A Study of Significance of Vocationalization of Education and Skill Development in India- with special reference to the State of Maharashtra

Submitted by

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<u>Declaration by the Candidate</u>

I declare that the thesis entitled **A Study of Significance of Vocationalization of Education and Skill Development in India- with special reference to the State of Maharashtra**, submitted by me for the degree of Doctor of Philosophy is the record of work carried out by me during the period from June, 2009 to February, 2012 under the guidance of Late Dr. Shashikant K. Gandhe and has not formed the basis for the award of any degree, diploma, associateship, fellowship, titles in this or any other University or other Institution of Higher Learning.

I further declare that the material obtained from other sources has been duly acknowledged in the thesis.

Signature of the Candidate   Date: March, 2012

Certificate of the Guide

CERTIFIED that the work incorporated in the thesis **A Study of Significance of Vocationalization of Education and Skill Development in India- with special reference to the State of Maharashtra,** submitted by Ms. Swati Shantaram Mujumdar was carried out by the candidate under my supervision/ guidance. Such material, as has been obtained from other sources has been duly acknowledged in the thesis.

The thesis has been supervised by Late Dr. Shashikant K. Gandhe and reviewed by Dr. Anil Keskar.

Late Dr. Shashikant K. Gandhe

(Supervisor/ Research Guide)

Dr. Anil Keskar

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Acknowledgement

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GLOSSARY OF TERMS

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a) "Vocational Education , Training and Skill Development (VETSD) "means all forms and levels of the educational process involving, in addition to general knowledge and academic skills , the study of technologies and related sciences, the acquisition of practical skills, know-how, attitudes and understanding relating to occupations in the various sectors of economic and social life.

b) "Accreditation" means the formal recognition of a vocational education and training course by accreditation body in accordance with the NVEQF Standards or the quality standards set by the State.

c) "Apprenticeship training" means a course of training in any industry or establishment undergone in pursuance of a contract of apprenticeship and under prescribed terms and conditions which may be different for different categories of apprentices.

d) "Associate Degree" means degree offered by Community colleges which build a foundation for a more advanced degree by allowing the students vertical mobility into third year of undergraduate program.

e) "Certificate" means an official document, issued by an awarding body, which records the training achievements of an individual following a standard assessment procedure.

f) "Community College" means an alternative system of education, which is aimed at the empowerment of the disadvantaged and the underprivileged through appropriate skills development leading to gainful employment in collaboration with the local industry and the community.

g) "Competency standard" means an industry-determined specification of performance which sets out the skills, knowledge and attitudes required to operate effectively in employment. In vocational education and training, competency standards are made up of units of competency, which are themselves made up of elements of competency, together with performance criteria, a range of variables, and an evidence guide.

h) "Continuing vocational education and training" means education training after initial education or entry into working life, aimed at helping individuals to improve or update their knowledge and/or skills, acquire new skills for a career move or re-training, or continue their personal and professional development.

i) "Credit Point System "means a method to measure the workload of a student's learning effort

j) "Credit transfer" means the process in which credits already obtained from one qualification is recognized completely or partially, towards obtaining a new qualification. Credit transfer allows students to transfer credits from one program to another within the same institution or across institutions.

k) "Further Education" means post-secondary education, including higher education, adult education, and vocational education and training.

l) "Learning outcomes" are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning.

m) "Pre-vocational training " means training arranged primarily to acquaint young people with materials, tools and standards relating to a range of occupations, to prepare them for choosing an occupational field or a line of training.

n) "Recognition" means the formal approval of training organizations, products and services operating within the vocational education and training sector.

o) "Recognition of prior learning" means the acknowledgement of a person's skills and knowledge acquired through previous training, work or life experience, which may be used to grant status or credit in a subject or module.

p) "Jan Shikshan Sansthas (JSS)" are volunteer agencies which are provided financial assistance for taking up vocational training programs for illiterates and neo-literate people belonging to socio-economically weaker sections, disadvantaged groups, unskilled and unemployed youths in the age group of 15-35 years. There are a total of 217 JSSs across India.

q) "Community Polytechnics (CP)" are selected AICTE Polytechnics that run vocational programs in the local area/region for Community Development under the Community Development Through Polytechnics (CDTP) scheme. Each CP runs short term non formal skill development programs through 5-10 extension centers in nearby villages. There is no age or qualification bar for trainees under this scheme and no fees are charged to students. There are a total of 703 CPs have been selected out of which 479 have been provided financial assistance to carry out this scheme.

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Vocational Education , Training and Skill Development (VETSD) means all forms and levels of the educational process involving, in addition to general knowledge and academic skills, the study of technologies and related sciences, the acquisition of practical skills, know-how, attitudes and understanding relating to occupations in the various sectors of economic and social life.

Vocational Education, Training and Skill Development (VETSD) is further understood to be:-

   (a) a means of preparing for occupational fields and for effective participation in the world of work;

   (b) an aspect of lifelong learning and a preparation for responsible citizenship;

   (c) an instrument for promoting environmentally sound sustainable development;

Vocational Education and Training (VET) is an important element of nation's education initiative. For Vocational Education to play its part effectively in the changing global environment, it is imperative to redefine the objectives of vocational education and training and to make it flexible, contemporary, relevant, inclusive and creative.

It is important to recognize that with more than 35% of citizens aged below 15 years, 700 million young people below 35 years and population growing at 1.8% per annum, India is expected to become the global powerhouse of human resource by 2025. In the emerging era of knowledge-driven society, declining workforce and aging population in developed countries, India with its large young population has the opportunity to position itself as a quality source of skilled manpower for the world. The large population can reap rich dividend for the country through a focus on providing quality vocational education and training.

In the changing global scenario, employment possibilities of graduates and post-graduates of general subjects are becoming increasingly limited. The education imparted at degree level is not oriented to the market needs and neither is it skill based. Due to this changing nature of work and employment, individuals now look for more flexible and multi-skilling learning opportunities for mobility across employment sector and geographic locations. The general education system has not been able to provide these opportunities.

Additionally, the strong linkage between the economy and education was never so clearly visible as now. The functioning of the educational institutions, as well as the educational choice of the youth, has remarkably been influenced by the market economy. Quest for knowledge is no more the only motivating factor for prospective learners; rather, it is the availability of employment in the market that makes the learners choose their areas of study. The lack of employment opportunities to conventional graduates has led to the shifting of focus on the skill based, industry oriented teaching learning pedagogy.

Traditional education which only creates knowledge, although important for basic development of a person, is fast losing its role as a means for human and societal growth. In our country, the growing unemployment amongst the educated youth is posing a serious concern to the value of traditional education in the context of living a better life in a better society. The inability for our youth to apply what they have learnt to improve their daily life or generate gainful employment is causing them to question the very essence of such an education system. It is thus imperative that as a society we must re-look at what should be the objective or outcome of our education system.

In present economy, the objectives of a society have also changed from fulfilling the basic needs of all round development to empowerment. The education system instead of going by text-book teaching needs to be promoted by skill based teaching learning pedagogy. The human resource instead of being unskilled or semi-skilled needs to be knowledgeable, self-empowered and flexibly skilled.

1.2 Changing Objectives of Vocational Education, Training & Skill Development

The immense scientific, technological and socio-economic development has led to a paradigm shift in the basic objectives of imparting education.

While factors such as increasing competition, economic slowdown, poverty, illiteracy, population imbalances and political instability are adding pressures on the policy makers as well as common citizens, the importance of education and especially 'relevant education' is gaining significance as a viable solution to combat these issues in our society.

In this present era, Vocational Education, Training & Skill Development thus has to become an integral part of our general education system.

There is also a necessity for establishing new relationships between educations, the world of work and the community as a whole. In this context, Vocational Education, Training & Skill Development should exist as part of a system of lifelong learning adapted to the needs of the local community and to worldwide technological development.

Vocational Education, Training & Skill Development should begin with a broad base which facilitates horizontal and vertical articulation within the education system and between school and the world of work, thus contributing to the elimination of all forms of discrimination. The integration of Vocational Education, Training and Skill Development into the academic sector is essential for the VETSD model to succeed.

1.3 Vocational Education, Training and Skill Development in National Plans and Policies

Attempts to restructure the Indian education have been made over a period of time. However, the vocational education system has remained terminal in nature. The students pursuing courses in the vocational streams do not have an option of vertical mobility into degree programs in their chosen Vocational sector.

This coupled with other reasons of quality, standardization, recognition and fragmentation have led to the failure of various vocational schemes introduced at both National and State level.

Vocational Education, Training and Skill Development has been emphasized upon in various National plans and policies at the national level. The details of various plans and policies are given in subsequent paragraphs.

1.3.1 The National Policy on Education (NPE), 1986 (modified in 1992)

The policy states that "The introduction of systematic, well planned and rigorously implemented programmes of vocational education is crucial in the proposed educational reorganization." These elements are meant to develop a healthy attitude amongst students towards work and life, to enhance individual employability, to reduce the mis-match between demand and supply and to provide an alternative for those intending to pursue higher education without particular purpose or interest." The policy also states that graduates of vocational courses will be given opportunities, under predetermined conditions, for professional growth, career improvement and lateral entry into courses of general, technical and professional education through bridge courses. The Kothari Commission Report had also emphasized on full-fledged vocational education in vocational institutions and schools after VIII+ and X+ as well as at higher secondary levels.

1.3.2   Vocational Education in National Five Year Plans

Vocationalisation of education was identified as a priority area in the Eighth Five Year Plan. The revised policy formulations which set forth the modifications to the NPE, however, retained the policy framework laid down by NPE. The target coverage was however, revised to divert 10 percent of the higher secondary students by 1995 and 25 percent by the year 2000.

The focus in the Ninth Plan was on reducing disparities, renewal of curricula with emphasis on Vocationalization and employment oriented courses, expansion and diversification of the open learning system, reorganization of teacher training and the greater use of information and communication technology

In the Tenth Five Year Plan, vocational education and training has been identified as an important thrust area. Special focus has been laid on vocational education in order

to ensure that there is consistency between the demand for and supply of skills. Additional allocation of Rs 650 crores has been done for the Vocational Education Mission in the Tenth Plan.

Keeping in view the growing problem of unemployment, the Planning Commission constituted a separate Working Group on Vocational Education for the Tenth Plan in 2000. In line with the recommendations of the working group, the centrally sponsored scheme was proposed to be recast in the Tenth Plan with the following features:-

- The vocational courses in schools should be competency-based and in modular form with a credit transfer system and provisions for multi-point entry/exit.

- There is a need to establish linkage between vocational courses at the +2 level and courses at the university level. The present admission criterion for entry to vocational courses at the graduation level also needs to be changed.

- The existing scheme should be strengthened by involving industries through Memorandums of Understanding, in designing of the course, development of the curriculum, training of faculty/students and certification of the courses.

- In order to sustain the scheme, schools may consider charging fees and the courses may be designed on a self financing basis.

- The apprenticeship training facility needs to be utilized fully and made compulsory.

- To achieve this, the placement of those who have completed vocational studies for apprenticeship and training should be decided by the Board of Apprenticeship Training immediately after the results of the +2 examinations are declared.

- Before vocational courses are started in schools, local business and industry should be closely involved in studying the need and for conducting district vocational surveys.

- Facilities for running vocational courses should become mandatory for the Kendriya Vidyalaya and Navodaya Vidayalaya school systems.

- Persons with disabilities should be given special treatment while designing vocational courses and their needs and integration into courses should receive appropriate attention.

- Financial assistance may be provided under the scheme for creating testing and certification systems in states in co-operation with user bodies and professional associations.

- The All India Council for Technical Education's (AICTE) vocational education board needs to be reactivated for providing technical support to the school system and for establishing linkages with other technical institutions.

The Steering Committee on Secondary, Higher and Technical Education set up for the Tenth Five-Year Plan recommended that the vocational education at the secondary school level, polytechnic education and Industrial Training Institutes (ITIs) should come under one department of the state government for better networking, linkages, focused targeting and optimal utilization of resources. An outlay of Rs. 350 crore has been allocated for the Centrally-sponsored scheme of Vocationalisation of Secondary Education in the Tenth Plan.

The Tenth Plan also focuses on evolving new policies for the Vocational Education sector. The absence of vertical mobility has also been addressed in the Plan. The Plan recommends that future policies on vocational courses must revolve around the following issues:

• There is a need to sensitize state governments and Union Territory Administrations on the importance of skill training/vocational education in the context of the problem of unemployment.

• There is an urgent need to cater to the Class VIII pass-outs whose numbers will swell with success of the Universalisation of Elementary Education and the Sarva Shiksha Abhiyan initiatives.

• There is need for careful assessment of the stage at which the trades of Fitter, Turner, Blacksmith, as also courses like Accountancy, Typing, Book-keeping and Secretarial practices are to be introduced.

• The duration of various vocational courses also needs to be carefully assessed.

• There is also a need for vertical mobility in the vocational stream. Students who complete +2 in a particular stream should be able to specialize and obtain diplomas

and degree certificates so as to get value added jobs and better employment opportunities.

- The vocational courses should be demand and need-based, keeping in mind the constantly changing requirements of technologies/industries. Vocational courses must have an in-built flexibility to allow students to switch courses with changes in demand patterns.
- The existing scheme should be strengthened by involving industries through MoUs in the designing and certification of courses and training of students and faculty.
- At present, most of the vocational courses are in the manufacturing sector. Given the slow growth in this sector and the exploding opportunities in the services sector, vocational courses should concentrate more on the latter.
- There should be focus on convergence of schemes like the Sarva Shiksha Abhiyan, Adult Education, and Vocational Education Programme at schools, ITIs, polytechnics, community colleges etc.
- There is a need to have a re-look at the vocational education scheme given the fact that a number of districts in Uttar Pradesh, Bihar, Haryana, Rajasthan and Madhya Pradesh have a poor industrial base.
- The syllabi of vocational subjects should be updated on a regular basis to keep pace with changes in technology. This is especially relevant in trades like food processing, dairy technology, leather and tanning technology, etc.
- Vocational institutes should also be networked with professional institutes like the Central Food and Technology Research Institute (CFTRI), Mysore, Central Leather Research Institute (CLRI), Chennai etc. to keep abreast with technological developments.
- The vocational education scheme should focus on the capacity of the local industry to absorb students of a particular trade. Excess supply of students of a particular trade needs to be avoided. In this context, there is need for diversification even within a trade.
- Urgent attention needs to be given to training vocational education teachers.
- There should be regular exchange of ideas/skills among vocational education teachers, master craftsmen and trainees.
- The apex industry associations like the Federation of Indian Chambers of Commerce and Industry (FICCI), Associated Chambers of Commerce and Industry

(ASSOCHAM) and Confederation of Indian Industry (CII) need to be involved to a greater extent in the implementation of vocational education programmes and imparting of skills.

Despite strong recommendations in the Tenth Five Year Plan, the recommendations were not implemented in the sector of Vocational Education, Training and Skill development as envisaged.

The Government of India at the national level is also in the process of establishing a "National Vocational Education Qualifications Framework". As a part of its Eleventh Plan Policy, Central Advisory Board of Education (CABE) had set up an inter-ministerial group which includes representatives of State Governments to develop guidelines for such a National Framework.

The unified system of national qualification will cover schools, vocational education and training institutions and higher education sector. NVEQF will be based on nationally recognized occupational standards which details listing of all major activities that a worker must perform in the occupation or competency standards – a detailed listing of the knowledge, skills and attitude that a worker should possess to perform a task written by the particular employment-led sector skills council.

1.3.3 Central Advisory Board for Education (CABE) Committee Recommendation

Central Advisory Board for Education (CABE) Committee report on Universalization of Secondary Education, 2005 has also proposed the following reforms:-

a) Ensuring that vocational education is not a dead end and by allowing well performing students in the vocational education track to proceed onto higher education will ensure that the vocational stream is not seen as an option of last resort by prospective students.

b) Ensuring private sector participation in management of institutions and curriculum design to ensure a direct connection to the labor market for graduates, and an effective medium for bringing about organizational and productive innovations.

c) Strengthening the general education component of these programs for providing basic knowledge in humanities and sciences, preparing students to work in various

occupations, teaching them to solve problems and encouraging them to continue learning.

d) Funding and budget allocations - moving from a system which is exclusively financed by the government to a system which is increasingly financed by the private sector and by students paying user fees. The private sector would be willing to contribute only if they see that the system is producing relevant graduates. Students are likely to contribute if they see accrual of labor market benefits from vocational education.

1.3.4 The National Skill Development Policy, 2009 (NSD)

The National Skill Development Policy has an ambitious plan to skill about 12-15 million youth each year. As part of this policy and to ensure execution, the Government of India has setup the National Skill Development Mission (under the aegis of the Hon.ble Prime minister of India), the Coordination Committee and the National Skill Development Corporation. The Policy amongst other things proposes to establish a National Vocational Education Qualification Framework.

The framework proposes the following features:-

a) Competency based qualifications and certification on the basis of nationally agreed standards and criteria

b) Certification for learning achievement and qualification

c) A range of national qualification levels – based on criteria with respect to responsibility, complexity of activities, and transferability of competencies.

d) The avoidance of duplication and overlapping of qualifications while assuring the inclusion of all training needs.

e) Modular character where achievement can be made in small steps and accumulated for gaining recognizable qualification.

f) Quality Assurance regime that would promote the portability of skills and labour market mobility.

g) Lifelong learning through an improved skill recognition system; recognition of prior learning whether in formal, non-formal or informal arrangements.

h) Open and flexible system which will permit competent individuals to accumulate their knowledge and skill through testing & certification into higher diploma and degree

i) Different learning pathways – academic and vocational – that integrate formal and non-formal learning, notably learning in the workplace, and that offer vertical mobility from vocational to academic learning

j) Guidance for individuals in their choice of training and career planning

k) Comparability of general educational and vocational qualifications at appropriate levels

l) Nationally agreed framework of affiliation and accreditation of institutions

m) Multiple certification agencies/institutions will be encouraged within NVQF.

