up of Skill Development Programmes as a CSR Initiative serves both the purpose.

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Impact of covid19 on the skill development movement in India

Biswabhusan Behera and Mamta Gaur***

ABSTRACT

This research paper endeavors in understanding the skill Development Movement in India and how the it has been impacted due to the Covid-19 pandemic in terms of challenges faced by Skill Development Trainings, opportunities which have surfaced and strategies adopted by Government, Companies & individuals to overcome challenges towards Skill Development Trainings during COVID-19.

The success of a nation always depends on the success of its youth hence, Government of India has launched Skill India Mission to empower the youth of the country with required skill sets and make them more employable and productive in their work environment. Skill India is certain to bring a lot of advantage and opportunities for its young workforce. Now, Skill India is not only limited to the domestic market but even caters to the global market demands and promotes cross geographical exposure and opportunities in the international market projecting India as an evolving skilled society with lots of possibilities, prosperity and progress for all. However, the entire progress has been disrupted due to COVID-19 pandemic as it adversely affected and slowed down businesses across all sectors. The companies in their endeavor to reduce cost especially the labour cost during the 'new normal' now prefer workers who are more adaptable and equipped with new-age technology. Hence, it is important that the young students are imparted diversified skill sets so that they remain employable in the post-pandemic world. In such scenario, it is important that all kinds of skill training Programmes are continued to strengthen the work-pool so that when the situation improves, the trained workforce is ready to for immediately resuming the activities quickly picking up with speed and agility. The skill de

The research paper has made a literature review analysis regarding its challenges, prospects of skill India and Make in India. Secondary data collected from various websites, journals, etc.

Keywords: Skill development, Skill India, covid-19 pandemic.

1.0 Introduction

Skill has many meanings but generally it connotes to knowledge, ability, quality, proficiency and competency of a person that enables him to gain expertise in a particular field and perform particular tasks. Skills are primarily of two types (i) Soft Skills (ii) Hard Skills. Soft Skills are personal habits, personality traits with which one does his work either alone or in group. Examples of soft skills are Leadership skills, Organizational skills, Life skills, communications skills, people skills / interpersonal skills and personal attributes like creativity, empathy, open-mindedness, integrity etc. Soft skills are sometimes inherited and sometimes developed through life experiences. A person can develop such soft skill only when he is interested and put in effort in mastering these skills. He can learn by himself from self-help books, audios, internet etc but the best is to find a mentors / coach who has practical experience and expertise in such areas and is willing to help / guide. Hard Skills are technical knowledge that we gain through our education, training or work experience. Hard skills can be quantified and verified from one's academic and formal training certificates.

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Many employers also test the prior learning of hard skills before recruiting employees and impart trainings to its employees to refresh their hard skills to do the existing job more efficiently or equip them with additional hard skills required to take up future jobs. However, both hard skills & soft skills are required in every job though the degree may vary with level / position. Hard skills are required for performing technical tasks in a job and Soft skills are required for working in team and creating a congenial work environment. More of hard skills are required at operational level and as one moves higher up in his career, he requires more of soft skills to think critically, set goals, formulate strategy / action plan, organize, collaborate, connect, communicate, manage team, solve problems, get things done, analyze information and review for continual improvement. Most employers look for candidates with hybrid skills i.e. combination of both soft skills and hard skills. However, employers may prefer candidates with better soft skills if the technical skills are equal. Today there is a paradoxical situation where on the one hand young men and women entering the labour market are looking for jobs; on the other hand industries are complaining of unavailability of appropriately skilled manpower. Enormous skills gap exists between what industries demand based on the rapid economic growth and the skills that young people acquire through education and training.

1.1 Objective of the Study:

The main objectives of the study are:

- To understand through the review of literature the Skill development Movement in India.
- To understand the impact of COVID-19 pandemic on the Skill development Movement in India.
- To provide some suggestions based on the observations and findings of the study.

1.2 Research Methodology:

The study in this paper is based on exploratory research based on the secondary data and information sourced from internet, relevant books, journals, magazines, articles, media reports and Government portals on Skill India, etc.

Being looked into requirements of the objectives of the study the research design employed for the study is of descriptive type. In depth analysis of the research study have been adopted and available secondary data have been extensively used for the study.

1.3 Literature Review:

The investigators have reviewed the literature with reference to skill development Movement in India which will give an understanding about the research conducted in the field and research gaps to be filled by further research.

Arora & Chhadwani (2018), conducted a study entitled “Analysing the impact of skill India as a tool for reshaping Indian economy”. The study aimed to analyse the need of skill India campaign in reshaping Indian , analyse the programmes under skill India campaign in reshaping Indian economy and analyse the impact of skill India campaign in reshaping Indian economy. The study was mainly descriptive in nature was based on secondary data & information which was collected from the concerned sources and were as per the need of research. The relevant books document of various ministry departments & organizations, articles, paper & website were used in the study. The findings of the study indicated that “to further increase the momentum & see to the proper implementation of the Skill India campaign the government set a target of skilling 400 million persons by 2022, but its pace is in slow rate than the set target. At this pace, the 2022 target appears to be very difficult. And training to job transition rate is very low than the expectation. In its first phase, the government trained some 1.97 million people against a target of 2.4 million. And the skilling to placement ratio is

low. Skill India is aspiring programme of Government of India. At present India faces a severe shortage of trained workers. Only 2.3% of India's work force has formal skill training compared to 68% in the UK, 75% in Germany, 52% in USA, 80% in Japan and 96% in South Korea. Hence there is an urgent need to impart skills in more efficient way. For contribution in growth in Indian economy to compete with other developed countries of world it is necessary to see that in the whole process of skill India campaign, training to job transmission rate proper skill acquisition & implementation rate is undertaken in an effective manner."

Furtado (2018), conducted a study entitled "A Study on Impact of Skill Development at Entry Level Job Candidates in India". The objective of the study was to understand the gap between the job applicant's performance level & job expectation at multiple stages of one's Life and understand employability of candidates at entry level job. Both Primary data & Secondary data were used. Primary data search was taken to have an assumption-based analytical view considered in findings and Secondary data was obtained from, online websites of organizations supporting skill development in India. Few reports that state the present scenario of skills along with the need & requirement of building the skills & character of an individual were considered. Online search engine optimization & multiple online findings were also considered. The findings of the study indicated that "Skill development in India is the most essential aspect for every citizen of the nation as with booming technologies, organizations up-scaling & a transitioning era as of such today. Though there have been many services being provided by the government & other organizations, it is important to see the competitiveness also being build along with its actual reach to candidates at entry level jobs, which in most terms is not the actual case resulting to a loss on the youth's potential being built for the nation. Irrespective of the various initiatives taken by the government & other organizations as well, the conversion rate is with long-lasting sustainable effect on the market in a structured analytical way, it is important to consider before providing any initiative relating to developing human potential especially for candidates at entry level jobs because it is directly dealing with building the future of the next generation to lead. Students and candidates, prior to applying for jobs must work on building their set skills as this would not only ensure in impressing the interviewer but also result in having been selected, thus attaining your dream job".

Kumar & Ramya (2017), conducted a study entitled "A research paper on - Economic prosperity through Skill India: A study of key success factors and challenges". These main objectives of the study were to know the awareness of skill development concept, know the problems faced in self employment and provide some suggestions based on the observations and findings of the study. The research was based on the primary data and the secondary data. Primary data was collected by distributing the questionnaires to respondents and through telephonic interviews with respondents from various places in and around Mangalore city. Random sampling was used in selecting the samples for the study. Secondary data was collected from websites related to the topic. The findings of the study indicated how Government is caring to abolish unemployment problem. Majority of the respondents were aware of the Skill India Campaign due to various publicity schemes of Government which is highly commendable. Out of the respondents selected for survey majority have undergone the skill development training under different areas and have benefited them in their overall development. This shows the popularity of the schemes and good response from the youth. The survey reveals that even after the training the respondents had faced some major problems while setting up their own business, which need to be tackled. Almost all the respondents were motivated through Skill India Campaign and have encouraged others for self employment.

Prasad & Purohit (2017), conducted a study entitled "Skill Development, Employability and Entrepreneurship through Make in India: A Study". The main objectives of the study were to understand through the review of literature the effect of Make in India initiative on employability, to understand the present status of skill development in India, to analyze through the

review of literature if the Skill Development measures will help to bridge the gap of existing skills and required skills of workforce and Labour force in India and to understand the Challenges in Skill Development Initiatives in India. The study was based on exploratory research based on the secondary data and information was sourced from libraries, relevant books, journals, magazines, articles, media reports and Government portals of Make in India, Skill India, etc. Being looked into requirements of the objectives of the study the research design employed for the study is of descriptive type. The authors adopted to have greater accuracy and in-depth analysis of the research study. Available secondary data was extensively used for the study. The findings of the study indicated, “the overall status of skill capacity available, skill requirement, skill gap and initiatives taken by Government of India for Skill Development. To make the ‘Make in India’ project successful, youth of the Nation should be empowered with Formal Education, Technical and Vocational training to meet the Industrial and Market requirement as per global standard. Despite various efforts and investments in shaping the skills of a huge labor force there are grave drawbacks in the System. Even after the Government investing a lot in training costs and infrastructure, creation of robust workforce for the industry is still a fantasy. As a fast-growing developing economy, besides white and blue collar, India also needs Grey collar- knowledge workers which include ICT skills, problem solving, analytical and effective communication skills and rust collar-skilled workers at the grass root level in currently unorganized sector and un-benchmarked sectors like construction, agriculture and related trade. Government, industry leaders are constantly from time to time launching new skill development initiatives but somehow it is not reaching the casual workers who dominate the Indian work-force. Stakeholders Industry leaders, Government etc have realized that none of them can work in isolation. They will need to collaborate as the stake involved is huge. Mandatory Monitoring and Quality Certifications should be in place which will ensure high standards training programs with prime focus on enhancing the employability. Sector specific Labor Market Information System at national and state level is to be established for reducing the skill mismatch which can help in the reliable and realistic assessment of economic trends and labour market. Supply and demand of skilled manpower can be mapped with the help of Human Resource Planning which is also one of the important components. These exercises can help to anticipate skill gap over a period of time at different levels, sectors and geographical areas. A designated agency should work on generating information from the LMIS and HRP exercises. Government employers, national, state and local level training providers, trainees and prospective trainees should be disseminated with information so collated so that they can use it in their skill development plans. The information at National level can be disseminated by NCVT by receiving inputs from state and local levels. Counseling, placement and guidance can be provided by strengthening and upgrading the Employment Exchanges. In a male dominated society, there has always been a limited scope to develop their skills for women and girls in rural areas due to social, economic and cultural constraints. The payment of wages is also on lower side. Socio-economic empowerment of rural women can be attained by investing in their skill development. They can be provided with basic education, technical training and other women extension services. Support by self help groups and NGOs can help in improving their conditions by making them understand the importance of basic education and also by making the change in attitude of society towards women. A designated agency should design the courses and introduce them at various levels on the basis of emerging opportunities for skill development and employment generation. The change should be brought from education system which needs to be renovated and restructured. Young population even after having degree is not able to fit in the industry due to lack of expertise to compete. The vocational training should start from High School. Students should be made industry ready by making the curriculum for professional courses such as Engineering and MBA in a way that provides complete on the job training. The standard and quality of training need to be upgraded. Soft skills training along with technical skills will bring desired results. Moreover, with the passage of the

Companies Act 2013, the mandate for Corporate Social Responsibility has been formally introduced and it is likely that the total CSR spends will increase for employability linked programs to promote skill development. Prime Minister in his maiden speech said, Skill development should be accompanied by a spirit of 'Shram-ev Jayate' – giving dignity to labour. Skill development and entrepreneurship is one of the top most priorities of the new Government due to which first time an independent ministry has been created to take the mandate forward. Finally, it is important that the intended beneficiaries of the skill development program join training programs with an inspiration to learn and make them self-reliant to live a better life. Short duration skills course through SDIS-MES Scheme, Dual course system as Germany pattern and Apprentice Training scheme 1961 revised 2015 should be implemented and monitoring properly. Basic Infrastructure i.e. Tools, Equipments and Machineries in ITIs should be replaced as per latest technology and as per Market need. All Government Sector, where Technical knowledge is needed, in Recruitment procedure minimum qualification should be ITIs. The Strengthening Capacity of Vocational Instructor Training Provider Institute i.e. FTIs, ATIs, MITIs and CTI under Directorate General of Training (DGT), Ministry of Skills Development and Entrepreneurship”.

Sandhya Rani (2016), conducted a study entitled “Skill Development Training Programmes for Reducing Gender Inequality in India”. The main objectives of the study were to highlight the importance of skills for the development of country, focus on gender inequalities in possessing skills in rural and urban India among women and study the programmes providing skill Training for both women and men. The paper was totally relied on secondary data. The data required was collected from the necessary published and unpublished information and from the internet sources wherever necessary. The findings of the study indicated that “the initiatives involving both the States and the Centre, often with private partnership will lead to the establishment of credible, trustworthy and reliable training, testing and certification edifice linked to global standards and responsive to the needs of the ultimate consumers of skill. With an estimated 58.6 million new jobs in the International Economy inviting skilled personnel for quality jobs beckoning the Indian Youth, the government and Private Sector will act in a concentrated manner so that these opportunities materialize and operate as an employability guarantee. Skills and knowledge are the driving forces of economic growth and social development of any country. They have become even more important given the increasing pace of globalisation and technological changes provide both challenges that is taking place in the world. As India moves progressively towards becoming a ‘knowledge economy’ it becomes increasingly important that the XI Five Year Plan should focus on advancement of skills and these skills have to be relevant to the emerging economic development.”

Pandey (2016), conducted a study entitled “Improving Skill Development & Employability Potential through Higher Education, Research & Innovations in India”. The main objectives of the study were to look in to the current policies supporting skills development programme, identify the gaps between government and private programs that need to be filled is duly intended during the study with a aim to collect lessons learned from past policy interventions, how higher education institutes can contribute in successful skill development of the country which is the flagship programme of the government. The study was mainly descriptive in nature based on secondary data & information was collected from the concerned sources as per the need of research. The relevant books document of various ministry departments & organizations, articles, paper & website were also used in the study. The findings of the study indicated that “the Private sector plays a major role in overcoming the gaps in Government policies. However, their motive is to expand and scale up their very own enterprises. Thus, their process of skill development may vary. There is a lack of innovation in Skill development programmes. Almost all courses and curriculums are catering to industrial needs. It is the time when at one side employment opportunities are being created in industries, on the other hand Climate and environment is severely getting affected by fast industrialization, besides other

factors. Therefore, skill development programs must be framed innovatively such that there is environment protection, optimal utilization of bio-waste and earning of livelihood can happen, all at same time. There appears a lack of trained trainers to impart necessary formal skill. Going by the different figures mentioned in article, target to create skilled workforce of 500 million by 2022 is large and no. Of certified trainers is very low. There is a strong need of trained trainers at different levels who can serve full time in a institute to provide full attention to the registered candidates. There are plenty of Government Schemes but most of them are in collaboration with private sources, or indirectly benefiting enterprises. More than 20 Ministries/Departments run 70 plus schemes for skill development in the country. However, there are gaps in the capacity and quality of training infrastructure as well as outputs, insufficient focus on workforce aspirations, lack of certification and common standards and a pointed lack of focus on the unorganized sector. Government intervention in skills development can make its impact on grounds like external benefits to skills that are not captured in market practices, Market imperfections that distort the benefits and costs of skills development, weak private training capacity and inequitable access to good quality skills training.”

Saini (2015), conducted a study entitled “Skill development in India: need, challenges and ways forward”. The main objectives of the study were to study the present skill capacity of India, study the challenges faced by skill development system in India and suggest possible solutions or ways forward. The study was mainly descriptive in nature, based on secondary data and information was collected from the concerned sources as per need of the research. The relevant books, documents of various ministries/departments and organizations, articles, papers and web-sites were used in the study. The findings of the study indicated that “India’s transition to one of the largest and fastest growing global economies during the last decade has been a remarkable phenomenon. In order to sustain its growth trajectory, an efficient and continuous system of skill development for its workforce is critically imperative for India. In order to capitalize the demographic dividend, India will need to empower its workers with the right type of skills. The drop-out rates of educational institution were estimated to be 50% in the age group of 5-14 years and 86% after 15 years of age and in contrast to this the participation rate of the workforce rises rapidly after 14 years of age and it results in a semi-literate workforce which finds it difficult to absorb higher form of skills. 38% of Indian workforce is illiterate, 25% has education below primary or up to primary level and remaining 36% has an education level of middle and higher level. 80% of Indian workforce does not possess any marketable skills. Only about 2% have received formal vocational training and 8% non-formal vocational training, thereby implying that very few new entrants to the work force have any marketable skills as compared to developed economies such as Korea (96%), Germany (75%), Japan (80%) and United Kingdom (68%). In-nutshell, it can be said that despite making considerable progress in terms of literacy, high incidence of illiteracy cripples the Indian workforce even today. The above facts are a stark reminder that India’s demographic dividend can rapidly convert into a demographic nightmare if skills are not provided to both new and existing workforce. There is a need for increasing capacity and capability of skill development programs. In this direction, both the Government and its partner agencies have undertaken various measures/ initiatives for the effective implementation of the skill development system in the economy. But still India faces a number of unresolved issues and challenges that need immediate attention of the policy makers.”