1.4 The Present Scenario

In the present scenario, only 2% of our manpower in the age group of 15-29 is formally skilled. However, statistics show that 90% of the employment opportunities require vocational skills which are not being imparted in our schools and colleges.

India's transition to a knowledge-based economy requires a new generation of multi-skilled youth. Its competitive edge will be determined by its people's ability to create, share, and use knowledge effectively. A knowledge economy requires India to develop workers – knowledge workers and knowledge technologists - who are flexible and analytical and who can be the driving force for innovation and growth.

To achieve this, India needs a flexible education system: basic education to provide the foundation for learning; secondary and tertiary education to develop core capabilities and core hands - on skills and further means of achieving lifelong learning. The education system must be attuned to the new global environment by promoting creativity and improving the quality of education and training at all levels.

1.5 Presentation in this research thesis

The Research thesis comprises seven chapters. The first chapter gives an introduction about the present scenario of education system, vocational education, historical perspective etc. The second chapter states the aims and the objectives of the thesis. The third chapter reviews the literature on which the research study is based. The literature review explains about the Indian and International perspective of the Vocational Education, Training.

It also portrays the present system of vocational education and skill development, benefits of the existing systems and the problems related to Vocational Education, Training and Skill Development Sector in India and in particular to the State of Maharashtra.

Chapter four mentions the hypotheses and the research methodology used for the collection of the primary and secondary data. Chapter five deals with data analysis of the primary data collected based on a sample of the vocational (ITI & VJC) students and faculty. Chapter six explains the findings made through the research, conclusions drawn and recommendations suggested. The recommendations also highlight the changes required in the present system as well as the importance and need of the establishment of the proposed Vocational University. Chapter seven explains the scope and the limitations of this research.

CHAPTER 2

AIMS AND OBJECTIVES

Introduction

Vocational education is gaining tremendous importance in our country in recent years. The lack of employability as an outcome of the education system has given rise to the need for skill based education. The development and economic growth of India will be accelerated if the youth of our country get vocational education and acquire relevant skills. The Central and the State Government are emphasizing on building skilled human resources. The Hon'ble Prime Minister of India has created the National Skill Development Mission with the ambitious objective of creating 500 million skilled resources in the next 5 years. The National Skill Development Corporation has been established to further implement this objective. However, at present Vocational Education and training system is fragmented, unregulated and lacks quality. Therefore there is a need to redefine the objectives of Vocational Education, Training & Skill Development so as to align with the changing environment and industrial needs.

It is in this context that we need to study the present scenario, problems and evolve possible recommendations for the Vocational Education, Training & Skill Development sector.

- **Aim of the Thesis**

The general aim of this thesis is to study the present scenario and problems of Vocational education, Training and Skill Development sector and provide recommendations for creating a management system which will help to unify, regulate, streamline, develop and popularize this sector.

    Aim 1: To recommend strategy for creating a unified system for effective regulation of Vocational Education, Training & Skill Development sector.

    Aim 2: To recommend the creation of a well defined vertical mobility pathway from school to higher education level for the Vocational & Skill Development sector.

Aim 3: To recommend policies and practices for continuous development, training and advanced skilling of faculty from the Vocational Education, Training & Skill Development sector.

Aim 4: To recommend measures for improving industry participation in the Vocational Education, Training & Skill Development sector.

Aim 5: To recommend policies for training and development of the unorganized sector.

- **Objectives of the Thesis**

The objectives of this thesis are:-

1. To study the present system of regulation of the Vocational Education, Training and Skill Development sector in our country with special reference to Maharashtra and identify problems therein.

2. To investigate and review the present systems and methods available to students for obtaining vocational, industrial training and technical training certificates and skills in India and Maharashtra and identify problems therein.

3. To study the prevalent policies laid down by the Government for continuous training and development of faculty belonging to the Vocational Education, Training & Skill Development sector.

4. To study the problems associated with low industry participation in the Vocational Education and Skill Development sector.

5. To investigate the opportunities available for the unorganized workforce to obtain advanced skills, continuing education and life-long learning from the perspective of social acceptability.

6. To identify the scope of further work in the vocational education, training and skill development sector in India.

CHAPTER 3
REVIEW OF LITERATURE

The researcher has conducted meetings with several Government authorities in Maharashtra Education Department and Ministry for Human Resource Development. The findings/literature derived from these meetings is presented in this chapter.

The integration of Vocational Education and Vocational Training is critical for the success of the VET model. In India, the Vocational Education, Training and Skill Development sector is fragmented, unregulated and under-developed both at National and State level. There is no single regulatory body for this sector in India today. While Vocational Education is under the ambit of Ministry of Human Resource Development (MHRD), the Industrial Training (ITIs) units are under Ministry of Labour and Employment (MoLE) at the Center. In Maharashtra, Vocational Education, Technical Education and management of Industrial Training Institutes is largely governed by the Dept. of Higher & Technical Education. There is no uniform policy governing Vocational Education and Training system in the State of Maharashtra. The quality of Vocational Education imparted by a number of VTP's is also questionable as no quality standards and measures are in place. The Govt. of Maharashtra also has several bodies offering varied vocational education and training courses without any uniformity or standards. The Maharashtra State Board for Vocational Education (MSBVE), the Maharashtra State Board for Technical Education (MSBTE looking after Polytechnic), the Department of Vocational Education (offering HSC-Voc), the Department of Vocational Training (looking after ITIs, ITCs) and other Vocational Providers are all offering vocational courses/ industrial training courses/ diploma programs at various levels. However there is no regulation or single statutory body to control, create policies or guidelines for standardization. This has lead to a duplication of effort with a large number of agencies offering similar types of courses with no standardization causing confusion amongst the student community as well as the industry.

During the course of past 3 years the researcher has not found many objective and comprehensive reports about the governance, administration and regulation of the Vocational Education, Training and Skill Development sector. Reports are available

about skill development in India and abroad and also about Government initiatives, however, the researcher could gather information, data about regulatory, administrative and governance aspects only after conducting detailed meetings with concerned officials at the State and Central Departments.

Vocational Education, Training and Skill Development courses are available in Maharashtra at secondary, higher secondary (school) and diploma level (including community colleges) in a variety of forms. This chapter gives details of the present Indian education system and the lack of vertical mobility for vocational students.

The international vocational education scenario is also presented for countries such as Australia, Germany, Korea, Sri Lanka, UK and China who have well developed VET systems. The trends related to labour market show that there are serious concerns from the industry as regards the quality of VET and at the same time the demand for skilled resources is increasing. The percentage of Indian workforce formally trained in some vocation is also extremely low as compared to other Asian countries. Majority of India's workforce is in the unorganized sector. Their problems and needs are different. The Government at the central as well as state level has not been able to effectively roll out schemes for the unorganized sector. These areas are also covered in the subsequent pages.

This chapter also presents the existing scenario, problems, challenges and reasons related to Vocational Education at SSC, HSC and Diploma levels in Maharashtra and gives details of some schemes which have been successful.

3.1 Vocational Education & Training Scenario – Indian and International Perspective

(Skill Development in India, the Vocational education and Training System, World Bank Report,2006; National Staff Development policy, March 2009; National Policy of Education, 1986-Modified in 1992; CABE Committee report on Universalization of Secondary Education, 2005; Kothari Commission Report; XIth Five Year Plan GOI; National Curriculum Frameworks 2005; Working document NVEQF, MHRD 2011; National Knowledge Commission Report, December 2006; India Non-formal Education for all global monitoring report, 2008; National Qualifications Framework in TVET for India- Issues and Challenges, Dr. Y. K. Anand)

Vocational education and training is an important component for socio-economic growth of any country.

The countries that have adapted to the changing global scenario by upgrading the VET sector to provide higher and specialized skills are better placed in the world of work.

India can also gain from the international experience by contextualizing the learning in the Indian context. The present vocational scenario in India and some of the successful international VET systems are outlined in the following pages.

3.2   Present Scenario of Vocational Education in India

The structure of current education system can be described as below:-
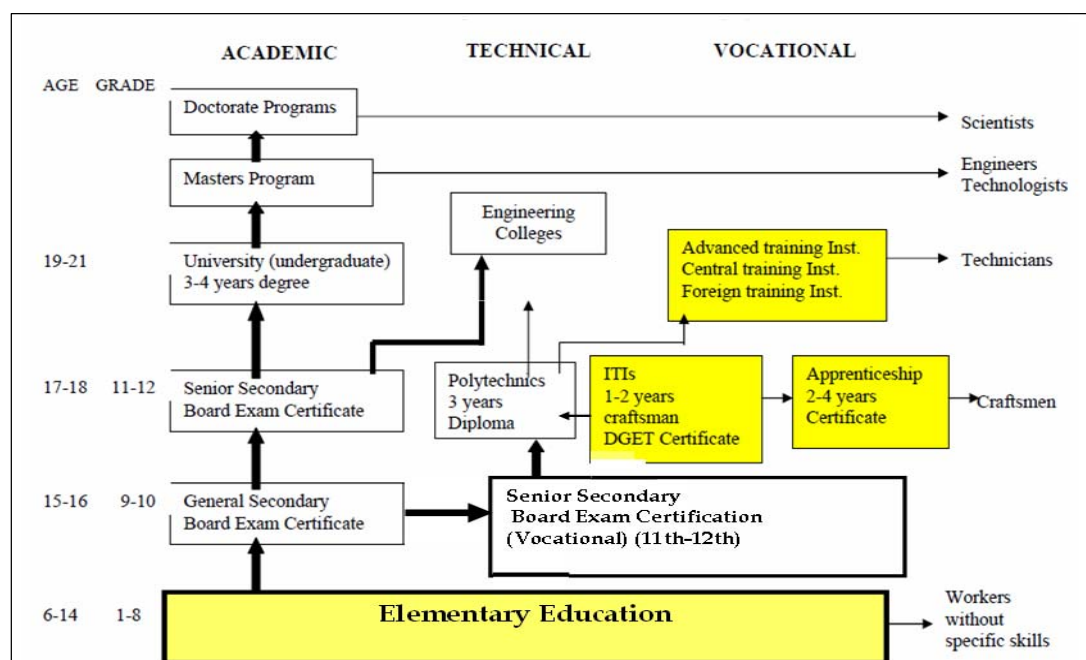
(Source -World Bank Report 2006)

In India, skill acquisition takes place through two basic structural streams – a small formal one and a large informal one.

Status of Vocational Training received: Only about 2.5 million vocational training seats are available in the India whereas 12.8 million persons enter the labour market each year *(Meeting of State Education Ministers on NVEQF 28th Jan, 2011 – Report from MHRD).* Similarly, the *World Bank Report, 2006* shows that among persons of age 15-29 only about 2 per cent reported to have received formal vocational training and another 8 per cent reported to have received non-formal vocational training. The

proportion of persons (15-29 years of age) who received formal vocational training was the highest among the unemployed. The proportion was around 3 per cent for the employed, 11 percent for the unemployed and 2 per cent for persons not in the labour force. The activity of persons receiving vocational education is as shown below-:
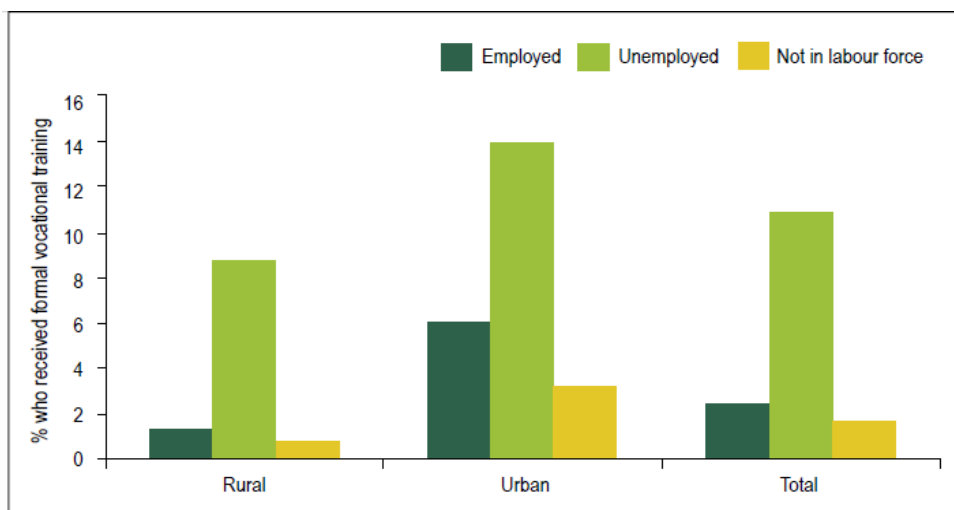
Source: Status of Education and Vocational Training in India, 2004-05, NSS 61ˢᵗ Round

Comparison with other Countries: *World Bank Report 2006* suggests that less than one per cent of students who had entered Grade 1 over the last decade or so would have eventually participated in vocational education. In comparison the status in various other countries is as shown below-:

Proportion of Students in Vocational Education at +2 level in India as compared to other countries:

Country	Secondary enrolment ratio	Number of students (thousands)	Vocational-technical share (per cent of total secondary enrolments)
Russia	88	6277	60
China	52	15300	55
Chile	70	652	40
Indonesia	43	4109	33
Korea	93	2060	31
Mexico	58	-	12
Malaysia	59	533	11
South Africa	77	-	1

Source: World Bank, 2006

Country	Percentage of Students at +2 level in vocational education
Germany	Above 65 %
Japan	40 %
India	4.8 %

(Source: Meeting of State Education Ministers on NVEQF 28th Jan , 2011- Report from MHRD)

The above table indicates the low percentage of vocationally trained students at +2 levels in spite of the existing schemes in place.

3.3 Vocational Education & Training Scenario – International Perspective

➢ **Australia**

Australia has a well defined National Qualification Framework. Australia has developed 'foundation' vocational skills courses offered through VET schools and standardized by the Australian National Training Authority, the single tripartite body responsible for training standards. *(Australia VET Bill 2010, Australian National Training Authority Act 1992; World Bank Report 2006)*

Level-I Certificates from the VET system are regarded as educationally equivalent to Senior Certificates from secondary schools, and Diplomas and Advanced Diplomas may be issued by the VET system or by higher education institutes. Depending on the courses of study, credits are allowed to be accumulated as participants choose to move between the three sectors. Some VET certificates may now be issued with little or no formal training, for example, to enterprise workers who have obtained their skills over a number of years on the job.