Misra (2015), conducted a study entitled “Skill Development: A way to leverage the demographic dividend in India”. The main objectives of the study were to understand the present skill development policy initiatives in India and find out the ways and means to produce world-class skilled manpower domestically through effective use of skill development schemes of Government of India. Primary data was collected through personal interview with government officials and training providers. Secondary data were collected through government policy documents, schemes, case studies, research papers & documents of various international agencies like ILO, WB, OECD etc. The

findings indicate that “India is in demographic phase and is in position to reap the benefits of the demographic dividend by providing trained manpower to fulfill the global and domestic need for skilled manpower, the Government of India had initiated National Policy on Skill Development, to facilitate its target of imparting requisite skills training to 500 million people by 2022. However, on the other hand, there are lots of challenges in the way of achieving target such as quality of training, standardization of curriculum, recognition of course globally etc. India has lot to work on policies for the skill development and put efforts for effective implementation of these schemes. The adoption of a much more robust approach is essential for putting in place a quality skill education and training framework in the country. The existing skill development policy should be modified in accordance with the need of the industry and global market. By establishment of Skill Development University in every state will fulfill the need of academic curriculum design, assessment and certification as per the global standard. Private participation will be more appropriate in infrastructure development and training to the participants. Target to train 500 million people by 2022 can be achieved through effective use of schemes by proposed restructuring of Skill Development Mission.”

Das (2015), conducted a study entitled “Skills Development for SMEs: Mapping of Key Initiatives in India”. The main objective of the study was to critically examine national skills development initiatives in India as the country embarks on building skilled manpower to meet the demand of SME sectors in the coming decade. The paper was based on quantitative and qualitative secondary data collected from different sources including MIS (management information system) reports generated by the implementing agencies and host ministries of the respective SD missions. The Planning Commission of India also compiled several datasets for strategic planning of national missions. Data collected were analyzed, visualized and presented using spread sheet application software. The findings indicate that “many of the government missions or national programmes fail to reach out to the targeted beneficiaries due to lack of awareness and monitoring mechanisms. However, the National Rural Livelihoods Mission (NRLM) and to some extent the National Skill Development Mission (NSDM), have increased awareness among their targeted beneficiaries. They have also established ICT-enabled monitoring mechanisms that help in quick identification of gaps in implementation. Data presented in this paper also indicate that these missions have attained good enrolment from targeted communities. In some SD centers, economically weaker sections, but not part of the marginal communities, also benefitted. Economic prosperity is linked to equitable access to vocational and professional skills enrichment training in all industrial sectors including informal sectors.”

Kanchan & Varshney (2015), conducted a study entitled “Skill development initiatives and strategies”. The main objectives of the study were to understand the present status of skill development in India, the challenges in skill development in India, Skill development initiatives and strategies in India and its impact on India. The research paper was an attempt of exploratory research, based on the secondary data sourced from journals, magazines, articles and media reports. Looking into requirements of the objectives of the study the research design employed for the study was of descriptive type. Available secondary data was extensively used for the study. The investigator procures the required data through secondary survey method. Different news articles, Books and Web were used which were enumerated and recorded. The findings indicate that “Presently 80% of the workforce in India (rural and urban) doesn’t possess any identifiable and marketable skills. Therefore, bridging this gap through various skill development initiatives could make India the global hub for skilled manpower, and also result in a surplus of skilled manpower of approximately 47 million 2020 (FICCI). Despite various efforts and investments in shaping the skills of a huge labor force there are grave drawbacks in the system. Even after the government investing a lot in training costs and infrastructure, creation of robust workforce for the industry is still a fantasy. As a fast-growing developing economy, besides white and blue collar, India also needs Grey collar- knowledge workers

which include ICT skills, problem solving, analytical and effective communication skills and rust collar-skilled workers at the grass root level in currently unorganized sector and un-benchmarked sectors like construction, agriculture and related trade. Government, industry leaders are constantly from time to time launching new skill development initiatives but somehow it is not reaching the casual workers who dominate the Indian work-force. Stakeholders (Industry leaders, Government etc) have realized that none of them can work in isolation. They will need to collaborate as the stake involved is huge.”

2.0 Analysis and Findings:

2.1 Skill development movement in India:

India is a young country with 65% of its youth in the working age group. It is projected that the total workforce of India would be around 404.15 million by 2023 which will include around 59 million youth (*Periodic Labour Force Survey 2017-18*). Skill development of these youth can help in reaping this demographic advantage as it would add value to their personal growth and ultimately boost economic growth of the country.

Skill India Mission, an initiative of by the Government of India, was launched on 15 July 2015 to empower the youth of the country with required skill sets and make them more employable and productive in their work environment. The success of a nation always depends on the success of its youth and Skill India is certain to bring a lot of advantage and opportunities for its young workforce.

Earlier, the skill development of youth was being ensured through implementation of the Apprenticeship Act, 1961 the compliance of the said Act was being monitored and implemented by Ministry of Human Resource Development (MHRD) and Ministry of Labour & Employment (MOLE). The Apprenticeship Trainings of the Trade Apprentices were monitored by MOLE through Directorate General of Training (DGT) and ITI framework and the Apprenticeship Trainings of Engineering Graduates, Technician and Vocational Apprentices were monitored by MHRD through respective Board of Apprenticeship Training (BOAT) / Board of Practical Training (BOPT). With launch of Skill India Mission, a separate Ministry for Skill Development & Entrepreneurship (MSDE) was formed to focus on enhancing employability of the youth through skill development. The entire apprenticeship training framework under MOLE has been transferred to the new Ministry i.e. MSDE and the training framework under MHRD are still continuing. Accordingly, now the Apprenticeship Trainings of the Trade Apprentice (designated trades for ITI and below qualification) & Optional Trade Apprentices (Engineering & Non-engineering Optional Trades formed as per Industry requirement) are monitored by Ministry of Skill Development & Entrepreneurship through respective Regional Director of Skill Development and Entrepreneurship (RDSDE), Sector Skill Councils (SSC) under Directorate General of Training (DGT) for Designated Trades and National Skill Development Corporation (NSDC) for Optional Trades.

The skill ecosystem in India is re-energizing the country’s workforce with reforms and policy interventions by Government of India. As per MSDE, “*Pradhan Mantri Kaushal Vikas Yojana (PMKVY) alone has till date seen close to 92 lakhs people get skilled and prepared for a new successful India. More than 720 Pradhan Mantri Kaushal Kendras (PMKKs) have been established till date to support skill development infrastructure in the country. Effort is also being made to recognize and certify skills acquired through informal means through Recognition of Prior Learning (RPL) program under PMKVY, which has brought a major shift from unorganized sector to an organized economy and So far, more than 50 lakhs people have been certified and formally recognized under RPL*”

The primary objective of Skill India Mission is to standardize, align and ensure implementation of common norms across all skill development programs (including ITI ecosystem) in the country for garnering better results in all vocational education and training programmes.

Comprehensive reforms have been introduced in the Apprentices Act 1961 by (i) giving control to the private sector to maintain industry standards as per market requirement and (ii) giving regulatory rights to the industry where they can even set the target for apprentices that they require. This is a big opportunity for industry to leverage and benefit from the scheme. National Apprenticeship Promotion Scheme (NAPS) has also been introduced to promote a sustainable model of skill development and industry-connect. Under this scheme, the Government of India provides financial benefits for apprenticeship. As per records, 7 lakhs approx. apprenticeship trainings have been conducted so far.

Pradhan Mantri Yuva Yojana (PM-YUVA) has also been introduced with the aim of educating and equipping potential and early stage entrepreneurs and catalyzing a cultural shift to support aspiring entrepreneurs. The candidates are linked to the Micro Units Development and Refinance Agency (MUDRA) scheme of the government to get assistance in initial business funding.

Now, Skill India is not only limited to the domestic market but even caters to the global market demands and promotes cross geographical exposure and opportunities in the international market. Soon India will evolve into a skilled society with lots of possibilities, prosperity and progress for all.

2.2 Skill Development Trainings during COVID-19:

COVID-19 pandemic has adversely affected and slowed down businesses across all sectors. The companies in their endeavor to reduce cost especially the labour cost during the 'new normal' would prefer workers who are more adaptable and equipped with new-age technology. Hence, it is important that the young students are imparted diversified skill sets so that they remain employable in the post-pandemic world.

The resumption of full-fledged work in industries seems far till the pandemic is in control or some medicine / vaccine is available in the market. In such scenario, it is important that all kinds of skill training programmes are continued to strengthen the work-pool so that when the situation improves, the trained workforce is ready to for immediately resuming the activities quickly picking up with speed and agility.

The Government of India on its part is already encouraging students and workers to acquire new skills and utilize their time effectively during this pandemic situation. The National Skill Development Corporation's (NSDC) eLearning aggregator portal, eSkillIndia portal offers more than 400 curated courses from various knowledge providers. During this pandemic, eSkillIndia has partnered with English Score, SAS India, Saylor Academy (USA) and UpGrad, to provide various online opportunities to interested skill-seekers.

As an emergency response and experimentation in skill development, industry and workforce has quickly migrating from classroom / on the job training to online / distance learning to neutralize the pandemic situation by adapting to the virtual mode and allowing young workforce to continue their skills upgradation and preparedness for the new normal. The pandemic has also taught that short term solutions can be and have to be found to create long-term positive impacts.

2.3 Challenges faced by Skill Development Trainings during COVID-19:

Skill Development is facing the following challenges during the pandemic:

1. Operation of Training Institutions:

The main challenge with Training institutions are to remain operational, to establish and maintain communications with and between trainers and students, and to continue to provide their services to the community, despite having suspended face-to-face classes.

2. Work from Home Norms:

The mandate to move employees to working from home has made it impossible to provide in-person, classroom-based skills training.

3. Temporary control over training premises by Govt.

Many training institutions are also supporting national crisis response measures as their training room/ workshops are being used to manufacture personal protective equipment and hand sanitizer etc for healthcare purpose or their premises are being used as temporary quarantine centers, isolation facilities or makeshift corona hospitals.

4. Lack of Access to Digital Platform:

Lack of smart phones/ mobile devices, mobile/internet data packs, the ability to recharge, fluctuating internet connectivity and a dearth of discipline are now a reality. It is required to explore aspects like 'learning and training anywhere, anytime' and work on the concept of lifelong learning.

5. Lack of Preparedness:

Technical preparedness is required to strengthen the ability to organize digital education, skilling and mobilizing teachers / trainers so that they continue offering effective e-learning.

2.4 Opportunities for Skill Development Trainings during COVID-19:

Every challenge opens doors for new opportunities. COVID-19 pandemic has shut many doors at the same time have also opened many doors and people slowly accept and adapt to the "New Normal". New dimensions and horizons which were obscured till date have suddenly been visible and vibrant. The same is true for Skill Development Trainings; the opportunities revealed during the COVID-19 pandemic is enumerated as under:

1. Upskilling for the New Normal

As many industries, business and process have become obsolete, forcing them to close down, the jobs being carried in such business have suddenly become useless resulting in loss of job. To remain in business, the industries have to adhere to the norms of "New Normal" and adapt quickly by embracing the change. It requires to prepare the work force for such new functions and upskilling them through Skill Development Training. Now it would be extremely necessary to be quick in response to any future disruptions as in future such disruptions can be expected at any moment of time. Change is the only constant and one who have a change before the change actually hit would win, one who change with change will just manage to survive and one who will not change will perish. It is true for both the Industry as well as the workers. The workers should also come forward on their own to avail such facilities and upskill themselves at their own cost and not depend on his/her employer as the pandemic has shown how the employers back out from their responsibilities and leave the workers to their fate. The pandemic has proved as a strong wakeup call for all.

2. Concept of any time learning / learning at one's convenience

As many of the Training Centers have been forced to shut down adhering to the social distancing norms, the Physical Trainings have been hit. But at the same time, it has opened doors

for online trainings through various online platforms where in one can download and learn anytime and at his/her convenience. If the learner wants, he can go through that learning any number of time and repeat the sessions for better understanding and clarity. Example of such trainings are the NPTEL courses being offered by Government of India. This aspect of learning was never given much importance and emphasis was always given to the physical trainings. Many employees due to their time constraint for physical trainings used to be deprived of trainings, now they can attend such trainings online from anywhere and at any time.

3. Reach beyond geographical boundary

With concept of online trainings & webinars using the latest video-conferencing platforms the earlier limitation of geographical boundary has been broken and people at far off locations can come together for a learning / training. Now, there is no limitation on the capacity of the Training Hall or attention capacity of the trainers.

4. Access to the best of trainers

Due to the online facility renowned trainers from around the globe can be accessed online directly from their institute / home without requirement of their travel to long distance and they can be accessed by different organizations at the same time making best use of their time also saving their money.

5. Affordability of training

No more travel to long distance or staying in training hostel / hotels is required, the cost of trainer can be shared over a large audience making the training highly affordable to all participants. Also, organizations which would have otherwise not afford training from such renowned trainers / global leaders can now access to them.

6. Pooling of resources

Organizations which otherwise do not have good training institutes can have the facility to pool the resources of other organizations and can jointly have structured training programmes on skill development.

2.5 Strategies adopted towards Skill Development Trainings to overcome challenges during COVID-19:

All stakeholders for Skill Development Training have understood the challenges faced during COVID-19 and have adopted the following steps:

1. Strategies adopted by Government

- i. Ministry of Skill Development and Ministry of Human Resource Development (Now Ministry of Education) issued guidelines & instructions to corporates making them mandatory to release stipend to apprentices undergoing skill training in spite of their actual attendance at the Skill Development Training Centre or on-the-job training. This was done with a purpose of support the Skill Trainees / Apprentice Trainees financially during the pandemic situation.
- ii. Health & Safety of the trainees are the responsibility of Employer as mandated by statute under Apprentices Act, 1961. During the pandemic, Ministry of Skill Development and Ministry of Human Resource Development (Now Ministry of Education) issued guidelines making Employer responsible for medical expenses of apprentices if they get infected with corona virus.

- iii. To encourage Corporates for engaging apprentices for Skill Development, Government of India has allowed corporates to book their expenses on stipend paid to apprentices beyond the minimum stipulated number, under Corporate Social Responsibility (CSR).

2. Strategies adopted by Industry / Companies

- i. Consultant / trainers are being hired to make online modules of different trainings or arrange for conducting online trainings through webinars to impart skill training from home when the Skill Training Institutes were shut with Government orders and on-the-job trainings were also hampered.
- ii. Collaborating with peer industries / companies to pool their resources towards skill development training programmes.
- iii. Coordinating with Government agencies to ensure compliances of statutory provisions on Skill Development.
- iv. Formulating policies to absorb some of the trainees / apprentices directly or indirectly in their organization or peer industries after their completion of training so as to help them in employment after Skill Training

3. Strategies adopted by individuals

- i. During this pandemic, Individuals have understood the necessity of skilling themselves and not depend on the Employer for skilling them. It is seen individuals now a days look for various webinars and training programmes available online and voluntarily avail such skill development trainings so as to upskill themselves and remain employable during the pandemic and beyond.
- ii. Individuals are now appreciating & supporting the efforts being taken by their Employer and the Government towards Skill Development Training as it is all in their own interest.

3.0 Suggestions & Recommendation:

3.1 Solutions for Skill Development Trainings during COVID-19:

The following are some solutions to the challenges faced by Skill Development during the pandemic:

1. Work virtual:

The Training Institutions have to migrate to online mode and adopt virtual platforms to run the show digitally from home adhering to the guidelines issued by Ministry of Home Affairs (MHA), Government of India and respective State Government.

2. E-learning:

Online skilling can be done through live sessions using Zoom/Google/Microsoft based platform. It is also possible to explore many mobile applications that support and promote Digital Learning. Many bigger IT companies like TCS are offering their Learning Management Systems (LMS) free of cost to NGOs to facilitate and streamline online deliveries. Other organizations can offer access to such knowledge platforms and online learning resources to facilitate self-learning. The course material can be downloaded and kept for ready reference. The students need not revisit it online every time. COVID-19 has accelerated the adoption of fully digitized approaches to re-create the best of in-person learning through live video and social sharing.

3. Training through Radio and TV:

The Maharashtra government had already sought air time on national television and radio from the

Central government to conduct educational programmes for children residing in areas where online learning could be a problem due to lack of internet access.

4. Access to digital platform:

It is highly important to redirect resources to places with low digital access or where the resources are unavailable. Service providers and companies need to come forward to invest in recharging mobile data packs or internet connections for students from the lower strata.

5. Access to digital devices:

Skill training has to be practical by ensuring that all the training materials and props reach the homes of the students, especially those who live in slums / rural areas. Private companies can come forward to fund smart phones/ tablets as a part of their CSR initiatives to bridge the digital divide. Organizations / NGOs should also come forward and conduct mass drives where people can donate their old laptops, tablets, smart phones or any other mobile devices that can be refurbished and provided to students from poor backgrounds.

6. Support of Government:

It will be highly beneficial if the Government (i) issue instructions and bring required regulations for proper functioning of Telecom companies and incentivize them, if required, so as to improve internet infrastructure and ensure uninterrupted internet access availability across all corners of India (ii) strengthen systems for the recognition and validation of digital learning (iii) increase investment in digital solutions for practical skills development (iv) improve coordination amongst education and training institutions, employment services and local authorities (v) support teachers and trainers to operate in the new environment and (vi) ensures strict compliance of Apprenticeship Act, 1961.