Secondary School	VET Sector	Higher education
Senior Certificate	Certificate I	
	Certificate II	
	Certificate III	
	Certificate IV	
	Diploma	Diploma
	Advanced Diploma	Advanced Diploma
		Bachelor
		Graduate Certificate
		Graduate Diploma
		Masters Degree
		Doctorate

Source: Abrahart (2000), Clarke (2005)
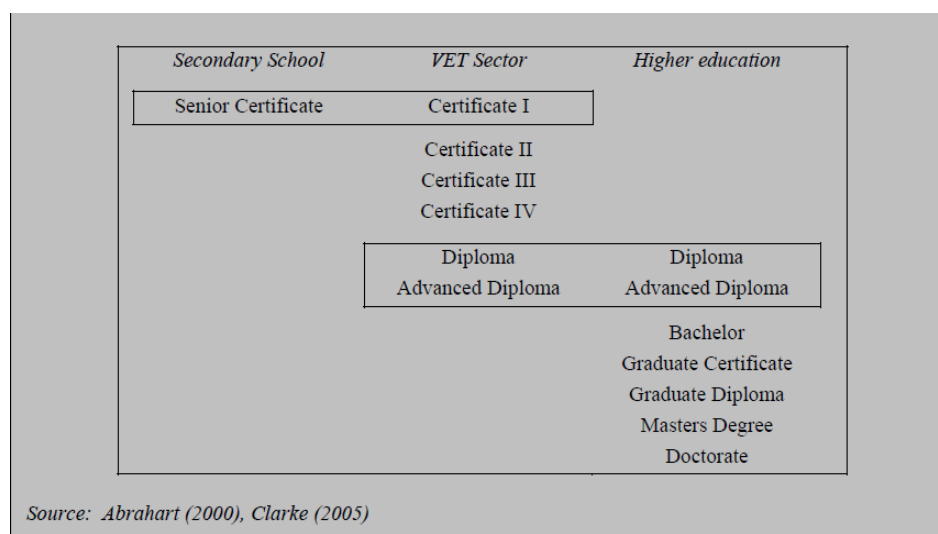
➢ **China**

In recent decades, China's vocational and technical education has produced a large quantity of low-level technical workers, low-level managerial professionals, and skilled workers. Vocational education in China is primarily associated with two or three-year institutions, and specialized training institutions closely linked to local industry and business needs. Postsecondary education in China is divided into four categories: formal four-year higher education institutions (Benke in Chinese), three-year or two-year vocational education institutions/ Universities (Zhuanke), private institutions (Minban), and adult universities (Yeyu). *(Development and reforming trends for Chinese Vocational and Technical Education and Training by Che Weimin, Chinese Service Center for Scholarly exchange, Dec 2009)* The framework of education system in China is as follows:-
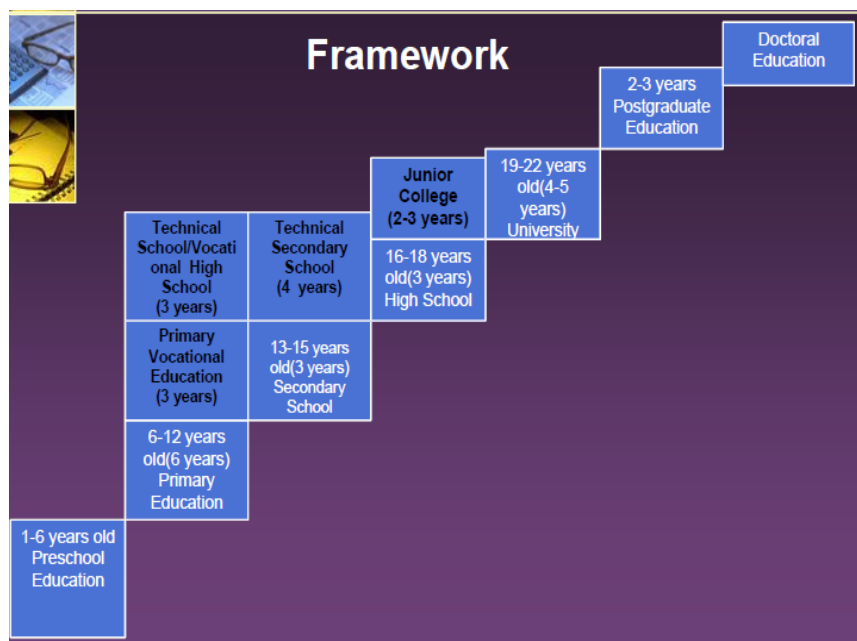
The Vocational Qualification Framework in China has divided into 5 levels (unlike the British system of 9 levels). Schematic presentation of NVQF is as shown-:

Qualifications Framework
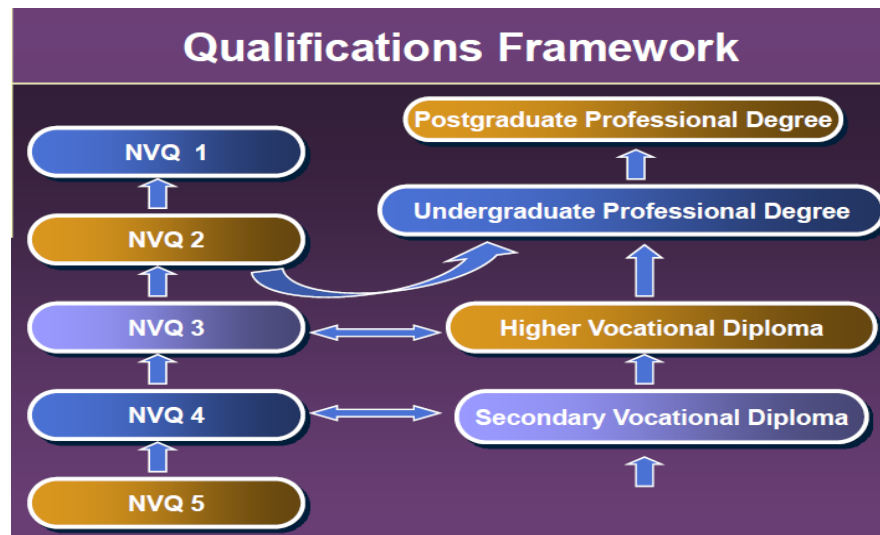
> **Korean Vocational Education System**

The Korean vocational education system has evolved considerably since it was set up in the early 1960s. While initially the emphasis was on churning out semi-skilled workers for the industry, the current focus is on equipping students with basic knowledge and skills and providing them with a foundation which will enable them to learn further. *(Pillay, 2005, World Bank Report 2006)* Some key features of the system include:

a) Delaying streaming into vocational education till high school (for three years after grade 11). All students undertake a common national curriculum in the first year of high school, following which they choose to enter the general or vocational stream for the remaining two years – however the vocational stream includes extensive elements of general education;

b) Ensuring the vocational stream is not dead-end – by allowing vocational students to proceed to higher education;

c) Financing vocational education through government and private resources – about 40 percent of financing for vocational education comes through entrance and tuition fees;

d) Linking up vocational schools with specific industries to ensure that curriculum and outputs match industry needs.

> **German Vocational Education System**

The structure of education system is as illustrated:-

Continuing vocational training			
Labour Market		University	Tertiary level over 19 years
Dual VET-System Company/part-time vocational school (approx. 51%)	Full-time vocational schools (approx. 12%)	Upper secondary grammar school (approx. 37%)	Secondary level II 15 to 19 years
Lower secondary school	Intermediate school	Lower secondary grammar school	Secondary level I 10 to 15/16 years
Primary school			Primary level 6 to 10 years

In Germany, vocational education is provided at secondary level (age group 15 to 19 years) through dual VET system and full time vocational schools. *(Vocational Training Act, Germany; Accreditation and Quality Assurance in VET)*

Vocational Universities in Germany called as Universities of Applied Sciences offer Bachelors and Masters Degree Programs in Vocational Streams. There are a total of 160 Universities of Applied Sciences in Germany. The Universities of Applied Sciences offer practical university-level education and training focusing more heavily on teaching rather than research and by offering degrees tailored to specific jobs and industries. Courses at these Universities are in great demand as they increase the status of vocational training by providing opportunity to vocational students to pursue University level courses. In fact today in Germany Universities of Applied Sciences currently train nearly all of Germany's social workers / social educators, two-thirds of all of its engineers and about half of its economists and computer scientists. *(Universities of Applied Sciences, Federal Ministry of Education and Research {BMBF}, August 2003)*

> **Sri Lanka**

B.Tech (Special)

B.Tech (NVQ Level 7)

Optional 4th year for selected courses

Three year

Degree

Programme

Selection Test NVQ Credit Transfer

Selection Test

Selection Test Non – NVQ credit transfer

Middle Level Non - NVQs

NVQ Level 6

NVQ Level 5

Cognitive attainment equivalent to GCE O/L + Selection Test

NVQ Level 4

NVQ Level 3

NVQ Level 2

NVQ Level 1
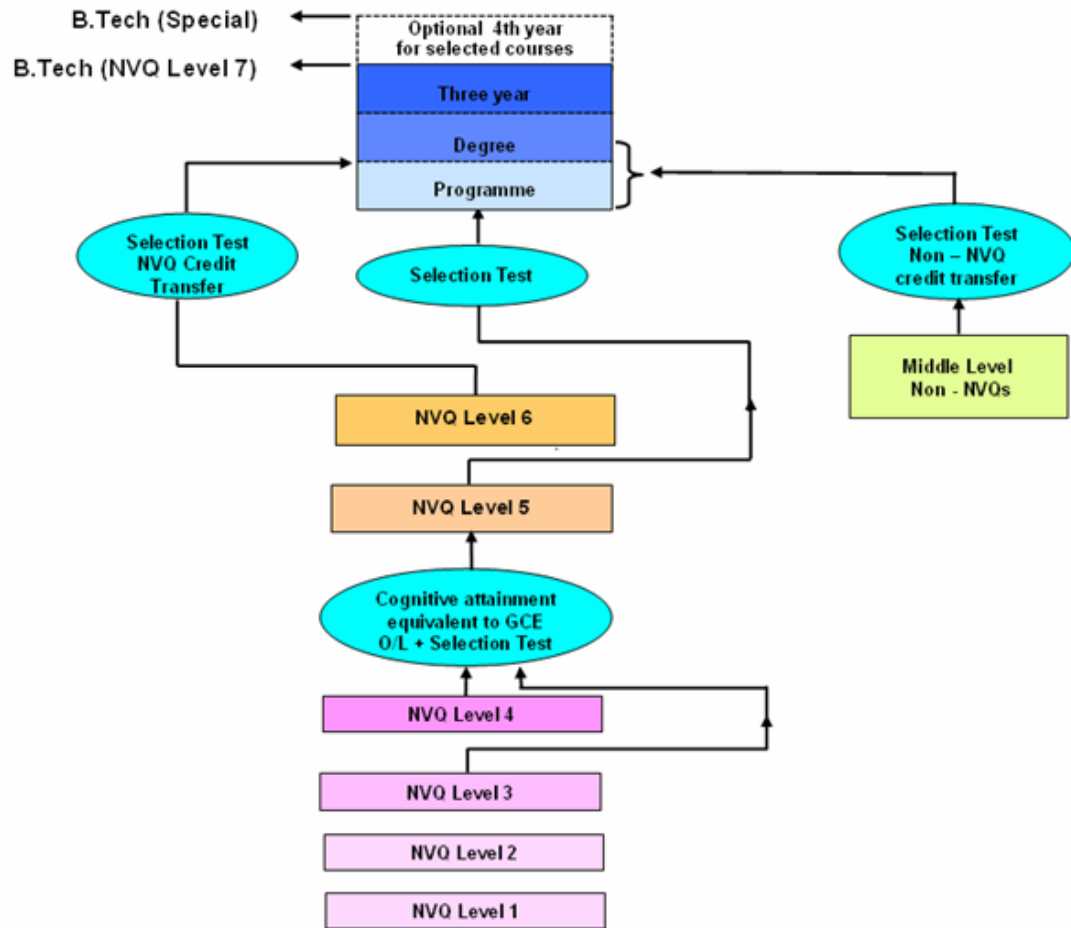
In Sri Lanka, there is a National Policy Framework on higher education and vocational and technical education. *(The vision for Sri Lanks's Tertiary and Vocational education, Dr. T. A. Piyasari, Director General, TVEC; Qualification Frameworks: Implementation and impact background case study on Sri Lanka, G. A. K. Gajaweera, Skills and employability department, ILO; National Policy Framework on Higher Education and Technical and Vocational Education, National Education Commission, Sri Lanka, 2009)*

➢ **UK**

National Qualifications Framework (NQF)		Framework for Higher Education Qualifications (FHEQ)
Previous levels (and examples)	**Current levels (and examples)**	
5 Level 5 NVQ in Construction Management [†] Level 5 Diploma in Translation	**8** Specialist awards **7** Level 7 Diploma in Translation	**D (doctoral)** Doctorates **M (masters)** Masters degrees, postgraduate certificates and diplomas
4 Level 4 NVQ in Advice and Guidance [†] Level 4 National Diploma in Professional Production Skills Level 4 BTEC Higher National Diploma in 3D Design Level 4 Certificate in Early Years	**6** Level 6 National Diploma in Professional Production Skills **5** Level 5 BTEC Higher National Diploma in 3D Design **4** Level 4 Certificate in Early Years	**H (honours)** Bachelor degrees, graduate certificates and diplomas **I (intermediate)** Diplomas of higher education and further education, foundation degrees and higher national diplomas **C (certificate)** Certificates of higher education
3 Level 3 Certificate in Small Animal Care Level 3 NVQ in Aeronautical Engineering A levels		
2 Level 2 Diploma for Beauty Specialists Level 2 NVQ in Agricultural Crop Production GCSEs Grades A*-C		
1 Level 1 Certificate in Motor Vehicle Studies Level 1 NVQ in Bakery GCSEs Grades D-G		
Entry Entry Level Certificate in Adult Literacy		

[†] Revised levels are not currently being implemented for NVQs at levels 4 and 5

In United Kingdom, the National Qualifications Framework (NQF) lays down the levels against which a qualification across various learning sectors can be recognized. The NQF framework with examples is illustrated in subsequent slides. *(Qualification and Curriculum Authority London)*

3.4 PRESENT SCENARIO OF VOCATIONAL EDUCATION IN MAHARASHTRA

A. Secondary School Level (SSC)

The Kothari Commission recommended diverting 20% of 8th std + students and 50% 10th std + students predominantly in the vocational education. The Centrally sponsored scheme of vocationalization of secondary education was launched in the year 1998. The scheme was implemented through States, Union Territories and NGOs / other agencies in the formal and non formal sector respectively. The scheme envisaged selection of vocational courses on basis of assessment of manpower needs. The main objective of the scheme as spelt out in the National Policy of Education, 1986, were to provide diversification of educational opportunities, so as to enhance individual employability, reduce the mismatch between demand and supply of skilled manpower and to provide an alternative to those pursuing higher education. Since inception of this scheme 9619 schools across India, with about 21,000 sections have been created, with an intake capacity of about 10.3 lakh students. This scheme was implemented in all States but without uniformity or success. The objective of introducing vocational education at secondary school level was to provide pre-vocational training to the students which would help to orient them towards the world of work. In many States the schools associated the local School Board implemented only a handful of vocational subjects at the secondary level, that too, as an optional subject. Further, there was no incentive or weightage given for these vocational subjects in the final 10th grade mark sheets. **As a** result, the scheme failed to gain popularity as a viable alternative at the secondary level and did not meet the objective with which it was laid out.

The present secondary school structure for schools affiliated to the Maharashtra State School Board consists of 9th & 10th grades. Students get an SSC certificate upon passing the 10th grade examination which is conducted by the Maharashtra State School Board.

Approximately 36,617 students are enrolled in vocational subjects at 9th grade in 2010 because pre-vocational education does not form a compulsory component of school education at 9th and 10th level.

The SSC scheme implemented at the secondary level in these schools is as under:-

Sr. No.	Subject	Max. Marks
1.	Language I	100
2.	Language II	100
3.	Language III	100
4.	Mathematics	150
5.	Social Science	100
6.	Science	100
	Total	650

Besides the above mentioned subjects, the students also study Environmental Sciences and Physical education.

Students are also given optional vocational subjects at the 9th & 10th grade, without any weightage in the final mark sheets. However, only the grade obtained for such optional vocational subjects is recorded on the final mark sheets.

Vocational subjects presently offered to secondary school students under this scheme are:-

V1 – Introduction to basic rural technology

V2 – Elements of mechanical technology

V3 – Elements of Electrical and Electronic technology

In addition to above, students also have option of taking vocational subjects instead of Work Experience as part of their SSC curriculum.

The Maharashtra State Board of Secondary and Higher Secondary Education plans to expand the vocational subjects to provide further opportunities to students.

➢ **Benefits of existing SSC scheme**

The following benefits are given to students opting for Vocational subjects at SSC level:-

  1. 40% reservation in bifocal stream at 10+2.

  2. 25% reservation in it is

  3. 15% reservation in Polytechnics

4. Students can obtain certificates from MSBVE by directly appearing for the examination for corresponding MSBVE course.

Despite, the following advantages, there is only 4.3% enrollment in vocational subjects of the total students admitted in 8th grade. The reason for poor enrollments is given in the next section.

➢ **Problems of above SSC scheme in State of Maharashtra**

1. Since these vocational subjects are optional, students who do not have aptitude for academic subjects cannot pursue these subjects as a career stream.

2. Further, less emphasis is given by schools to motivate students to opt for such vocational subjects. Even though some of the schools desire to offer vocational courses, these schools do not have adequate infrastructure and trained staff to undertake the same.

3. Besides since these vocational subjects are not given weightage in the final marksheet, students do not feel motivated to opt for them.

4. Time period required for these courses is 20% of the total workload which is over and above the student's regular coursework and requires the students to undertake additional practical work which is not given any marks. This further discourages students to opt for vocational courses.

5. The type of vocational subjects offered is very limited. At present   only technical vocational subjects as mentioned above are offered.

Due to the above problems vocationalization at school level has not been successful. Besides students do not see a clear vertical mobility in the vocational stream from school to graduate level. Employability after completing the vocational subjects is also poor due to which students do not opt for them at the secondary school level.

B. **Higher Secondary Education (HSC)**

As per the National Education Policy of 1986, based on the recommendations of Kothari Commission, the Govt. of India introduced +2 level i.e. 11th & 12th (HSC) Vocational stream in 1988-89. This stream has been implemented by almost all States initially. The objectives of this stream were to create an alternative system of education for students at the Higher Secondary level and to

divert the flow of students from conventional higher education to vocational education thereby reducing the pressure on conventional universities. The Government also envisaged that a large pool of employable youth of the age group between 16-18 years would be generated through this alternative stream. There are about 1.6 crore children at the +2 level out of which about 25% (i.e. 40 lakh students) diversion into vocational stream is envisaged. According to the evaluation conducted by Operations Research Group, 1996, the proportionate share of vocational students vis-à-vis total enrollment at higher secondary stage was 4.8 % and 28 % of the vocational pass outs were employed or self employed. In several States 2 year courses or Diplomas are offered at 10+2 level. It is apparent that the vocational education courses available at higher secondary level have been unable to attract a large student population as compared to the conventional education courses due to various reasons.

In Maharashtra State a total of about 150 vocational courses are offered at +2 level in major vocational areas of Agriculture, Business and Commerce, Engineering and Technology, Health and Paramedical, Home Science and Humanities, Science and Education. The MSBVE also offers some courses at 10+2 level.

Presently in Maharashtra, approx 1444 senior schools are running 150 vocational courses with total intake capacity of 88020. However, approx 59,854 students appeared for HSC (Voc) examination in 2011. *(Data provided by Maharashtra Higher & Secondary School Examination Board)*

Similar to the HSC (Vocational) scheme, the Government of Maharashtra also introduced BIFOCAL scheme at +2 level in 1977-78.