3.2 Recommendations:

1. Beyond the electronic connection, we need to connect emotionally - especially in times of anxiety and uncertainty. The Management is in panic mode as the business are trapped in the tornado of global recession, the workers are in panic mode due to job loss and salary cuts. The future is in fog. But, at this moment of challenging time Industries & Individuals need to come together and collaborate at this testing time to face the challenge and converted it to advantage in favour. The Government needs to extending a helping hand and promote hope not despair.
2. Doing nothing and waiting for normalcy would be foolish as it emerges seems the change permanent. The quicker one adapts to the post-pandemic "New Normal", the better he / she can position himself / herself for the future possibilities. For adapting the existing workforce as well as the future workforce needs to be adequately skilled for the new requirement of the "New Normal".
3. The entitlement mentality of workforce cannot be nurtured anymore. The individuals have to take up the skill development initiatives themselves without waiting for the Industry or Government. The pandemic has shown how the carpets can be pulled under our feet. The vanity of job security has been evident. Individual's wellbeing is his/her own responsibility. Earlier, the efforts of Industry / Government to skill the work force was not being seriously appreciated by the workforce now the pandemic has taught that workforce needs to appreciate the skill development efforts in their own interest.

4.0 Conclusion:

Every challenge has an opportunity hidden in it. The disruption due to covid-19 pandemic is temporary but the changes would be permanent. The process of change has been expedited and have given birth to new possibilities. But these possibilities would be only for those who embrace these changes. The industries and individual who will adapt well will exist rest will perish. Panic will push further to perish. They both need to understand the requirement of "New Normal" and skill up to meet it so as to welcome the new dawn of change.

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Skill Development of Women for Atmanirbhar Bharat

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Abstract:

This research paper endeavours in understanding the Female Labour Force Participation (FLPR) in India, initiatives of Government, support of corporates towards skill development of women, issues that needs to be addressed for achieving the goals, role of skill development of women in meeting the objectives of Atmanirbhar Bharat Abhiyan and the way-forward. The study is an exploratory research based on the secondary data and the research design employed for the study is of descriptive type. Literature Review has been done with reference to skill development of women in India and Atmanirbhar Bharat Abhiyan to identify the research gaps.

Post COVID19 pandemic, businesses are disrupted and lives & livelihood are severely affected. In the midst of such an economic crisis, the Government launched "Atmanirbhar Bharat Abhiyan" to make India self-reliant and steer the country to growth. This ambitious mission cannot be achieved without bringing the women to the mainstream workforce. But India has been witnessing a declining FLPR based on various social, political and economic reasons. The Government has adopted various policy-based approach and capacity building through skill development programmes and Corporates are also partnering in the process through their CSR Projects, Apprenticeship & other similar programmes for women.

To attain the self-reliant tag in a true sense, women need to be empowered economically and integrated with the developmental goals of the nation. The social stereotypes need to be removed and the women needs to be supported & encouraged to partner in the progress of the country and achieve self-reliance.

Key words: Atmanirbhar Bharat, Skill Development, Training, CSR Women Empowerment

1.0 Introduction:

The world has changed post COVID-19 pandemic with disrupted businesses, life & livelihood adversely affected and it seems the impact would persist for a considerable time. On the wake of such a challenging time, the Hon'ble Prime Minister of India has given a clarion call for Atmanirbhar Bharat Abhiyan to steer the country on the path of self-sustenance and galvanize the growth across various sectors of the economy so that the country as a whole can fight back the COVID-19 onslaught.

The structure of the Atmanirbhar Bharat has been envisaged to be standing on five pillars viz. economy, infrastructure, system, demography and demand. Out of these five pillars, the vibrant demography of India and the capable Human Resource / skilled workforce is the backbone to support the ambitious mission of being self-reliant.

Women constitutes half of India's workforce. The potential of the unutilized Female Labour Work Force can be tapped through skill development of the women which can improve the Gross domestic product (GDP) of India and help in the success of Atmanirbhar Bharat Abhiyan.

1.1 Objective of the Study:

The main objectives of the study are:

- To understand through the review of literature the Skill development of Women in India.
- To understand how Skill development of Women can help in the success of Atmanirbhar Bharat Abhiyan.
- To provide some way-forward based on the observations and findings of the study.

1.2 Research Methodology:

The study in this paper is based on exploratory research based on the secondary data and information sourced from internet, relevant books, journals, magazines, articles, media reports and Government portals on Skill India, website of world bank etc. The research design of the study is descriptive, in-depth analysis of the research study have been adopted and available secondary data have been extensively used for the study.

1.3 Literature Review:

The investigators have reviewed the literature with reference to skill development of women in India and Atmanirbhar Bharat Abhiyan of Government of India which will give an understanding about the earlier research in the field and research gaps.

Sowjanya S. Shetty & M, Dr. V. Basil Hans (2019) have opined that if the girls are given quality education and skilled to secure a livelihood that would be the best way to ensure progress of the society and also contribute in development of the Nation.

Dr. Rajni Arora & Manoj Chhadwani (2019) have stated that the whole process of Skill India campaign needs to be undertaken in an effective manner for Indian Economy to compete with other developed countries of the world.

Musharraf Jahan (2019) mentioned that the status of women is improving due to technology and with help of advanced technology women have now access to new jobs, professions & occupations.

Manjot Kaur, Sukhdeep Kaur Mann & Kanwaljit Kaur (2018) have opined out that the skills & knowledge that a woman acquires, always proves beneficial, sooner or later.

Anjali Vyas (2018) has stated that as India progress towards knowledge economy it is necessary to focus on advancement of skills which are relevant to the emerging economic environment.

MSR Krishna Prasada Rao (2018) has remarked that Government of India is promoting Skill India & Stand-up India for upliftment of youth especially women.

Pitambara & Bishwa Bhaskar Choudhary (2017) have stated that the employment pool can be broadened if the girls & women participate in their local economics.

Tauffiqu Ahamad, Ambalika Sinha & Rajesh Kumar Shastri (2016) have brought out that Government of India has been giving special attention on skilling of women as per world standards.

Sonali Kanchan & Sakshi Varshney (2015) have stated that International players find great opportunity in the Indian skill sector to enter a growing market whilst ensuring service to the society.

Tanu Jain, Dr. Reena Verma, Prof. (Dr.) R.P. Agarwal (2016) have opined that skill development sector requires a paradigm shift in favour of innovations, improvements and high-quality training. The concept of training and skill development needs to move beyond the conventional goals, encourage higher self-esteem and overall personality development of women for an effective Skill development.

Dr. Jag Prasad Verma (2016) has mentioned that India marches towards a knowledge economy it is imperative to focus on advancement of relevant skills that is befitting to the emerging economic environment.

Dr. Shailendra Kumar Gupta (2016) has stated that the role of women is being recognized and steps are being taken to promote women entrepreneurship. Today, women are willing to take up business and contribute to the growth of the nation.

Dinesha. P. T & Naveenchandra C B (2016) have remarked that employment revolution along with skill development revolution is the need of the hour to unlock the full potential of women workforce in India and there should be focus on women specific policies for their effective participation in the employment market.

2.0 Analysis and Findings:

2.1 Female Labour Force Participation in India:

As per the data of International Labour Organisation (ILO), published by World Bank, the Female Labour Force Participation Rate (% of female population age 15+) in India is about 21 percent in 2019 against the Male Labour Force Participation Rate of 74.4 percent. The declining rate of Female Labour Force Participation Rate is attributable to following social, cultural, political and economic factors:

- i. Increased duration of academics as girls tend to pursue higher education
- ii. Shrinking of the agriculture sector in rural areas coupled with lack of alternative jobs in the manufacturing sector
- iii. Lack of smart infrastructure options in urban areas
- iv. Mobility limitations
- v. Social stereotypes towards women and work, family commitments, increasing household incomes
- vi. Employers' bias against hiring women, terms of employment, unconducive working conditions
- vii. Jobless growth, job stagnation and unemployment situation (aggravated by the COVID-19 pandemic).
- viii. Inequal payment of wages (lower wage rate) to women workers in unorganised /informal sectors

The women workforce brings in different perspective or approach to specific problem / issue in the workplace, creates a balance in the gender gap, ensures women empowerment, helps in bettering the living standard in the society and strengthens financial security of the family. Higher involvement of women in the workforce gives a positive impact on the economy.

2.2 Initiatives of Government towards Skill Development of Women:

To increase the Female Labour Workforce Participation rate in India, the Government of India has adopted various policy-based approach starting from educational scholarships,

reservations/quotas, self-employment through self-help groups to capacity building through skill development training programmes.

The Ministries of Women & Child Development (WCD) and Ministry of Skill Development & Entrepreneurship (MSDE) are partnering to enable, skill and empower the women and youth of India. Women Training under MSDE takes care of providing skill training to women and aims at stimulating employment opportunities among women of various socio-economic levels and different age groups. Lives of over 35.36 lakh women have been transformed and their livelihood secured through Skill Development Training under following initiatives of Skill India mission launched by MSDE:

1. **Long Term Skill Development Training** - through around 15,000 Industrial Training Institutes (ITIs) with special focus on enrolment of women (173,105 women trainees in 2019).
2. **Short Term Skill Development Training** - promote increased participation of women in the workforce through appropriate skilling and gender mainstreaming of skills under the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) – 40% of 73 lakh candidates trained under Pradhan Mantri Kaushal Vikas Yojana 2016-2020 are women candidates. Around 6000 training targets have been allocated to train women in 4 Pradhan Mantri Mahila Kaushal Kendra (PMMKK). Exclusive ladies' batches for skill development trainings under the National Apprenticeship Promotion Scheme (NAPS) in all Centrally Funded Institutes (CFIs) etc.
3. **Essential skills training and vocational training** - to non-literates, neo-literates as well as school drop-outs through Jan Shikshan Sansthan (JSS) to uplift rural population economically with special focus on women (90 % female trainees).
4. **Women's Vocational Training Programme (WVTP)** - promotes Vocational Training for women for wage-employment in industry, as instructors and also promotes their self-employment through Craftsmen Training Scheme (CTS), Crafts Instructor Training Scheme (CITS) and Advanced Vocational Training Scheme (AVTS) etc.
5. **National Skill Training Institutes (NSTI) especially for women** – 18 National Skill Training Institutes (for Women) are imparting skill training exclusively for women.
6. **School Initiatives and Higher Education** - In the school education space, NSDC along with Ministry of Human Resource Development (MHRD) have identified 73 Job roles across 21 Sectors to be offered and in the higher education space, NSDC is working with All India Council for Technical Education (AICTE) for facilitation of its flagship initiative of PMKVY-TI (Pradhan Mantri Kaushal Vikas Yojana – Technical Institute) with special focus on women candidates.
7. **Special Global Skill Training** – through India International Skill Centres (IISCs) for promoting global mobility of women workforce, strengthening the Indian skilling ecosystem and sharing of knowledge with other developing & developed economies.
8. **Future jobs and industry-oriented Skill Training** – for encouraging participation of women in new-age job roles aligned to Industry 4.0 like AI, 3D printing, Data Analytics etc.
9. **Recognition of Prior Learning (RPL)** - more than 4 lakh women candidates have been oriented in different skill areas, recognizing their existing skills through a formal certificate.
10. **Apprenticeship Training** - under Apprenticeship Act, 1961 and amendments made thereunder for on-the-job industry experience of trainees.

2.3 Corporates support for Skill Development of Women in India:

Corporates have always partnered with the Government for the Skill Development of Women through their CSR Projects, Apprenticeship & other Skill Development Programmes.

Skill development is listed as an activity under Schedule VII of the Section 135 of the Companies Affairs Act, 2013 for Corporate Social Responsibility (CSR) projects. Further, as per circular dated 12.02.2016 of Ministry of Corporate Affairs, Industries/establishments can utilize their CSR funds for Apprenticeship Training including Basic Training expenses and Stipend payable to Apprentices under Apprentices Act 1961. (Amended 2014).

As per the Corporate Engagement in Women's Economic Empowerment (WEE) Report of United Nations Development Programme in India (UNDP India), in partnership with Samhita Social Ventures, 72% of BSE 100 companies report an intervention in women's empowerment. The Women's Economic Empowerment is a big challenge in India due to the low participation of women in the workforce as per the data published by the NSSO. It is estimated that if women were to participate in the labour force in equal numbers to men, the GDP of India can increase by 27%.

2.3.1 CSR in Education and Skill development of women:

Education and skill development are fast emerging as preferred choice for CSR initiatives of corporates in India. For the purpose ensuring the conduct of skill development corporates adopt various models starting from setting up their own foundation, funding training organisations & NGOs, adopting training institutes, creating training infrastructure/facilities to encouraging startups / self-help groups etc.

2.3.2 Skill Development through Apprenticeship Training programmes:

As per the recent amendment in Apprenticeship Act, corporates are required to engage apprentices in the band of 2.5% to 15 % of their workforce (including contractual staff), has flexibility to design Apprenticeship Trade as per requirement of the Industry and can engage apprentices with the minimum stipend notified by the Government from time to time. The corporates are also allowed to book their expenditure on apprentices' stipend and training above the minimum 2.5% band as CSR expenses.

Corporates have shown their full support for such Apprenticeship programmes and has been engaging candidates as Trade Apprentices (10th/12th pass, ITI pass outs), Technician Apprentices (Diploma holders), Vocational Apprentices (vocational degree/diploma holders), Graduate Apprentices (BE/BTech pass outs) and Optional Trade (non-technical graduates and post-post graduates) in various defined / optional trades / discipline to meet their industry requirement. A considerable percentage of these apprentices is women.

2.4 Issues in creating an “Atmanirbhar Bharat”:

The various issues that need to be addressed to achieve the goals of Atmanirbhar Bharat are (i) raising unemployment, (ii) huge informal employment, (iii) underemployment, (iv) low female worker participation rate (v) slow-down / stagnant growth etc. These issues can be addressed to a great extent through skill development and entrepreneurship endeavours of women.

2.5 Role of Skill Development of Women in meeting the objectives of “Atmanirbhar Bharat Abhiyan”:

The Atmanirbhar Bharat Abhiyan seeks to build capacities across sectors and promote local products as the objective of the mission is to revive different spheres of the economy in the short term and also insulate India from any future global economic downturn, in the long run (M Venkaiah Naidu, 2020).

The structural reforms in society can only be witnessed when skill development becomes the backbone of this ambitious programme (Ankit Shyamsukha, 2020). Skill development of India's

women population, will play a crucial role in the following ways and help in meeting the objectives of the government's mission:

1. ***Exploiting the demographic dividend:***

India has the advantage of having a young age structure when populations of advanced countries are rapidly ageing. Such a situation can be exploited if our workers have the skills required to produce the goods and services that are in demand in advanced economies.

Women and girls are now a days more focused to education and career compared to their previous generations. Once these more educated group of women reach working ages, they have the potential to achieve higher levels of labour force participation and higher wages than their previous generation. These shifts in women's labour force participation rates and wages would constitute a gender dividend, resulting in a more productive economy (Kate Belohlav, 2016).

According to a report by the McKinsey Global Institute, *the country could add up to USD 770 billion (i.e., more than 18%) to its GDP by 2025, simply by giving equal opportunities to women.*

2. ***Skilling, Up-skilling and re-skilling of women workforce:***

To remain globally competitive with a well-assured future, the focus should be on "skills, scale and speed" and shift to demand-driven skill development, digital technology and skills pertaining to Industry 4.0 to create more employment opportunities for women in post-pandemic era. If the women workforce is upskilled, they would be ready to take up the future jobs.

3. ***Adoption of digital technology by women workforce:***

As work from home is the new norm in the pandemic situation and many offices are being closed down permanently. If the women adopt quickly to digital technology, they can contribute from their home breaking the geographical barrier. Many ladies who had earlier opted out of office due to family obligations can now handle both work and home responsibilities from their home with help of digital technology.

4. ***Vocal to Local:***

Hon'ble Prime Minister while addressing the nation on 74th Independence Day said that the campaign for vocal to local, Re-skill and Up-skill will work for a self-reliant economy. Voice has now been raised to buy, promote and preserve local skills and products in India and work towards "vocal for local" as an opportunity to boost local skills and products in India.

5. ***Local to Glocal:***

To emerge as the global hub for providing skilled manpower to other nations, it is required to strive to stay ahead in the innovation-led knowledge economy, 'Think globally and Act locally'. The aim of Atmanirbhar Bharat is to gradually reduce imports in every sector on the basis of locally available resources, talent, and skills of the human capital,

6. ***Women Entrepreneurship:***

Women play an essential role in the development of a society and economy hence to attain the self-reliant tag in a true sense, the most viable option is to empower women

economically and to integrate them with the developmental goals of the nation and campaigns such as Atmanirbhar Bharat (Anushruti Singh, 2020).

3.0 Way-forward:

1. Corporates need to come forward and create training facilities in small districts and villages to skill, up-skill and re-skill women / girls to make them ready for the future jobs
2. Government needs to promote PPP model in rudimentary, primary and advanced level of skill development training of women by mapping industry needs.
3. A centralised skill management information system needs to be maintained which can bring the entire skill ecosystem under a common web portal to meet the demand and supply of skilled female workforce
4. Education of girl / women should be skill based with industry connect so that the female students after their education are employable
5. Identifying skill is pivotal. Girls / women should be encouraged to come forward and skill themselves in the area of their interest.
6. The women skill development programmes need to be demand driven and the training modules should be as per requirement of industry with sufficient opportunities for industry exposure or experiential learning
7. Women entrepreneurship needs to more promotions and the women entrepreneurs need to be given greater access to finance, resources, markets, networks, and mentorship to succeed in building smart business models.
8. Advocacy / awareness programmes needs to be conducted for increasing social acceptance of women leading enterprises.