The objectives of this scheme are providing opportunities of employment / self-employment for students at + 2 level and also an opportunity to pursue higher education. This scheme is very popular in Maharashtra and has gained acceptability amongst all stakeholders.

HSC (Vocational) Scheme

The present HSC (Vocational) scheme is given as under:-

Sr. No.	Subject	Teaching Period/Week		Examination	
		Theory	Practical/ Tutorial	Theory	Practical Internal
1.	English	5	--	80	20
2.	Second Language	5	--	80	20
3.	GFC	5	--	80	20
4.	Vocational Subject I	4	8	100	100
5.	Vocational Subject II	4	8	100	100
6.	Vocational Subject III	4	8	100	100

➢ **Benefits of HSC Vocational Scheme**

1. This scheme is offered to students of Maharashtra at a nominal fee. As such it has created an affordable education system.
2. This scheme is supported by Vocational (Technician) Apprenticeship Training. This enables the students to get exposed to world of work and also earn a stipend in the process.
3. The students completing HSC Vocational in technical stream get admission into 2nd year of   Polytechnic Diploma in the respective branch.
4. The students completing HSC Vocational also get admission into 1st year of undergraduate / Bachelors of Arts and Commerce programs in some of the Universities.
5. Some banks also give priority to HSC Vocational students while granting loan for start-up business proposals.

➢ **Problems of HSC Vocational Scheme**

The lack of vertical and lateral mobility has resulted in a decline in the   popularity of HSC Vocational courses amongst the student population. In many States across India, this scheme has been completely discontinued. At present only 2% of total student

population at the 10+2 level are opting for vocational education at national level against the 25% envisaged by the Kothari Commission.

In Maharashtra, the scene is promising where the enrollment is 6.8% of the total student population at the 10+2 level *[Report – National Workshop on Equivalence, Vertical Mobility of vocational courses at 10+2 level & Placement prospects of vocational pass-outs, 13th May 2010]*. Some of the other limitations of the HSC (Vocational) Scheme are as under:-

1. Presently, only HSC (Vocational) students of technical stream get limited entry into 2nd year of Polytechnic Diploma. However, other stream students do not have this option.

2. There is a lack of trained vocational teachers at +2 vocational level. There is no institute dedicated to teachers training and resource development.

3. Recruitment rules unchanged to accommodate vocational students.

4. Lack of establishment of a state-level board to design vocational curriculum and create specialized learning material for such students

5. Lack of equivalence in the relevant scheme with conventional universities/colleges to facilitate movement from vocational to academic sector and vice-versa. Not all Universities provide vertical mobility into bachelors programs for HSC (Vocational) students. Presently entry is limited only to B.A/B.Com/BBA. For example - Students pursuing HSC (Vocational) in Agriculture stream are not given admission in B.Sc Agriculture.

6. Limited numbers of vocational streams are offered at HSC (Vocational). The scheme was introduced in six streams covering 30 courses in 1986. Since then, no new courses have been introduced under this scheme

7. The curriculum of HSC (vocational) is rigid. It is neither modular nor competency based.

8. There is a lack of industrial linkages at HSC (vocational) level. The HSC (vocational) students are not market ready and hence do not get readily employed.

9. HSC (vocational) students lack general academic skills like problem solving, numeracy, analytical skills, computer literacy, team work, basic communication skills, leadership etc

10. HSC Vocational is not considered equivalent to ITI and Polytechnic courses by industries for employment purposes.

11. HSC Vocational students get admission into 2nd year of Polytechnic Diploma. Thus there is a loss of one academic year.

12. HSC (voc) students are not eligible to apply for all applicable/relevant entrance tests. For example:- HSC Vocational students are not allowed to appear for Engineering and Medical entrance exams in Maharashtra.

13. Apprentice Act 1956 has been amended in 1986 for vocational students as Vocational technician apprenticeship Act. However, unorganized implementation of the Act has resulted in depriving the HSC students from obtaining hands on industrial experience.

14. No financial assistance has been provided to vocational education institutes since 1991, the scheme was handed over by Central Govt. to State Govt. This has led to ill-equipped labs and workshops for training purposes. Some States have discontinued this Scheme due to lack of funding from the Center.

15. In spite of the introduction and subsequent expansion of vocational education at both SSC and HSC levels, the Government has failed to create any separate infrastructure/organization/ bodies for preparation of books, curricula, quality assessment, technology development, teachers training and other administrative setup as is available for general school education such as SCERT, Bal Bharati, Bal Chitravani, Student Guidance Cells etc.

16. There is a lack of industrial linkages at HSC (vocational) level. The HSC (vocational) students are not market ready and hence do not get readily employed.

C. BIFOCAL SCHEME

The Bifocal stream which was introduced in 1977-78 by the Govt. of Maharashtra is offered through 1575 Vocational Jr Colleges, including 49 Govt. colleges, 129 aided non-govt. colleges and 1397 non-aided private institutions. The intake capacity of these colleges is 1, 65,350. This scheme is popular with students in the technical stream as it gives option of one bifocal subject (200 marks) in lieu of two other subjects (one language, biology). Students prefer these bifocal subjects instead of the more theoretical subjects. It is apparent that students look at the BIFOCAL stream only to get additional marks in the HSC examination, with the objective of pursuing conventional education and not because of their liking for

vocational education. *(Data provided by Directorate of Vocational Education, Govt. of Maharashtra)*

The bifocal scheme is offered in four vocational groups consisting of 16 subjects.

The present BIFOCAL scheme is given as under:-

Sr. No.	Subject	Teaching Period/Week		Examination	
		Theory	Practical/ Tutorial	Theory	Practical Internal
1.	English	5	--	100	--
2.	Mathematics	5	--	100	--
3.	Physics	4	4	80	20
4.	Chemistry	4	4	80	20
5.	Vocational Subject I	4	4	80	20
6.	Vocational Subject II	4	4	80	20

➢ **Benefits of HSC Bifocal Scheme**

1. This scheme provides vertical mobility into undergraduate programs.
2. The scheme provides a platform for the students who wish to go for professional degrees like Engineering and Medical.
3. This scheme is popular with students and experience suggests that meritorious students join this scheme.
4. It gives rebate of two general subjects to students who are inclined and determined to go for professional / conventional education in future.
5. The Vocational subjects are practical oriented and hence enables the student to obtain high scores and thus a better overall result and higher percentage on the HSC Mark sheet.

➢ **Problems of HSC (BIFOCAL) Scheme**

1. Very few students opting for HSC Bifocal are entering the labour market.

2. Many institutes have not created separate infrastructure to cater to the training needs of vocational education and training

3. 40% seats in bifocal are reserved for pre-vocational students. However, these seats are not fully utilized as the feeder channel does not provide sufficient technical students for this scheme. These seats are later given to the non-technical students.

4. The bifocal stream does not allow students to opt for any vocational subject of his choice. The option of vocational subject is restricted to the bifocal stream the student is enrolled in.

5. The periodic revision of curriculum is not taking place for this scheme.

6. It is apparent that students look at the BIFOCAL stream only to get additional marks in the HSC examination, with the objective of pursuing conventional education and not because of their liking for vocational education.

3.5 PRESENT SCENARIO INDUSTRIAL, TECHNICAL TRAINING & SKILL DEVELOPMENT

A. **Industrial Training Institutes / Centres (ITI / ITC)**

The DGE&T in Ministry of Labour and Employment conducts vocational training courses through 6906 ITIs/ ITCs with a total capacity of 9.53 lakhs *(Source – Human Resource and Skill Requirements in the Education and Skill Development Services sector (2022) – A Report by NSDC).* In the State of Maharashtra, there are a total of 416 ITIs and 310 ITCs with an intake of approximately 1,50,000 (113644 in ITIs and 35512 in ITCs) students. Total of 116 NCVT vocational courses are available across India out of which the State of Maharashtra has introduced 89 courses in these ITIs and ITCs. These courses range from 6 months to 3 years duration and cover wide range of sectors such as Engineering and Non Engineering. The Non Engineering sector includes Food, Textile, Services, Para Medical etc. *(Data provided by Directorate of Technical Education).*

The present ITI Scheme for technical trades offered at 10+ level is as under:

Sr. No.	Subject	Examination Scheme			
		Theory	Sessions	Practical Internal	Total
1.	Employability Skills (Quality mgmt, Communication skills, English, safety environment, leadership & teamwork)	50	-	-	50
2.	Engineering Drawing	50	20		70
3.	Workshop Calculations & Science	50	10		60
4.	Trade Theory	100	20		120
5.	Workshop Trade Practical	-	100	300	400
6.	IT Literacy	Not reflected in the marksheet			
	Total	250			700

➢ **Benefits of pursuing Industrial Training Institute programs**

1. The curriculum is designed at national level in consultation with industry and is uniform across all ITIs.

2. ITI pass outs obtain National level trade certificate of NCVT.

3. Training is practical oriented and skill based which is more suitable for technical trades required in the industries. This improves the employability of the students in the organized industrial sector.

4. CTS scheme is supported by well structured apprentice training scheme which gives facility to all ITI pass out students to get industrial exposure with on-job training on stipend basis which makes them industry-ready and fully skilled.

5. A nominal fee is charged in Govt. ITIs.

6. As the scheme has been in place since 1950, it has more industrial acceptance.

7. 2% seats are reserved for ITI students in respective branches of Polytechnic Colleges.

8. The ITI pass out students can enroll into vocational diploma programs under artisan to technocrat scheme.

> **Problems of Craftsman Training Scheme (ITIs)**

1. ITI courses are mostly available in the engineering trades. Non Engineering and Service sector courses are not widely available in ITIs.

2. The salaries received by ITI students are relatively low in comparison to the training received.

3. ITI students get placed in low level jobs with very few emoluments.

4. No general academic skills like life coping skills, numeracy, analytical skills, etc are compulsory part of the syllabus. Industrial experience suggests that the prospective employers want workers with these general academic skills in addition to hard skills.

5. The curriculum is not competency based. The teaching-learning pedagogy is not well developed for competency based assessment.

6. No modern techniques of teaching and training are employed. Use of ICT in training is minimal.

7. The faculty is not well trained and lacks the necessary qualification. Faculty often does not have latest skills. Further continuous skill upgradation through periodical refresher training courses is not available or emphasized. This fact is supported by feedback received from faculty working in ITIs and Vocational Colleges across Maharashtra.

8. The syllabus is rigid. The system does not allow for any changes to be incorporated in the curriculum as suggested by the local industries on a continuous basis.

9. The curriculum revision procedure is lengthy and takes more than 5 years which results in the syllabus getting outdated.

10. The ITI courses are generally opted by students with low aptitude for academics and belonging to economically backward sections and rural population.

11. 30% reservation has been given to female students in all trade of ITIs, yet only 3% girls enroll for ITI courses.

12. Vertical mobility is limited to 2% seats in Polytechnics for two year duration ITI courses. Students pursuing non technical courses do not have an option of career advancement.

13. As the training imparted is out of date, the industries need to re-train the students before employing them. Thus, the students passing out of ITIs are not market ready.

14. Modernization has led to specialization in the skills required by the industries. Certificate level training is not sufficient for students to undertake complex jobs. This has created a need to offer further specialization through vocational diploma and vocational degree programs to vocational sector students.

15. As no standard procedure has been adopted for sector wise skill   mapping and future manpower projection, the selection of courses and thereby the supply of manpower is not in line with market needs.

16. The procedure for setting up of ITCs is rigid in nature. This discourages private industries and other private players from coming forward and establishing ITCs.

3.6 MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION (MSBVE)

Presently, Maharashtra State Board of Vocational Education (MSBVE) is offering 1014 courses of duration varying from 6 months to 2 years and covering school drop outs, minimally educated and graduates. Approx 70,000 students are enrolled in MSBVE courses across Maharashtra. *(Data provided by Maharashtra State Board of Vocational Education)* Many courses / diplomas are offered by MSBVE at 10+2 level. These courses are however, terminal in nature and do not provide any vertical mobility options to the students.

3.7 MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION (MSBTE)

Maharashtra State Board of Technical Education (MSBTE) offers diploma courses in 23 disciplines through polytechnics and affiliated institutions.

Maharashtra has 1077 Polytechnics (385 – AICTE approved, 183 – Pharmacy/Non AICTE & 509 other Govt. approved Institutes running short term courses and

diplomas). Total Intake capacity in Polytechnics is 1,46,169 out of which actual enrolled are 1,30,000 students. *(Data provided by Maharashtra State Board of technical Education)..*

Polytechnics offer diploma courses of one year to three year duration after 10th, 12th, diploma and graduation. These courses are in various disciplines such as Engineering, Hotel Management, Catering Technology, Pharmacy, Fashion Technology, Wine Technology, Management, Industry & Fire Safety, Computer & IT and Travel, Tourism. Several scholarships are also offered to deserving students.

AICTE diploma programs have gained tremendous popularity in the Engineering sector as the vocational students have clear vertical mobility paths into Engineering Colleges as these students get direct entry into 2nd year Engineering. Students can also take admission in 1st year engineering if seats remain vacant. In 2010-2011, 22,023 seats were vacant in engineering 1st year. Non AICTE diplomas are mostly terminal in nature with limited vertical mobility options.

The Polytechnics also run non-AICTE diploma programs which do not provide any vertical mobility options to the students. However, these diplomas are viable options for vocational students who do not have other options of higher education.

> **Benefits of the Polytechnic Scheme**

1. There is a 20% quota for Polytechnic students in Engineering College. These students get direct entry into 2nd year of Engineering without appearing for an entrance exam.

2. State Board has given AICTE diploma equivalence to HSC

3. Besides the 20% quota, seats which remain vacant in 2nd year Engineering are being offered to Polytechnic students. The concurrence of the Govt. and AICTE has been obtained.

4. Permission has been granted to desirous Engineering colleges to start a separate Division for Polytechnic Diploma holders

5. AICTE also allows Engineering Colleges to admit Polytechnic students in 1st year Engineering if seats remain vacant. No entrance test is required for the same.

Although there is vertical mobility for Polytechnic Diploma students this is limited and non-polytechnic diplomas do not enjoy similar opportunities. Most of these diplomas are terminal in nature.

3.8 PRESENT SCENARIO OF COMMUNITY COLLEGES IN INDIA

The Community College is an alternative system of education, which is aimed at empowerment of the disadvantaged and the underprivileged (Urban poor, Rural poor, Tribal poor and Women) through appropriate skills development leading to gainful employment in collaboration with the local industry and the community and achieve skills for employment and self employability of the above sections of people in the society. The Community College is an innovative educational alternative that is rooted in the community providing holistic education and eligibility for employment to the disadvantaged.

The Community College scheme was rolled out by the Govt. of India in 2008, by appointing IGNOU as the nodal agency. There are 128 Community Colleges established as of date under the aegis of IGNOU. Community Colleges generally have a 2-year curriculum that either leads to an Associate degree with a facility for further transfer to an undergraduate program in a college or leading to the students' direct entry into any occupation or trade.

➢ **Present Scheme**

1. Associate Degrees of 2 years duration are offered at +2 level by Community Colleges and other Vocational Institutions in India.
2. Community Colleges also offer short term certificate courses and diploma programs. The certificate is from the College or joint certificate with IGNOU.

Present courses are in various vocations ranging from hospitality, tourism, para medical, technical, services etc.

➢ **Problems with present scheme**

1. The Associate Degrees are not yet available in a wide range of vocations and are not popular amongst students as this scheme is not implemented in all States.
2. There is no uniformity or standardization of course content, curricula or certification.
3. Vertical Mobility is not clearly defined - The purpose of this scheme was to award associate degrees in the Community Colleges and also to provide vertical mobility into under graduate programs at IGNOU or other Universities/Colleges. However,

this scheme did not gain popularity as the mobility options are not clear and provided for. Other than IGNOU, no conventional colleges or Universities accept Community College students.

4. The benefits of this scheme were not clearly defined and communicated to potential students. All stakeholders including UGC, Conventional Universities and Local Colleges have not given a buy-in for this scheme as such it has remained restricted.

5. The overall implementation has remained fragmented and ineffective.

6. Vertical Mobility into other Universities for undergraduate programs or into Polytechnics for diplomas is not available.

7. Credit Transfer across other Universities (other than IGNOU) is not available.

8. The certificate courses although vocational in nature do not focus on skill development and hands-on training. Further such certificates do not have any recognition through DGET or any other national body – other vocational training providers offer NCVT certificates which are nationally recognized. However students completing certificate courses from Community Colleges in vocational areas do not get NCVT certificate or any other nationally or State recognized certificate automatically.

9. There is no mechanism for quality check and no emphasis on the vocational teaching learning pedagogy. As a result the quality of teachers, and teaching in Community Colleges is questionable as compared to other accredited vocational training providers.

10. Community Colleges do not have standardized infrastructure, laboratories or equipment as compared to accredited vocational training providers as such the quality of hands-on training is questionable. This scheme has not been recognized by any State Govt. or UGC as such there are no 'defined' parameters for establishing or maintaining a Community College.

3.9 PRESENT SCENARIO OF VOCATIONALISATION OF HIGHER/ TERTIARY EDUCATION

In the changing global scenario, employment possibilities of graduates and post-graduates of general subjects are becoming increasingly limited. The education imparted at degree level is not oriented to the market needs and neither is it skill based.