4.0 Conclusion:

The Atmanirbhar Bharat is the need of the hour and a national mission to empower the people of India to be self-reliant so that we are prepared for current COVID19 pandemic situation and also for any future similar recessions. The success depends on how we all come forward for the cause and work together in a mission mode. We need to break all social stereotypes / inhibitions and support our female counterpart to partner in the progress of the country. The COVID-triggered economic crisis can be an opportunity for India if we create a development model that brings opportunities for the people at the bottom of the pyramid.

In history too, when ever men & women of India came together, they could win the Freedom Struggle which otherwise was an impossible task. The history can repeat again in our struggle for self-reliance and the objective can be achieved only when the women workforce is made ready through skill development and brought to the mainstream. Skill development of women help in achieving the dream and ensure Atmanirbhar Bharat.

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EMERGENCE OF INDIA AS THE SKILL CAPITAL OF WORLD - POSSIBILITIES & PATH AHEAD

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ABSTRACT

India is blessed with a demographic dividend due to its huge young population who are about to enter the global workforce. This is at such a time when the entire world especially the developed economies are facing acute & ever growing shortage of skilled workers. If India enables this young population with the right skill, it can cater to its own domestic demand as well as cater the global skill requirement. India can emerge as the Skill Capital of the world with massive action, intense focus & mission-mode efforts in skilling the Indian youth. The researchers have made an attempt to comprehend & analyse the possibilities for India in emerging as the global skill capital or talent hub and ponder on the path ahead in this journey. The study concluded that catering to the global market calls for a mission mode focused massive action on all skill development efforts, identification of key global labour markets & key sectors as per their demand. The opportunity exists to emerge as the Global Skill Capital but to make it happen a structured approach encompassing multiple areas needs to be adopted for reaping the real benefits of the demographic dividend.

Keywords: Skill Development, Demographic Dividend, Workforce, Employability, Global Skill Capital.

Introduction

India has made its mark globally and its presence can be felt in almost every country be it the indentured labourers in Southeast Asian Countries, farmers & drivers in Canada, nurses in Europe or healthcare / finance / technology consultants in Australia, America and European Countries. The Indian emigrants are successfully contributing to their chosen countries where they have migrated. The contribution of these professionals have completely changed the Image of India from a county of snake charmers & bullock carts to a country producing the largest number of doctors & engineers. The greatest factor that has penned their success globally is their ability to leverage their skills, sheer hard work and quick adaptability. A huge growing youth population (16 million approx.) is being annually added to the workforce in India (an estimated 70% of the population would be in the working-age group by 2025); on the contrary the workforce of the most advanced economies including China is either shrinking or stagnant. If this youth population is skilled right with future focused and industry-linked skills, it would transform India into a large skill-hub. This talent pool can cater not only the domestic economy but also cater to the global market.

Objectives

The study has been conducted with an aim to:

- Understand how India is emerging as the global skill hub
- Analyse the possibilities in favour
- Ponder on the path ahead in this journey.

Research Methodology

The study is based on exploratory research based on the secondary data and information sourced from internet, relevant books, journals, magazines, articles, media reports and Government portals on Skill India, websites of various related Ministries, ILO and World Bank etc. The research design of the study is descriptive, in-depth analysis of the research study have been adopted and available secondary data have been extensively used for the study.

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Literature Review

Dr. S.C. Patil & Prof.Amaresh B Charantimath (2021), in their paper titled "*Skill Development Initiatives and Employment Opportunity in India*" aimed to appreciate the importance of employability skills and the skill gap between expected vs. acquired Skills. The study concluded that the effective involvement of the stakeholders viz. workforce /students/trainees, Governments, academia and training partners can enhance the employability rate in India. Industry-institute interface can impact the infrastructure facilities and curriculum upgradation. The Public-private partnership can fulfil the requirement of funding, controlling and reviewing of the skill development programs.

Dr. Chandra Sekhar Dash & Shilpa Dash (2020), in their paper titled "*Skill Development Initiatives and Employment Opportunity in India*" aimed to assess the skill landscape of India in the wake of technological advancements, global transformation & international mobility of labour / workers. The study concluded that despite the commendable aspects of the Skill India Mission, a lot more needs to be done w.r.t. gender inequality, sectoral imbalance in skilling, training & placements etc. for achieving the real essence of skill development.

M.K. Ganeshan & Dr. C. Vethirajan (2020), in their paper titled "*Skill Development Initiatives and Employment Opportunity in India*" aimed to analyse the current status of skill development and the challenges in implementation of various initiatives. The study concluded that global players have discovered boundless opportunity in the Indian Skill Sector which has given rise to a demand of around 500 million plus skilled workers by 2022 these issues.

DilipChenoy, Shobha Mishra Ghosh & Shiv Kumar Shukla (2019), in their paper titled "*Skill development for accelerating the manufacturing sector: the role of 'new-age' skills for 'Make in India'*" tried to put light on India's perspective in developing a unified environment for 'new-age' manufacturing & 'future ready' manpower. The study concluded that India can benefit from its demographic advantages by reskilling & upskilling its workforce with 21st century skill sets through lifelong learning initiatives. This huge task of developing a skill-based workforce can possible only with the collective efforts of government and industry partners.

Dr. Rajni Arora & Manoj Chhadwani (2019), in their paper titled "*Analysing the impact of skill India as a tool for reshaping Indian economy*" aimed to create opportunities, space and scope for the development of Indian youth's ability and to expand existing sectors as well as identify new sectors for skill development. The study concluded that an effective implementation of Skill India Mission, starting from training to job transmission rate, proper skill acquisition, is required for ensuring growth in Indian economy and competing with other developed countries.

A Krishnamoorthy, H Srimathi (2019), in their paper titled "*Skill Development - The Future of India*" aimed to analyse the initiatives, policies, plans and practices w.r.t skill development and compare it with the international practices. They concluded that if India want to be the global skill capital, it would require to carefully study &analyse the global requirements of work force and take adequate steps for imparting industry-linked skills. A mixed strategy of all the global best practices on need-based analysis, periodic introspections &revisions and cohesive contribution of all stake holders would be required.

Dr. Anand Prakash (2017), in their paper titled "*Skill Development in India: Challenges and Opportunities*" aimed to study the present system of regulation of Skill Development in India. They concluded that for success of skill development initiatives it calls for a coordinated effort from all the stakeholders, agencies and students/trainees.

Dr. Jagdish Prasad & Dr. D.G.M. Purohit (2017)in their paper titled "*Skill Development, Employability and Entrepreneurship Through Make in India: A Study*" made an effort to analyse the possibility of bridging the skill gaps through Skill Development measures, comprehend the impact of "Make in India" on employability and evaluate its scope. The finding indicated that a gigantic skill gap exists in India which call for effective implementation of various skill development initiatives of Government of India.

Skills Gaps Across the World

Shortage of skill is being experienced in almost each and every country in the world. As per a survey done by The Organisation for Economic Co-operation and Development (OECD), the shortage of skilled workers is being faced by most of the nations, the shortage in Japan is around 81%, in Brazil and Turkey around 63%, in Australia, Germany and USA around 40%. It is estimated that globally the shortage is around 45 million skilled and around 40 million highly skilled workers. As per the European Centre for the Development of Vocational Training (CEDEFOP), finding the workers with the right skills is

a challenge in Europe which has an adverse impact on productivity and overall competitiveness. A report highlighted, the increasing skills mismatch of unemployment & job vacancies in United States. Companies are battling for workers with right skill sets. Another survey indicates that Middle East is experiencing a similar challenge as the job seekers lack technical skills as well as soft skills. In near future, acute shortage of skilled workforce would be experienced in Europe, North America, Australia, New Zealand, Japan and Middle East. China is also facing the same issue but it has to locally address it in view of the domestic employability, language & political factors. As per United Nations Population Division, the shortage in demand of skilled workers is around 15 % and the major additions in global labour force would be made by India, Africa & South Asia. Hence, India has the opportunity to meet the growing global requirement of skilled workforce.

Factors for the Global Skill-Shortage

There is a demographic change and slowing trend of population globally due to declining fertility and rising life expectancy rates. Due to economic transformation the skill requirements are changing inter-sectors and intra-sectors. Movement is being experienced from labour-intensive manufacturing to higher value-added manufacturing which calls for a continuous adjustment of the skills by the workforce to match the pace of change. There is an increasing demand for workers with integrated skill sets and not a single skill. Currently, there is a global skill gap and mismatch between the desired skills as per demand of industry and the available actual skills of workforce / students / trainees as equipped by the academia / training institutes. The situation is worsened with the fact that along with the shortage of skilled workers there is oversupply of un-skilled / ill-skilled / inadequate-skilled workers.

Challenges in Meeting the Global Skill Requirements

Industries across the globe viz. Australia, Europe, United States, Canada Middle East etc are finding it difficult to grow at the desired pace due to the challenge of skill shortage in skilled workforce and hence eye on developing countries like India, Pakistan, Bangladesh, Nepal, Sri Lanka, Thailand, Vietnam, Philippines, Jordan, Egypt, Mexico, Poland and Algeria. The largest suppliers of labour / workers / manpower in the world is India; but, it is yet to emerge as the skill capital. There are structural challenges as a huge chunk of Indian population that seek jobs in other countries are currently in the lowest level of skills (unskilled or semiskilled) and earning brackets; with poor preparedness to migrate for jobs. There is informal worker-job match which makes the situation very chancy & risky. The cost to migrate is prohibitive and even the landing in the host country is very hard. The facilitation for international mobility is also very limited. This calls for a systemic approach at a larger scale, greater efficiency and effectiveness to transform India into the world's skill capital.

Current Skill Status of India

There is definitely a lot of advantage of having a demographic dividend due to such a growing young population in India. But, reaping the real benefits of this demographic dividend is still a distant dream considering the current skill gap of the existing workforce in India.

Amammoth demand of 500 million plus skilled workers by 2022 has been estimated, but currently the supply of skilled workforce in India is very meagre as only 2% of the workforce has been skilled. A vast majority (around 93%) of workforce is in the unorganized / informal sector and yet to be connected to a structured system of skill development. They are often skilled on-the-job but are not backed with any matching education /training.

The current education & training ecosystem is not aligned to the dynamic & evolving industry needs. As per a study only 7 % of engineering & MBA graduates are employable. As a result, there is a large pool of educated but industry unfit job seekers who are not employable.

A high percentage of the workforce possess outdated skills. The advancement in technology, rate of growth in economy and disruptions in the market calls for new job opportunities predominantly skill-based. Also, to match the disruptions due to technological advancements, India needs to make generational transformation in its academia & skill development ecosystem to deliver the required 21st century skills. The current and the prospective workforce need to match with this growing demand by being up-skilled with future required skills.

A dramatic structural shift is being experienced in the labour market. The Labour Force Participation Rate (LFPR) for women in India is around 31 % and they contribute only around 17 % to India's GDP. These factors are beneficial for India's demographic dividend, but only when it succeeds in enabling & equipping the workforce with useful, right and future focused skills. For preparing a future-ready workforce, India needs to follow a demand-driven approach for forecasting skill requirements.

Government's Commitment towards Skill Development

The government of India has acknowledged the importance of Skill Development and launched an ambitious Skill India Mission in 2014. A separate Ministry i.e. Ministry for Skill Development & Entrepreneurship (MSDE) has been formed to co-ordinate all Skill Development efforts and also responsible for bridging the demand & supply of skilled manpower, building the required framework for vocational & technical trainings, up-gradation of existing skills, building of new skills and innovative thinking on existing & future jobs in India. It aims for a large scale skilling to meet the objectives of Skill India Mission of Government of India.

Directorate General of Training (DGT), National Skill Development Agency (NSDA), National Council for Vocational Education and Training (NCVET), National Skill Development Corporation (NSDC), National Skill Development Fund (NSDF), Sector Skill Councils (SSCs) (38 Nos.) National Skill Training Institutes (NSTIs/NSTI(w)) (33 nos.), Industrial Training Institutes (ITIs) under DGT (15, 000 approx.) and training partners registered with NSDC (200 approx.) assist MSDE in the implementation of Skill India mission.

MSDE also coordinates with existing network of Skill Development centres, universities and other alliances in the field and collaborates with related Central Ministries, State governments, international organizations, industry and NGOs for a multi-level engagement and impactful implementation of Skill Development in India.

Various Schemes & initiatives on Skill Development being implemented under MSDE are detailed in Table -1 below:

Table 1

Sl. No.	Schemes & Initiatives	
1	Schemes & Initiatives through NSDC	Pradhan Mantri Kaushal Vikas Yojana (PMKVY)
		Rozgar Mela
		Pradhan Mantri Kaushal Kendras (PMKK)
		Capacity Building Scheme
		Udaan
		School Initiatives and Higher Education
		India International Skill Centres (IISCs)
		Pre Departure Orientation Training (PDOT)
2	Schemes & Initiatives through DGT	Craftsmen Training Scheme (CTS)
		Crafts Instructor Training Scheme (CITS)
		Apprenticeship Training under the Apprentices Act, 1961
		Advanced Vocational Training Scheme (AVTS)
		Vocational Training Programme For Women
		Schemes for Up gradation of IITs
		STRIVE
		Initiatives in the North East and LWE Regions
		Trade Testing
		Dual System of Training (DST)
		Polytechnics
3	Other Schemes and Initiatives	Skill Loan Scheme
		Indian Institute of Skills (IISs)
		SANKALP
		Academic Equivalence to Vocational Qualifications
		Aspirational Districts
		Swachh Bharat Abhiyan
		Technology Initiatives

Source: Ministry of Skill Development & Entrepreneurship

With initiatives under Skill India mission, India would definitely evolve into a skilled society and would bring prosperity and dignity for all. Skill India is now not restricted to domestic market but is aggressively engaging for promoting cross geographical exposure and opportunities in the international market. The demographic dividend of India transforming into a large pool of skilled workforce would certainly cater to domestic market demands and also the global market demands. The National Policy on Skill Development and Entrepreneurship, 2015 has been instrumental in streamlining skill development efforts at scale with speed and standard (quality).

Possibilities for Meeting the Global Skill Demand

The demographic dividend of India position it with the potential to cater to the global skill requirements and also its domestic demand for skilled workforce. The United Nations Development Programme (UNDP) in a report has projected that by 2050, in the Asia Pacific, India would dominate the growth in the working-age population, as over a billion people would be entering the workforce. In next 20 years, it is expected that the labour force in the industrialized world would decline by 4%, but, in India it would increase by 32%. There is a huge opportunity to invest in education and skilling. If the workforce & the people to enter the workforce are trained well with effective skill development programs, there would be a surplus of around 47 million skilled workforces. Over 2 crore people have been trained with required skills in 5 years out of them around 60 % have either been employed. With this India has the opportunity for meeting the global skill demand and become the skill capital of the world.

Path Ahead

- **Collaboration of Stakeholders:** It requires collaboration of academia, training providers/agencies, government agencies /bodies, Sector Skill Councils, industry/companies etc. for designing, developing & delivering proper contents for students / trainees & potential job seekers. Also, academia needs to partner with employers for understanding industry requirement and updating curriculums accordingly.
- **Partnership of Private Sector:** An increased participation of the private sector and their prominence in the space of skill development is required, particularly in services sector trainings.
- **Leveraging of Digital Technology:** Lack of mobility is a big impediment for accessing skill trainings and also for gaining employment. Through mobile and web-based training applications, the workforce can access at-home & self-paced skills which can result in a whipping growth of productivity in India. Proper implementation of digital-based initiatives can generate better-educated and -trained job seekers with better employment possibilities and reduce the risk of losing jobs. Furthermore, digital technology can provide a unique opportunity to expand access to basic skills. More concentrated efforts are required to reap the benefit of digital technology in skill development of workforce and students.
- **Learning from Global Best Practices:** It is required to learn from some global best practices like Germany's Dual Training System (a part as school study and part as on-the-job industry experience), United Kingdom's Trailblazer Apprenticeship Model (Practical trainings at employer's workplace, technical trainings by training providers or institutes with world class assessment & certification practices), United States of America's Inter-twined network of employers and training providers (provide training in industry relevant skills), Australia's movement between formal, technical education and national quality assurance framework (provide multiple conduits to undertake qualification either at school, workplace or training organisations), Malaysia's PPP model (focus on latest technology and emerging skills), Canada's wide range of course offering to match age-group wise labour market needs and China's performance matrix for service providers and fund distribution process. The learnings from these models embedded into the skill eco-system can help in improving its accessibility & effectiveness, impact livelihood, create skilled youth ready for transactional employment opportunities, transform policies & standards at par with global standards.
- **G2G Arrangement:** India require to make efforts in breaking down barriers in international labour supply to ensure hassle-free movement of talent globally by leveraging its image as a non-threatening power with a strong democratic tradition and tolerant society for creating partnerships with other countries and establishing Government to Government (G2G) arrangement for securing better terms for workers migrating to those countries and ensuring protection of their rights. Government need to formulate policies for addressing the vital aspects of international mobility of workers by imagining new paradigms of digital skilling by augmenting the adoption of digital technologies.

Conclusion

Learning from global best practices on skill development & vocational training can help in enhancing the capacity of government & private institutions in skill development sector for meeting the current & future demands of industries and inculcate growth of skill ecosystem in India. To cater the global market, the skill development is required to be undertaken on mission mode by incorporating all key components. It is required to identify the key global labour markets and the key sectors which are of demand in these labour markets. The opportunity exists to become the Global Skill Capital but India is not ready, at present, for the role. A structured approach encompassing multiple areas is required to be adopted for unleashing the potential of the demographic dividend and reaping its real benefits.

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