Attempts to restructure the Indian education have been made over a period of time. However, the vocational education system has remained terminal in nature. The students pursuing courses in the vocational streams do not have an option of vertical mobility into degree programs in their chosen vocational sector. The social acceptability of the vocational education being low the students do not opt for higher education in the vocational field, also due to lack of higher level degree programs the parents of these students do not encourage them to continue their education in the vocational stream. This coupled with other reasons of quality, standardization, recognition and fragmentation have led to the failure of various vocational schemes introduced at both National and State level.

University Grants Commission (UGC) also launched the scheme of vocational education in the academic session of 1994-95. This curriculum of vocational education was introduced as a part of undergraduate courses of Arts, Science, Commerce, and Engineering & Technology. At present this scheme is being implemented in 100 Universities covering 1317 colleges. However, this scheme has not been successful. Evaluation of Vocational Education Scheme of UGC done by Institute of Applied Manpower Research suggests that lack of infrastructure, absence of trained teachers, poor quality of training, lack of on the job training and practical oriented approach were the major reasons for the failure of this scheme. *(Evaluation of Vocational Education Scheme of UGC done by Institute of Applied Manpower Research)*

The failure of the above scheme also indicates that vocationalization of tertiary education cannot be done through conventional universities. The different teaching learning pedagogy of Vocational education and training cannot be imparted through existing colleges and Universities without training the faculty and creating infrastructure or linkages with industry which are critical components for success.

In the State of Maharashtra, Vocationalization of higher secondary education has been implemented through introduction of the MCVC scheme popularly known as HSC (vocational) scheme. However, survey conducted by the researcher indicates that students undergoing HSC (vocational) aspire for higher education. Thus, vocational education at higher secondary level must be viewed as a preparatory stage for students to enter higher / tertiary education system rather than as a terminal stage. Furthermore the Community Colleges, Polytechnics and other VTPs need to have a comprehensive vocational education system with clear vertical mobility options in order to make the vocational stream successful and popular. Today, many parents and young children do not see the vocational stream as a viable alternative to the academic stream in spite of the fact that they may have more aptitude for 'hands-on' courses rather than theoretical subjects. The creation of a clear, well defined vocational education system starting at school level going upto higher secondary, graduate and post graduate level will give birth to a popular alternate system of education which will create skilled human resources suitable for employment and entrepreneurship within the local industry and community.

Worldwide, such a comprehensive vocational education and training system is not only available as an alternative system but is also extremely popular and successful. In fact in many countries such as Germany, China, Korea and others students prefer the VET system over the academic sector as it offers tremendous potential for gainful employment. One of the key factors for the success of the VET system in other countries has been the opportunities for vertical and lateral mobility into higher / tertiary vocational education programs. Such higher / tertiary vocational education programs are offered in other countries through dedicated Vocational Universities, Universities of Applied Sciences, Dual Mode Universities and Community Colleges. In Germany for example, the Universities of Applied Sciences have become extremely popular over past few decades and have trained majority of the country's workforce. It is seen that industry preferred students passing out from such Universities in Germany as compared to conventional / academic Universities. Today there are about 160 Universities of Applied Sciences in Germany. A similar situation exists in China, Korea and Australia where students have started opting for the vocational system and are participating in large numbers in the vocational higher / tertiary education programs. It is seen that such universities have also become a bee-

hive for industrial employees to obtain advanced skill development and continuous skill up gradation.

3.10 PRESENT SCENARIO OF VOCATIONAL FACULTY TRAINING & DEVELOPMENT

At present, there is no specific Government rule related to vocational faculty qualifications. The World Bank Report (2006) suggests that one of the major concerns of industry is poor quality of curriculum. This aspect is closely linked to quality of teachers who teach in vocational colleges and ITI/ITCs. It is seen that teachers are not equipped with knowledge of the vocational teaching learning pedagogy. Many of them try to apply the conventional teaching pedagogy for teaching vocational or skill based courses. Teachers also lack sufficient knowledge of ICT and are unable to deliver technology based learning. Soft skills are many times absent in vocational teachers especially those from semi-urban and rural colleges. As a result the teaching is not effective. Furthermore, the assessments designed by the present vocational teachers are also not designed to judge the skills obtained by students. The assessments mostly emphasize testing of theoretical knowledge. As such inspite of undergoing a vocational or technical course, it is observed that students do not possess the level of skill required and the desired outcome is not achieved. Due to these reasons, industry has concerns about quality of vocational students. Thus vocational students end up getting re-trained when they join the industry.

The other major concern related to vocational teachers is related to continuous teacher development through training. Such continuous training is not mandatory at present for vocational teachers. Prior industry experience is also not a mandatory requirement while hiring teachers in vocational institutions. As such, vocational teachers themselves do not possess latest skills required to train students. Furthermore, strong industry interface, collaboration, research and continuous training is lacking amongst vocational colleges and ITI/ITCs. As a result, vocational teachers do not get exposure to latest machinery, equipment, skills and pedagogy. Research as a component of academics, is also unseen in vocational colleges and ITI/ITCs. Industry sponsored research projects are unheard of in most vocational institutions. All this affects

quality of teaching-learning, curricula and finally quality of students coming out of vocational colleges, ITI/ITCs.

The PSSCIVE (PSS Central Institute of Vocational Educational, Bhopal) is an arm of NCERT and focuses on development of curricula and content for the vocational education sector. At the State level (in Maharashtra) however, no such dedicated institute for vocational curricula & content development or vocational teacher training exists at present.

(Source – Human Resource and Skill Requirements in the Education & Skill Development Services sector (2022) – A Report, by NSDC)

The demand for Vocationally Skilled persons (in addition to ITI/ITC qualified persons) is expected to be anywhere between 25% and 85% of the workforce. Considering the need for skilled manpower is increasing rapidly, it is imperative that the requirement of trained teachers will also increase. The NSDC estimates that the requirement of vocationally trained teachers would be about 5.8 million annually between 2008 and 2022. The Skill Development Centers which are proposed to be established by NSDC numbering about 5000 by 2013 will themselves require about 40,000 trained teachers. The need for assessors will also increase proportionately. NSDC estimates that about 415,000 teachers will be required to undergo training annually from the vocational education and training sector. Therefore, a need for establishing several teacher training institutes across the country will emerge in the coming years.

In fact, along with good infrastructure and strong industry collaboration, a large pool of trained teachers will also be a critical component of the vocational education and training system. However, it is not just important to train large number of vocational teachers. It is equally important to focus on quality of teacher training, industry liasoning through collaborative projects for skill upgradation of teachers and continuous development through life-long learning opportunities.

3.11 PRESENT SCENARIO OF VOCATIONAL EDUCATION, TRAINING & SKILL DEVELOPMENT IN RELATION TO INDUSTRY

Industry plays an important role in the Vocational Education, Training and Skill Development sector. In the past, the Industry has not played an active role in the development of this sector. High cost of training, inability to afford downtime and increasing overheads and costs associated with poor efficiency are all factors which have driven the industry to demand skilled workforce. As compared to countries such as Korea where over 90% of the workforce is vocationally qualified, India has only 5-7% of its workforce vocationally trained or qualified. Most skills obtained by workers are through an informal training system such as family inheritance or "guru-shishya parampara". As a result, it is very difficult to measure the competencies of skills or create any standards of competency levels. Inability to measure competencies or establish any standards for occupation to skill mapping makes it difficult for industry to associate optimal wages for skills of workers. One of the major reasons for limited success and popularity of the VET sector has been the inability of the industry to emphasize formal vocation qualifications or training for its workforce. As such majority of the industry workforce continues to be poorly qualified and do not go for further skill enhancement. There is no focus from the industry for in-service training and as such skill upgradation is not taking place. These aspects need to be seriously addressed by the industry as productivity is directly linked to skilled manpower.

3.11.1 Trends related to Labour Market

An analysis of the labour market has brought the following issues to the fore-:

1. Labour market requirement for skilled workers without general education skills is declining. The industrial concern on vocationally qualified work force is as illustrated:-
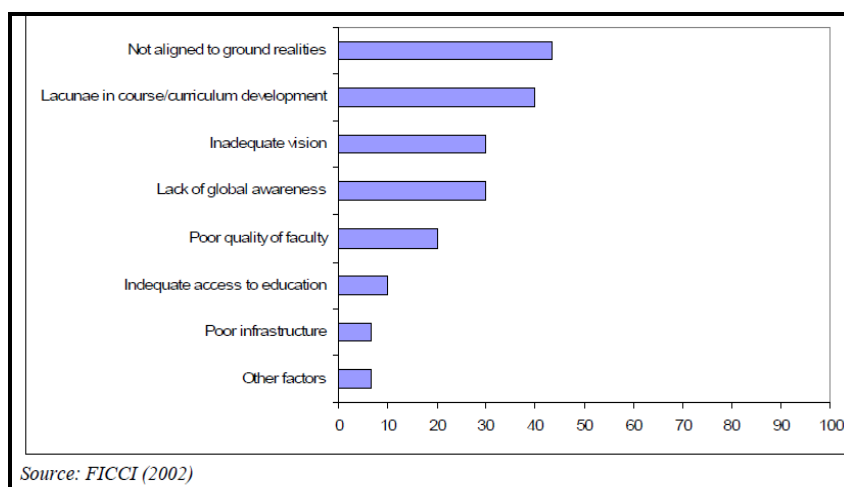
2. High growth sector related vocational courses are not being widely offered. There has been a decline in minimal skilled jobs which require lower educational qualifications. For example: there are 4.0 million trained and skilled persons required in high growth sector in Maharashtra alone by 2012, out of which minimally skilled required are only 1.1 million. Composition of employment in industrial sector is indicated below-:

Table 1.3: Composition of Employment by Industry Sector

Sector	Employment Share (%)			GVA per Worker (Rs) 1999-2000	Annual Growth (%) over 1993-94
	1961	1993-94	1999-2000		
Agriculture	75.9	63.8	59.9	12,323	3.2
Mining and Quarrying	0.5	0.7	0.6	116,863	7.7
Manufacturing	9.5	11.6	12.2	40,741	5.8
Electricity, gas and water supply	0.1	0.4	0.3	269,323	12.0
Construction	1.5	3.2	4.4	33,334	-0.1
Trade, hotels and restaurant	4.3	7.6	9.4	45,344	4.5
Transport, storage and communication	1.7	2.9	3.7	57,245	3.2
Financial, insurance, real estate and business services	0.3	1.0	1.2	193,247*	7.2
Community, social & personal services	6.1	8.8	8.4	45,818	8.2
All sectors	**100.0**	**100.0**	**100.0**	**27,722**	**5.8**

Source: Narain (2005)

As indicated above, the high growth sectors are transport, communication, finance, insurance, real estate and business services. Vet sector should concentrate on high growth sector related skill development courses.

Labour force participation is declining while student participation is increasing. Thus more students are joining higher secondary education and looking for vertical mobility.

Inability to measure competencies or establish any standards for occupation to skill mapping makes it difficult for industry to associate optimal wages for skills of workers. One of the major reasons for limited success and popularity of the VET sector has been the inability of the industry to emphasize formal vocation qualifications or training for its workforce. As such majority of the industry workforce continues to be poorly qualified and do not go for further skill enhancement. There is no focus from the industry for in-service training and as such skill up gradation is not taking place. These aspects need to be seriously addressed by the industry as productivity is directly linked to skilled manpower.

Some of the major concerns of the industry related to the VET sector are:

1. Poor quality of training
2. Curricula of training not aligned to industry needs, lack of input of industry in academics
3. Lack of general academic skills such as numeracy, problem solving, presentation skills, entrepreneurship etc.
4. Lack of global awareness and understanding of specific industry needs
5. Lack of standardization in certification or content
6. Inability to judge competency or skill level
7. Lack of incentives from Government for industry participation
8. Lack of engagement from other stakeholders of the VET sector such as community and Government.

In spite of the above issues there is no denial that industry plays a vital role in the overall development and growth of the VET sector. *(FICCI, 2002 Report).*

3.12   PRESENT SCENARIO OF UNORGANIZED SECTOR

Over 90% of employment in India is in the unorganized sector. For this large section of the population attainment of Vocational education and training is crucial. Within this unorganized sector, 40% are employed by enterprises/companies, while about 60% are self-employed. Male workers constitute about 60% of the informal employment in manufacturing and services sector, while female workers constitute about 40%. As of 2007, about 427 million persons were employed in various sectors, with agriculture accounting for about 50%-55% of the employment.

(Human Resource and Skill Requirements in the Unorganized Sector Study by National Skill Development Corporation).

The National Skill Development Policy, 2009 has identified the target groups in the unorganized sector as own-account workers, workers and apprentices in micro enterprises; unpaid family workers; casual labourers; home-based workers; peripatetic workers and migrant labourers; out of school youth and adults in need of skills; farmers and artisans in rural areas, among others.

The various sectors and areas of occupation in the Informal/Unorganized Sector are illustrated below:-

Sector	Job title
Manufacturing Sector	
Wearing Apparel; Dressing and Dyeing of Fur	Stitchers, tailors, sewing machine operators, dress makers, sewers, upholsterers
Leather and leather goods	Stitchers, tanners in tanneries, cutters
Tobacco Products	Tobacco and beedi makers
Food Products and Beverages	Operators, packers, sorters, cleaners, inspection
Textiles	Stitchers, tailors, sewing machine operators
Furniture; Manufacturing	Carpenters and wood workers
Other Non-Metallic Mineral Products	Machine operators, workers, helpers
Fabricated Metal Products, Except Machinery and Equipment	Welders, Electricians, Fitters, Machinists
Chemicals and Chemical Products	Machine operators, workers, helpers
Construction	Workers, Masons, Carpenters, Plumbers, Electricians, stone cutters
Hotels and Restaurants	Cooks, stewards, waiters

Sector	Job title
Manufacturing Sector	
Transport, Storage, and Communication	Drivers, helpers, loaders, workers
Other community, social, and personal services	Domestic workers, cleaners, beauticians, security guards, hair dressers, and other related areas
Retail	Show owners (kirana), assistants, Salesmen

Source : NSSO, and IMaCS analysis

The National Policy of Education, 1986 (as modified in 1992) in para 4.14 states that a critical development issue today is the continuous up gradation of skills so as to produce manpower resources of the kind and number required by the society Special emphasis will, therefore, be laid on organization of employment/self employment oriented, and need and interest based vocational and skill training programs.

The training in the informal sector is mainly carried out through NIOS which offers 85 courses through 700 providers, Community Polytechnics which train about 45,000 annually, Jan Shikshan Sansthan (JSS) offering 255 types of vocational courses. *(World Bank Report, 2006)*

However, no mechanism exists that recognizes the experience and the skill attained by a person in the non formal sector which will enable him to upgrade his skill through formal vocational training.

3.12.1. MODULAR EMPLOYABLE SCHEME (MES)

Under the skill development initiative program of Government of India, scheme on Modular Employable Skills (MES) for training, assessment and certification of the school drop outs, existing workers who have acquired proficiency through informal means, agriculturists, women, physically challenged persons etc has been introduced in 2007. This scheme aims to help the people in the unorganized sector to access the decent jobs in the word of work.

MES courses are provided through 855 Vocational Training Providers (VTPs). The MES courses are available in 65 sectors covering nearly 1400 courses. New courses are being introduced at regular basis as per the market demands.

The salient features of the scheme are as under:-

(a) Course duration - 90 hrs to 300 hrs

(b) Fee reimbursement is done to the passout students from Govt. of India (c) It is a totally flexible scheme

(e) National level certificate of NCVT is given to MES a passout student which enables them to seek a job.

(f) MES certificate is also given to persons in unorganized sector who have acquired skill through informal training by carrying out an assessment as a direct student.

➢ **Problems of MES Scheme**

1. There is no standardization of assessment for MES courses.

2. For each of the MES courses parameters such as requirement of infrastructure, staff, equipment, assessment criteria, course content etc are not defined.

3. The reimbursement of fees to the students is often delayed.

➢ **Other Problems of Vocational Training in unorganized sector**

1. The provision of recognition of prior learning (RPL) does not exist in any of the formal vocational training providers like ITIs, Polytechnics etc. Thus, public sector vocational training providers have a limited role in the training of the unorganized sector.

2. The training needs of the informal sector cannot be addressed through traditional vocational education and training methodology. The sectors of occupation identified for the unorganized sector are not covered by any of the formal vocational training providers.

3. Additional bridge courses are not offered by any of the VTPs to enable people in the informal sector to enter mainstream vocational education sector.

4. The national policies on education has focused on providing primary education in the informal sector rather than alternate skill oriented training coupled with general academic skills.

5. The informal apprenticeship training which is predominant in our country is based on traditional methods of training and quality of training delivered depends on the skill of the artisan. The basic foundation of general education is missing and only functional skills are being passed from generation to generation.

6. Entrepreneurs in the unorganized sector require additional skills like life coping skills, numeracy, problem solving, analytical skills, quality control, marketing, legal regulations etc. These skills are not being imparted by any vocational training provider.

7. The unorganized sector students who acquire vocational training find it difficult to easily obtain financial assistance both for vocational training and for starting their own business. As such students from this sector do not see a huge benefit in the vocational training stream and are not readily open to pursuing this stream.

8. The Industry does not emphasize for formal vocational training for the unorganized sector work force due to which there is no motivation or compulsion on such workers to obtain vocational certification.

9. Industry recognition for MES courses is not very high

CHAPTER 4

HYPOTHSES & RESEARCH METHODOLOGY

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Hypotheses

1. There is a progressive growth in Vocational Education, Training and Skill Development in India and Maharashtra. However the need for a unified system and a single regulatory authority towards qualitative development in this sector is imperative.

2. Creation of a clear, well defined vocational education and training system, providing vertical mobility from school to post graduation level will give birth to a popular alternate system of education.

3. Quality of the vocational teaching-learning pedagogy is dependent on continuous faculty training and development.

4. Active industry participation is critical for success of the Vocational Education, Training & Skill Development Sector.

5. Over 90% of the India's workforce is in the unorganized sector. For this large section of population, attainment of formal Vocational Education and Training is crucial.

4.1 Research involves 4 p's

1. People
2. Problems
3. Programs
4. Phenomena

In practice most recent studies are based upon at least a combination of two p's as below:-

1. Study population
2. Subject area, problems

An opinion oriented survey of students and faculty from ITI/ITCs and Vocational Junior Colleges across select cities of Maharashtra was carried out by the researcher.

As the subject matter deals with the Vocationalization of Education & Skill Development in India vis-à-vis State of Maharashtra, it was essential that the

descriptive methods along with qualitative methods would exhaustively explain Vocationalization of Education in consonance with the objectives and hypotheses of this thesis. The descriptive aspect includes detailed explanation of the existing ITI/ITC and VJC institutes in Maharashtra.

The sampling procedure was representative of the entire estimated population of ITI/ITC and VJC students. Also opinion survey was extended to the faculty in the ITI/ITC and VJC institutes.

The Methodology is essentially based on the problems, programs and prospects. The qualitative aspect of the research was restricted to describing the present structure and scenario of educational system.

4.2 Developing the Objectives

"To study the Significance of Vocationalization of Education and Skill Development in India with special reference to the State of Maharashtra."

From the viewpoint of Objectives this study is Descriptive research as it attempts to describe systematically the situation, the problem, the study discusses the present structure and scenario of the education system, problems of existing system, trend in the labour market, the international perspective of VET system, the changing objectives of VET system.

The study is an inquiry study and is a qualitative research since it is describing the present structure and scenario of the education system.

4.3   Method of Data Collection

The Survey method used for collecting the data was a pre – prepared questionnaire given to the participants.

4.3.1 Two types of data were collected:
1. Primary data
2. Secondary data

Primary data was collected through structured survey method by using formal lists of questions asked to all the respondents in the same way.

4.4 Source of information-

4.4.1 Sample design

The sample:

Since the study is basically related to the State of Maharashtra, the sample of students was drawn from all parts of this state; though it was limited by the number of the ITI/ITC institutions in different regions.

4.4.2 The type of sampling:

Stratified random sampling, as the population is divided into mutually exclusive groups.

The tools for data collection are the structured survey by interviews. The closed ended questions-multiple choice questions were used to get the response of the respondents.

4.4.3 Piloting the questionnaire:

The questionnaire was piloted to a sample of respondents from select cities across Maharashtra, to understand if the desired response was as per the objectives of the study.

4.4.4. The sample size

In all, a sample of 2818 students responded, i.e. 1888 from ITI/ITC and 930 from VJC, students were selected from 21 ITI/ITC 40 VJCs spread all over Maharashtra. In the ITI/ITC 90% were boys and 10% were the girls. In the VJC, boys accounted 83% while the rest, 17% were girls.

4.5 Collecting the Data

The data was collected from the various parts of Maharashtra, namely

- Western Maharashtra

- Konkan (Coastal belt)

- Vidarbha

- Marathwada

The State of Maharashtra can be broadly divided into four regions, i.e. Western Maharashtra, Konkan (Coastal belt), Vidarbha and Marathwada. Since the regions of Western Maharashtra and Konkan are relatively better off educationally they have a

larger number of ITIs/ITCs and hence the number of students selected from the regions is in relation to the number of institutions.

4.5.1 The following Information was collected through the questionnaire from the students:

- Educational Qualifications
- Computer Literacy
- Aspirations for higher education
- Vocational stream preferences in Higher Education
- Seeking employment
- Seeking self-employment
- VJC student's interest in consultancy, research, skill development etc.

The survey research was direct approach which involved direct questions to the respondents. Information was collected by mail questionnaire and also through personal interviews.

4.6 Data analysis: Qualitative

4.6.1 Processing and analyzing the data:

The data processing operations are: Editing & Classification.

Classification as per attributes such as literacy.

Classification can be either:

1. Simple classification where we consider only one attribute and divide the universe

2. Into two classes where we consider two or more attributes simultaneously and divide the data into a number of classes

The raw data was formatted in a table form. Tabulation is the process of summarizing the raw data and displaying the same in the compact form for further analysis. It is an orderly arrangement of data in columns and rows.

Qualitative data analysis: In case of interviews

The content analysis was carried out in order to identify the main themes that emerge from the responses of the respondents. The main steps carried were as follows:

1. Identification of the main themes: The content needs to be structured, and broken down into meaningful themes the next step is to integrate into the text of the report.

2. Manual data analysis been carried out in the research study.

Writing the report was the last step.

CHAPTER 5

DATA ANALYSIS

AN OPINION ORIENTED SURVEY OF ITI/ITC STUDENTS, VOCATIONAL JUNIOR COLLEGE AND FACULTY OF ITI/ITC AND VJC INSTITUTIONS IN MAHARASHTRA.

An opinion oriented survey of students and faculty of ITIs/ITCs and Vocational Junior Colleges (VJC) in select cities across Maharashtra, was conducted by the researcher as part of research work for the degree of Ph.D. under the Faculty of Management, Symbiosis International University, Pune. The topic of research is "A Study of the Significance of Vocationalization of Education and Skill Development in India with special reference to the State of Maharashtra." This is a descriptive type of research. The statistical presentation and analysis of the data collected in the survey and the broad findings thereof are presented hereunder. Part A presents the responses of the students, Part B deals with the faculty feedback and Part C gives the feedback obtained from the Industry.

PART A
Students' Response
Table – A - 1
The Selected Sample

Sr. No.	Students	Number	Remarks
1	ITI/ITC	1888	ITI – Industrial Training Institute ITC – Industrial Training Center
2	VJC	930	VJC – Vocational Junior College 11th & 12th standard – MCVC scheme
	Total	2818	

In all, a sample of 2818 students responded, i.e. 1888 from ITI/ITC and 930 from VJC students were selected from 21 ITI/ITC 40 VJCs spread all over Maharashtra.

Select cities across Maharashtra were taken for purposes of survey as a representation of the entire region. Mumbai being a very large metropolitan city was excluded for the survey as the large data from Mumbai would have unnecessarily influenced the entire picture. Further Mumbai conditions and problems with respect to vocational education/industrial training are different due to many reasons including topography, per capita income, industrial influence, economic and social factors etc.

In the ITI/ITC 90% were boys and 10% were girls. In the VJC, boys accounted 83% while the rest, 17% were girls. It is clear that in the technical or vocational courses of study the boys have predominance. It was also observed that girls tend to undertake non-technical vocational courses. The sampling was done on the 'pure random sampling basis'. All the students were interviewed with the help of a pre-prepared questionnaire. The questionnaire comprised clear, specific and brief questions. There were total 18 questions.

Data was collected on the following aspects:
- Educational Qualifications
- Computer Literacy
- Aspirations for higher education
- Vocational stream preferences in Higher Education
- Seeking employment
- Seeking self-employment
- Component of Practical Training

➢ **Geographical Distribution of Students**

Since the study is basically related to the State of Maharashtra, the sample of students was drawn from all parts of this state; but from select cities as a representation of the region, though it was limited by the number of the ITI/ITC institutions in these regions. The region and institution-wise distribution of the sample is shown below:-

Table A – 2

Geographic Distribution of Students

Part (a) – ITI/ ITC

Region	Location	Number of Institutes	Random Sample of Students	Percent of Population
1. Western Maharashtra	1.Nashik	1	124	7
	2.Malegaon	1	80	4
	3.Patas	1	130	7
	4.Khed	1	90	5
	5.Dhule	2	119	6
	6.Pune	2	471	25
	Total	8	1014	
2. Konkan	1.Guhagar	1	88	4
	2. Dapoli	1	128	7
	3. Devrukh	1	127	7
	4. Lanja	1	88	4
	5. Rajapur	1	124	7
	Total	5	555	
3. Vidarbha	1. Washim	1	107	6
	2. Nagpur	1	172	9

Region	Location	Number of Institutes	Random Sample of Students	Percent of Population
	3. Khamgaon	1	31	2
	Total	3	310	
4. Marathwada	1.Pathri	1	9	-
	Total	1	9	-
	GRAND TOTAL	17	1888	
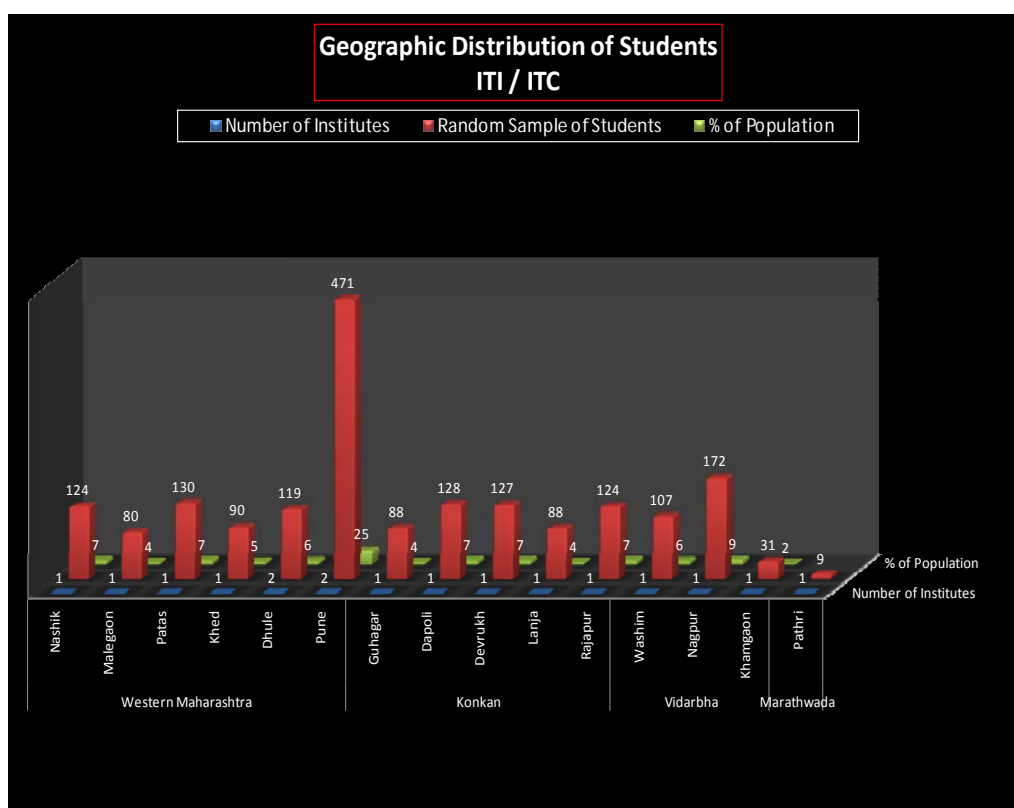
The State of Maharashtra can be broadly divided into four regions, i.e. Western Maharashtra, Konkan (Coastal belt), Vidarbha and Marathwada. Select cities have been taken for the purposes of survey keeping in mind the region, culture, socio-

economic conditions represented thereof and the presence of ITI/ITCs and VJCs in these cities. It would be noted that 54 % of the students are from the Western Maharashtra, followed by Konkan, Vidarbha and Marathwada respectively.

Table A - 3

Geographic Distribution of Students

Part (b) – VJC

Region	Location	Number of Institutes	Random Sample of Students	Percent of Population
1.Western Maharashtra	1. Nandurbar	3	71	8
	3. Satana	1	40	4
	4. Pune	14	291	32
	6. Pimpalgaon	1	50	5
	8. Nashik	1	55	6
	9. Mangaon	2	45	5
	Total	22	552	
2. Marathwada	1. Deulgaon	2	97	10
	Total	2	97	
3. Konkan	1. Ratnagiri	1	45	5
	Total	1	45	
4. Vidharbha	1. Wardha	1	30	3
	2. Khamgaon	2	115	13

Region	Location	Number of Institutes	Random Sample of Students	Percent of Population
	3. Chandrapur	1	30	3
	4. Morshi	1	61	7
	Total	5	236	24
	GRAND TOTAL	30	930	
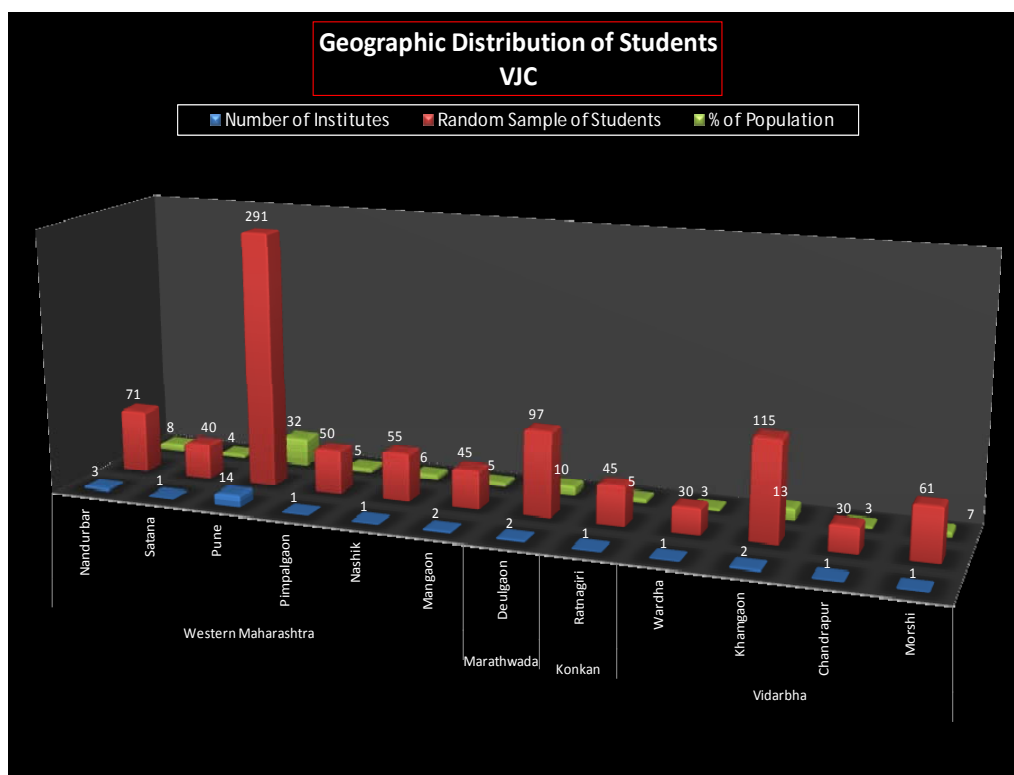
Although the researcher had circulated questionnaire and sought responses from almost all the ITIs/ITCs and VJCs across the above select cities in Maharashtra, the maximum responses were received from Western Maharashtra. The response was limited from other regions as is clearly depicted in the tables above.

From the select cities, in both types of institutions, Pune district with Pune city as its headquarters gave the maximum response as the researcher being based in Pune was able to persuade large number of students and faculty in responding to the

questionnaire. Hence Pune accounted for 25 % and 30% for the ITIs/ITCs and the VJCs respectively, of the response.

Table – A - 4

Distribution of students by parental monthly income

Sr. No.	Monthly Income Range (Rs.)	% of students ITI/ITC	% of students VJC
1	Upto 10,000	89	84
2	10,001-20,000	6	8
3	20,001-30,000	2	3
4	30,001-40,000	1	1
5	40,001-50,000	0	1
6	Above 50,000	0	0
7	Unclear	2	3
	Total	100	

Distribution of Students by Parental Monthly Income

■ % of Students ITI / ITC   ■ % of Students VJC

Income	% of Students ITI / ITC	% of Students VJC
Upto 10,000	89	84
10,001 - 20,000	6	8
20,001 - 30,000	2	3
30,001 - 40,000	1	1
40,001 - 50,000	0	1
Above 50,000	0	0
Unclear	2	3
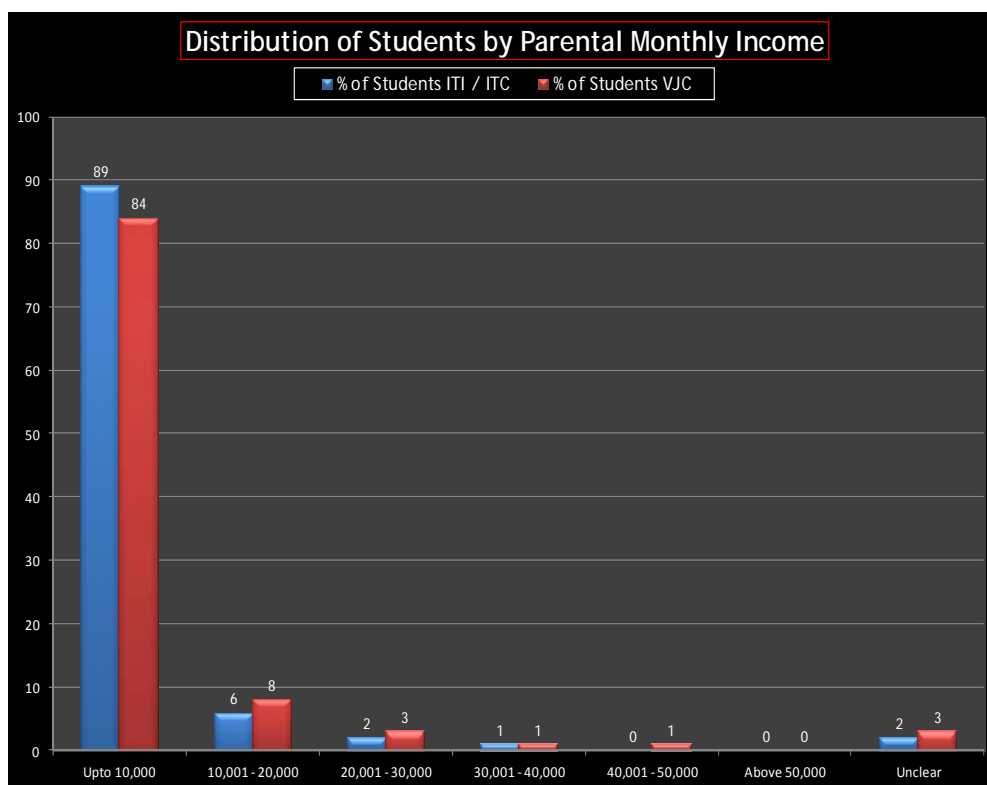
The minimum entry qualification for ITI/ITC is 10th pass though a small number of courses are offered for 8th pass students. For the VJC the minimum eligibility is 10th pass (SSC). Therefore students who can afford to go in for higher education (10+2: Colleges) generally do not enroll for these courses. As is revealed by the table above, the students belong to the economically poorer sections of the population and almost 89 % of students belong to families with monthly incomes upto or less than Rs. 10,000. Further since professional undergraduate education is becoming quite expensive day by day, students from low economic backgrounds cannot afford and hence may go in for vocational courses.

Table – A - 5

Distribution of students by trade, vocation or profession

Distribution of Students by trade/vocation				
Profession Offered	**ITI/ITC**		**VJC**	
	No	**% to total students**	**No**	**% to total students**
Commerce	12	1	254	27
Agriculture	7	0.4	27	3
Automobile	310	16	104	11
Electrical	265	14	157	17
Electronics	140	7	109	12
IT	127	7	7	1
Home Science	172	9	8	1
Civil	454	24	49	5
Mechanical	371	20	83	9
Insurance	N/A	N/A	15	2
Material Management	N/A	N/A	52	6
Unclear/Unclear	30	2	65	7
Total	1888		930	

Distribution of Students by Trade / Vocation / Profession Studying - ITI / ITC

Commerce, 12
Unclear, 30
Agriculture, 7
Mechanical, 371
Automobile, 310
Electrical, 265
Electronics, 140
Civil, 454
IT, 127
Home Science, 172

Distribution of Students by Trade / Vocation / Profession Studying - VJC

Material Management, 52
Insurance, 15
Unclear, 65
Commerce, 254
Mechanical, 83
Civil, 49
Home Science, 8
Agriculture, 27
IT, 7
Automobile, 104
Electronics, 109
Electrical, 157

64
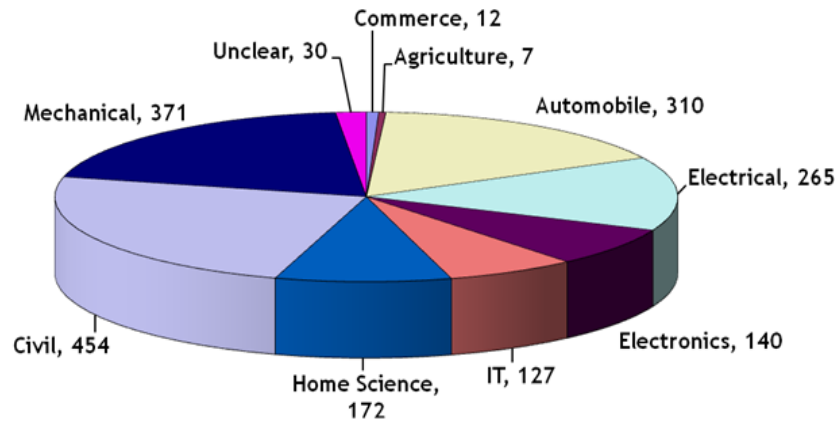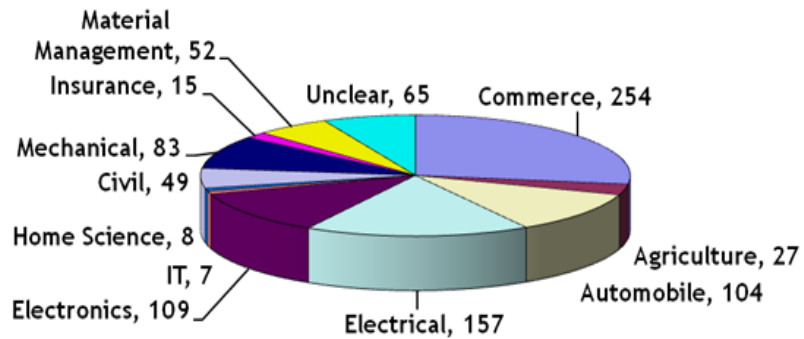
From the above data it appears that in the ITIs, the most popular trades relate to the technical field which together account for almost 80 % of the students. Commerce has a poor representation of just 1 %.

Among the VJC students Commerce seems to be a popular choice, almost one-third of the sample of students having opted for this vocation. Engineering courses taken together account for little more than 40 % of the enrolled students. Civil and Mechanical branches also seem to have good response. Agriculture, Home Science and Insurance with very small enrollments do not seem to be popular with students.

Table – A6

Educational Qualifications

Sr. No.	Qualifications	ITI/ITC No. of Students	Percent	VJC No. of Students	Percent
1	Below 8th	44	2	46	5
2	SSC Pass	998	53	712	77
3	HSC Pass	832	45	119	13
4	HSC Appear	N/A	N/A	48	5
5	Unclear	14	1	5	1
	Total	1888	100	930	100

Educational Qualification

	Number of Students				% of Students			
	Below 8th	SSC Pass	HSC Pass	HSC Appear	Below 8th	SSC Pass	HSC Pass	HSC Appear
■ VJC	46	712	119	48	5	77	13	5
□ ITI/ITC	44	998	832	0	2	53	45	0
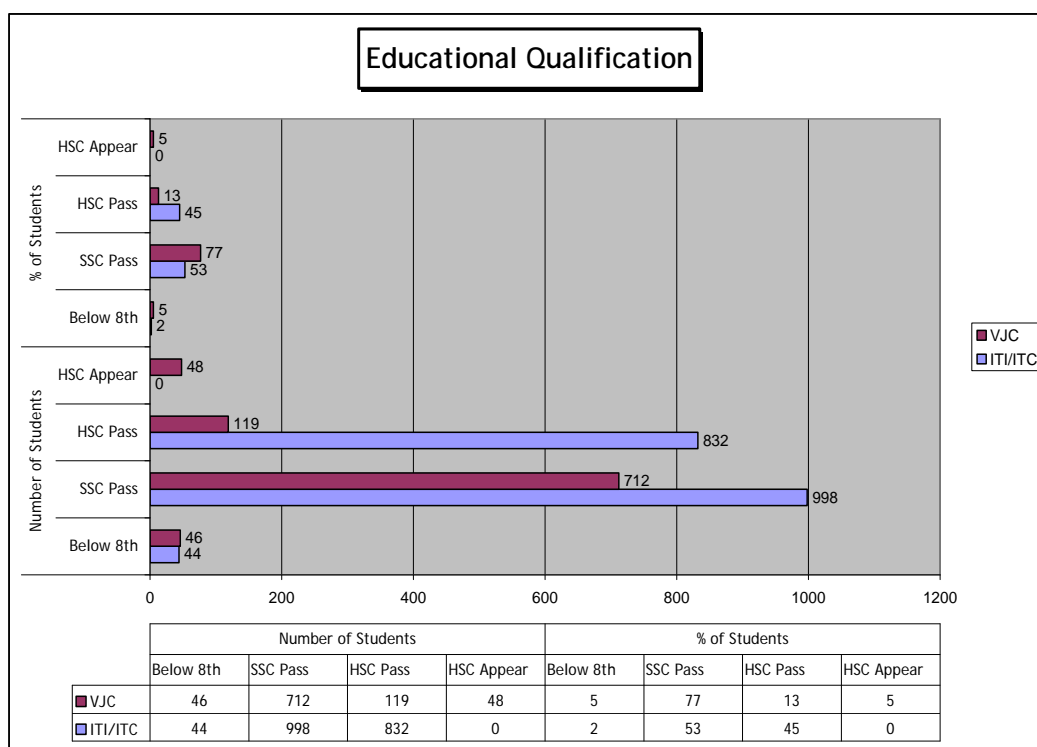
Among the ITI/ITC students 53% are SSC passed. About 45% students have completed HSC. Since they could not afford to pursue higher education in the colleges, they seem to have opted the technical/vocational courses. The other reason also may be that they could not join the colleges because of poor performance at SSC/HSC.

A small percent of students who have studied upto 8th std. have opted for vocational courses, because entry for this category of students is restricted to a limited number of courses, where there are less prospects of employment.

It appears that since there are limited number of courses for school drop-outs and those who have not even completed 8th standard, it appears that ITIs are not a viable alternative for skill development for such students. The researcher has recommended some schemes for skill development of such school drop-outs.

Entry eligibility to the Vocational Junior College is open to SSC pass students only. However, students who await SSC results or who have failed in the first attempt and plan to re-attempt are also allowed entry in VJCs. A small proportion of students who have passed HSC level have also joined the VJC for better employment prospects. It is observed that such HSC passed students are generally from

conventional backgrounds like Arts, Commerce and even those who have done ITI course.

As stated earlier in this study, the prospects of vertical mobility are almost absent in the State of Maharashtra resulting in relatively poor enrolment in these technical or vocational institutions at all levels.

Table – A - 7

Computer Literacy

Table No.6: Computer Literacy

Computer Literacy	ITI/ITC No. of Students	Per cent	VJC No. of Students	Per cent
Yes	1317	70	657	71
No	529	28	250	27
Unclear	42	2	23	2
Total	1888		930	

Computer Literacy

Legend: VJC % of Students | VJC No of Students | ITI / ITC % of Students | ITI / ITC No of Students

Unclear: 2, 23, 2, 42
No: 27, 250, 28, 529
Yes: 71, 657, 70, 1317
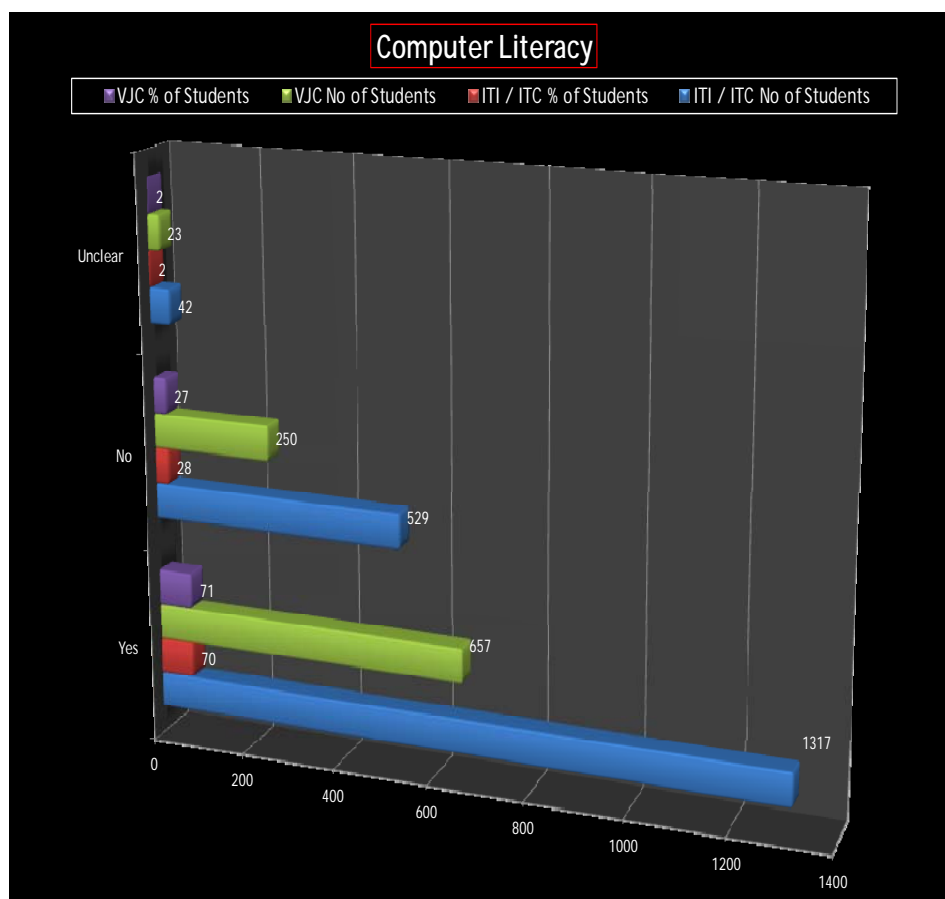
Students were asked to state whether they have any knowledge of operating computers. It was surprising to find that a majority of them about 70% knew how to operate a computer. The general opinion of these students was knowledge of computer literacy along with a certification in any trade/ vocation or profession was necessary for getting a job. Most of the upper primary schools and high schools have also acquired computer equipments in the last one decade or so and the Government is taking significant measures to introduce ICT (Information, Communication & Technology) early on in our schools. There is a growing awareness of computers and internet also due to private computer coaching classes which have penetrated even remote villages.

Yet, there are still about one third of students, both ITI/ITC, VJC, who have limited knowledge of operating computers. These students may perhaps represent non-technical streams such as Home Science, Agriculture, etc where basic knowledge of computers is not a compulsory component of the curriculum and as such students have limited ICT knowledge. However, the Government is extremely progressive in

this matter and is encouraging basic computers, internet and technology as an essential component of curriculum in all vocational and technical institutions.

Table - A - 8

Student-Aspirations for Higher Education

Sr No.	Level of Edu. Aspired for	No. of ITI/ITC Students	Percent	No. of VJC Students	Percent
1	Diploma	1057	56	493	53
2	Bachelor degree	478	25	309	33
3	Master's degree	294	16	109	12
4	Unclear	59	3	19	2
	Total	1888		930	
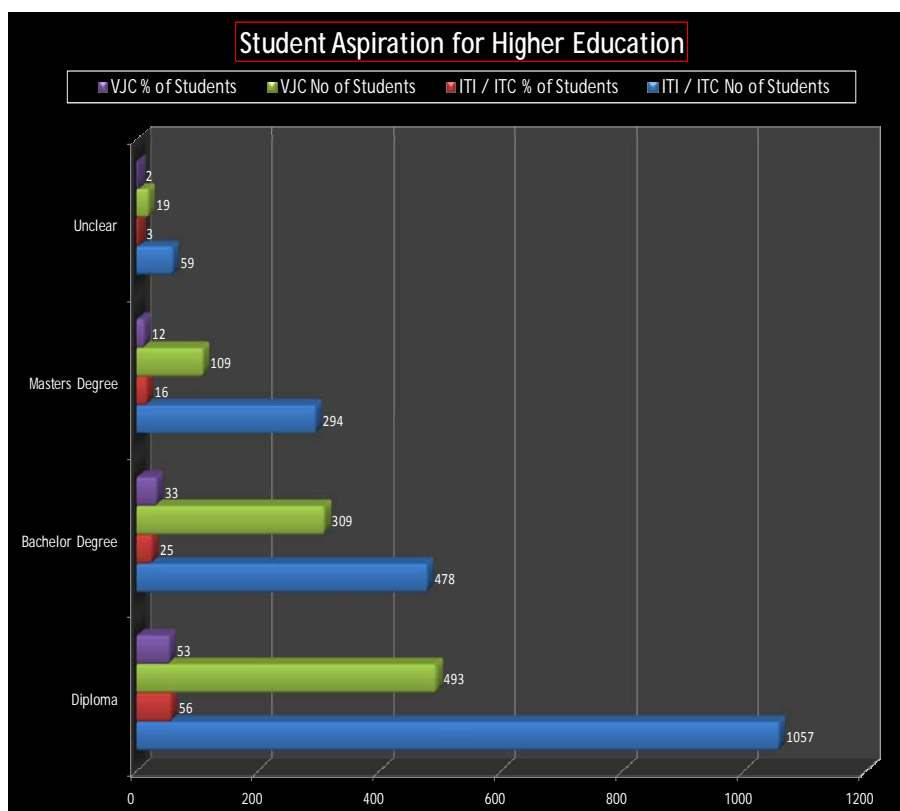
It is observed that lack of vertical mobility is limiting the growth of vocational and ITI students into higher education. Vocational and Industrial training streams are not gathering as much popularity as was envisaged by the Government as parents of children do not see this as a clear, well-defined education pathway leading from senior secondary into graduation. Further the data clearly shows that majority of vocational and ITI students aspire for higher education i.e. entering under-graduate programs. However, our conventional universities are not offering specially designed under-graduate degree programs tailored for vocational students. Many of these students thus end up joining conventional degree programs and in fact loose the skills they have acquired post SSC. It is seen from the data that vocational students pursuing technical streams aspire to go in for technical diplomas as this is the only option available of higher education where mobility is provided by the present system. The ITI students are allowed to join 2nd year of Polytechnic Diploma in the present system (which is of 3 years duration after SSC). As such ITI students who do 2 years courses after SSC loose 1 year by joining Polytechnic Diploma 2nd year. But since this is the only option available many ITI students use this vertical mobility path in the present system. Our data suggests that many ITI students are keen on joining even conventional under-graduate degree programs such as Architecture, Computers, IT, Electronics etc for which entry is limited and sometimes not available to ITI students as they are not given equivalence to HSC.

The VJC students who join the junior college on completion of the SSC examination, are allowed vertical mobility only in a limited number of courses like degrees in Arts or Commerce and that too in a limited number of colleges in Maharashtra. They are not allowed to compete for the entrance tests for the engineering, medical, architectural or agricultural degree courses. On the other hand students completing the general (non-vocational) HSC courses, can compete for these entrance tests. This is an anomaly and an important reason why the vocational stream (MCVC scheme) introduced more than two decades back at the HSC level has not become very popular.

This study attempts to find the student-responses whether they wish to pursue higher education on obtaining the certificates. All most all of them aspired to pursue higher education. More than half of the students both in the technical or vocational streams aspired to do a diploma. More than a quarter of the ITI/ITC and a third of the VJC

students expressed a desire to complete a bachelor degree program, while a few also aspired for a master's degree.

Social acceptability of skilled manpower is quite low in our society. The researcher has observed that due to the issue of social acceptability many students who have some inborn talent or skill do not pursue the same as a nearer option. Even the skilled manpower wishes to acquire some degree and associate this with better social acceptability. The aspirations of students for higher education and vocational degrees are a proof of the perception that a vocational degree will yield the skilled manpower a better social acceptance in our society. The Vocational University will be able to satisfy this need of vocational degrees for our skilled students.

This analysis supports the growing demand in Maharashtra for the setting up of Vocational Universities both in the public as well as the private sectors. It also highlights the need for examining in detail the processes for introducing the element of vertical mobility for the young boys and girls doing the certificate courses in ITIs and VJCs.

The researcher has therefore recommended the creation of a clear, vertical mobility pathway for obtaining skills and vocational education leading from school to graduate level through reforms at every stage including creation of a Vocational University. This will enable our youth who have acquired skills through VJCs and ITIs to get higher education opportunities without losing skills they have obtained after SSC.

Table – A - 9

Students' interest in different technical/vocational

Degree courses if vertical mobility is provided in the near future.

Sr. No.	Streams in Higher Education	ITI/ITC No of Students	Percent	VJC No of Students	Percent
1	Mechanical	524	28	62	7
2	Electrical	299	16	148	16
3	Civil	377	20	77	8
4	Information Technology	111	6	51	5

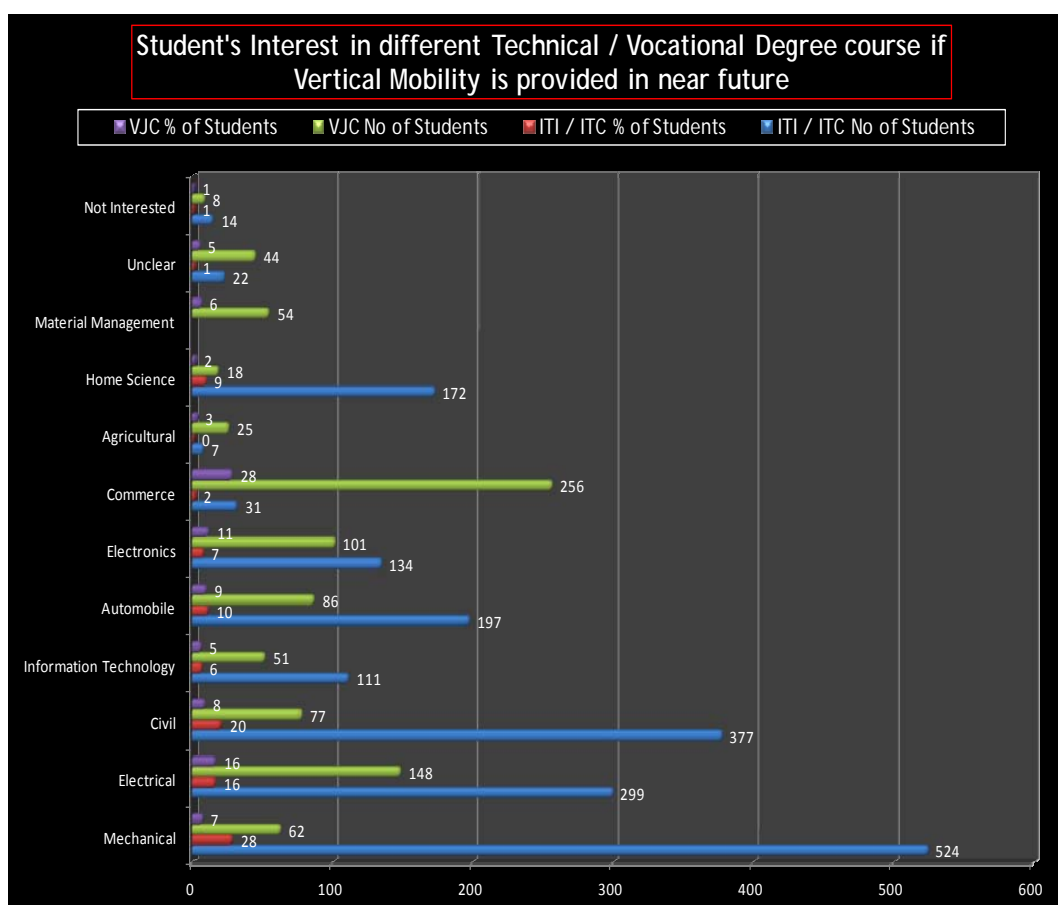| Sr. No.	Streams in Higher Education	ITI/ITC No of Students	Percent	VJC No of Students	Percent
5	Automobile	197	10	86	9
6	Electronics	134	7	101	11
7	Commerce	31	2	256	28
8	Agricultural	7	-	25	3
9	Home Science	172	9	18	2
10	Material Management	-	-	54	6
11	Unclear	22	1	44	5
12	Not Interested	14	1	8	1
	Total	1888		930	

Student's Interest in different Technical / Vocational Degree course if Vertical Mobility is provided in near future

Legend: VJC % of Students | VJC No of Students | ITI / ITC % of Students | ITI / ITC No of Students

Category	VJC % of Students	VJC No of Students	ITI / ITC % of Students	ITI / ITC No of Students
Not Interested	1	8	1	14
Unclear		5 → 44	1	22
Material Management		6 → 54		
Home Science	2	18	9	172
Agricultural	3	25	0	7
Commerce	28	256	2	31
Electronics	11	101	7	134
Automobile	9	86	10	197
Information Technology	5	51	6	111
Civil	8	77	20	377
Electrical	16	148	16	299
Mechanical	7	62	28	524

About 1866 out of 1888 in ITI/ITC and about 886 out of 930 in the VJC respondents attempted this question. As mentioned previously, majority of students are interested in pursuing higher education. However, due to lack of clear vertical mobility options, students are unsure about their future. The table shows the vocational streams students are interested in pursuing if they are given opportunity of undergoing higher education (at UG level) in vocational field. It is seen that technical branches such as Mechanical, Civil, Electrical etc are popular among the ITI students who wish to pursue higher education (under graduate degree programs) in these streams while among them VJC students Commerce and Home Science are also popular streams apart from the technical streams.

A large number of ITI/ITC students (about 25 %) would like to join the Mechanical engineering courses if vertical mobility is provided to them. Civil engineering was the next field of preference followed by Electrical Engineering. The response for Agriculture courses was low.

Among the VJC students a high preference was indicated for the Commerce stream with about 28 % opting for the same, followed by Electrical engineering 15%, Electronics engineering 11 %, and Automobile engineering 9 %. For Agriculture degree, 2 % students may opt if a vertical mobility is provided.

If a Vocational University does get established as is proposed by the researcher, the popularity and scope of vocational higher education is only bound to increase.

Table - A - 10

Career aspirations of students on completion of vocational/ITI courses

Sr. No.	Type of employment	No. of students - ITI/ITC	Percent	No. of students – VJC	Percent
1	To seek jobs	1628	86	667	72
2	To seek self-employment	186	10	202	22
3	Unclear	34	2	18	2
4	Not Interested	40	2	43	4
	Total	1888		930	

Career Aspirations of Students on completion of Vocational / ITI Courses
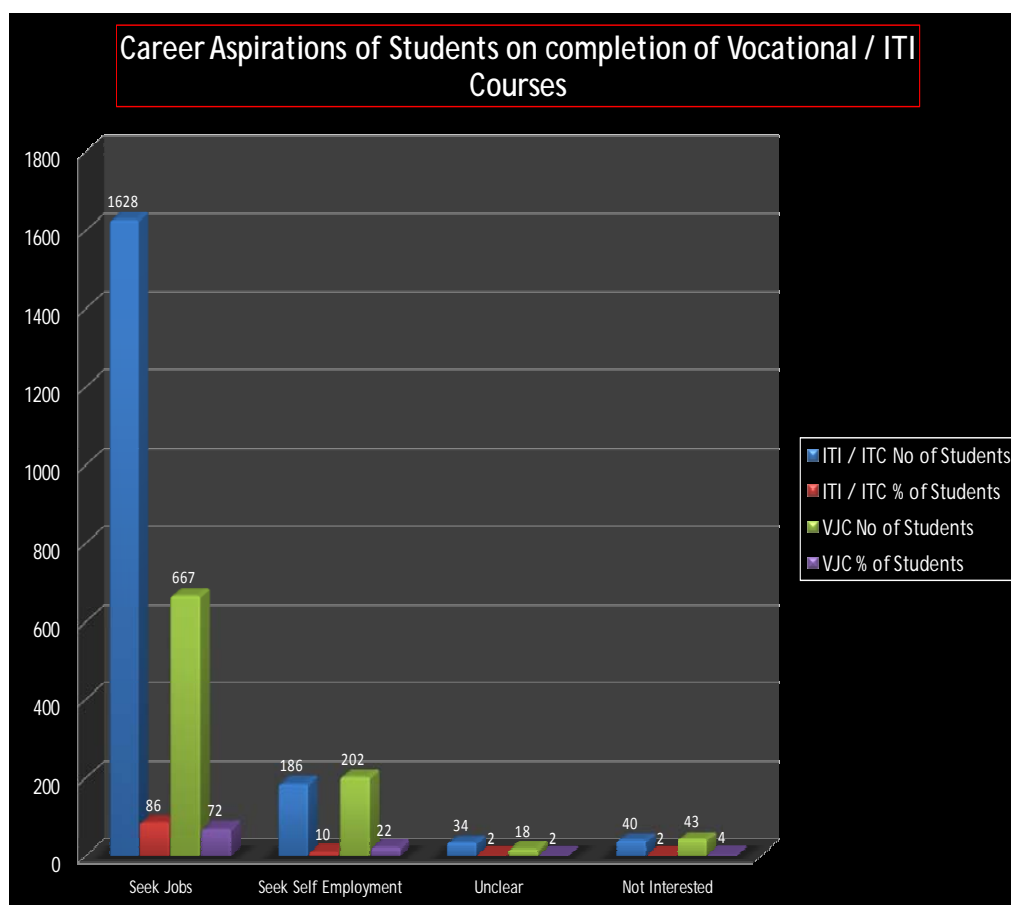
A vast majority of ITI/ITC students – almost 9 out of every 10 – are desirous to seek employment in the trades relevant to their field of study. It is generally believed that while selecting the trade/ course, the students had considered the potential for employment. Only a small proportion of ITI/ITC students just about 10 % - have expressed a desire to set up their own units. Some of them wish to work in the units already operated by their families and thus have categorized themselves as self-employed.

Among the VJC students a large number – almost 3 out of every 4 – aspire to seek employment on completion of the vocational courses. The remaining are desirous of self-employment.

It is also seen from the data collected that students do aspire for higher education in their chosen vocation or trade, provided such opportunities are provided to them by our system. However, students would prefer a 'learn while you earn' model of higher education, wherein they can take employment and continue with education at the same time. Since many students come from low income groups into ITIs or VJCs,

seeking immediate employment (at 10+2 level) is the need. Nevertheless, given an opportunity such students desire to continue pursuing higher education degrees in their chosen field/vocation/trade.

Table - A - 11

Desired weightage of practical component

Desired Weightage for Practical Component				
Weightage for Practical Work	ITI / ITC Student No.	ITI / ITC % of Student	VJC Student No.	VJC % of Student
Less than 6 Hours Per Week	495	26	338	36
6 to 10 Hours Per Week	600	32	188	20
11 to 20 Hours Per Week	140	7	158	17
21 to 30 Hours Per Week	416	22	94	10
31 to 40 Hours Per Week	72	4	61	7
> 40 Hours Per Week	79	4	39	4
Unclear	86	5	52	6
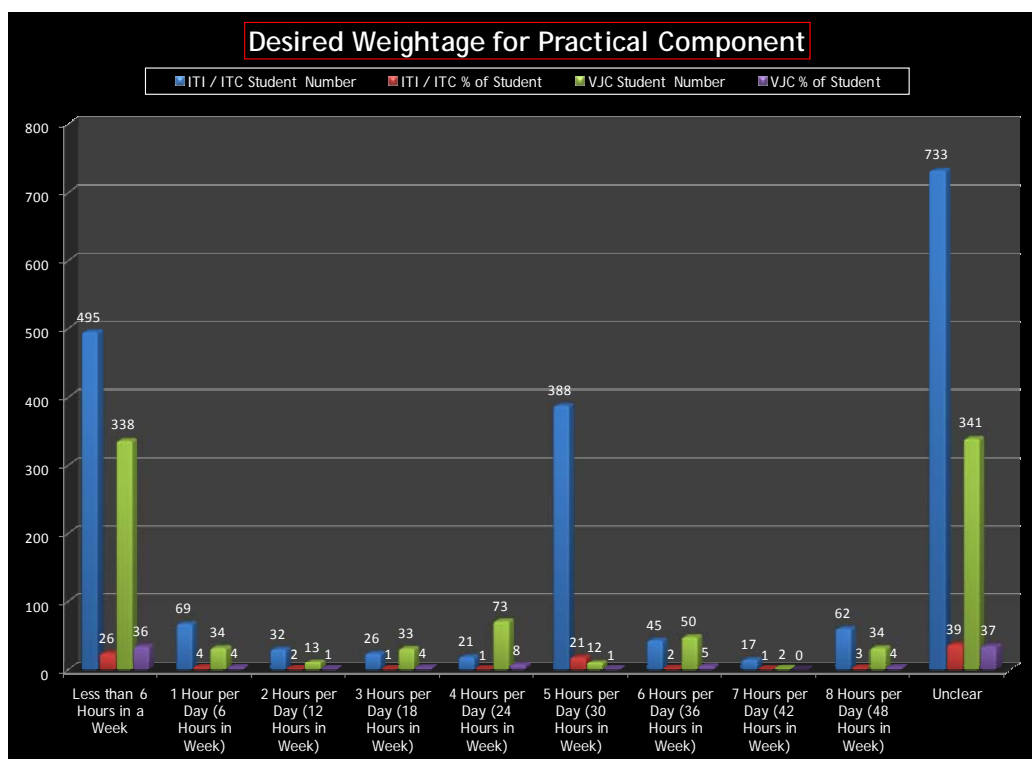
Desired Weightage for Practical Component

An important question as to what weightage should be assigned to the practical component in the ITI/ITC and VJC course curriculum was asked to all the student respondents.

32% of the ITI students are of the opinion that the practical should be needs to conducted atleast for an hour in a day which may also extend to 10hrs in a week. 22% ITI students are of the opinion that the practical should be given larger weightage and should be conducted to for 21-30 hours in a week. Whereas 20% VJC students are of the view that the 6-10 hours of practical training in their curricula would be satisfactory for them. 36% students feel that practical training less than 6 hours a week also would serve their purpose of staying updated with the latest technology.

From the data collected and response of the ITI and VJC students it is obvious that practical component is considered to be of significant importance and hence should have a solid weightage in the curriculum of courses taught in ITIs and VJCs. This data is suggestive of the fact that the curriculum of vocational and technical courses must have large practical component of hands-on training. It is seen that foreign institutions also follow similar approach. From the student responses it can be also concluded that students perhaps correlate practical component to future employment

opportunities and feel that a good weightage of practical component in their curriculum will increase their chances of getting desired employment. Further, industry also gives tremendous emphasis to practical component weightage. In the industry responses, the researcher found that industry felt that present weightage of practical component should be further increased. Not only that but industry also felt that relevant, up-to-date and latest training should be given to students through the practical component. This will reduce the industry's re-training activity which they presently have to undertake upon employment of the young ITI and vocational students. In fact industry also correlates quality of vocational courses to weightage of practical component. The researcher feels that practical component is important for both students as well as employers/industry and therefore should have significant weightage in the curriculum. The researcher has later suggested an ideal vocational teaching learning pedagogy where hands-on training or practical component has a significant importance in the curriculum.

Part B

Faculty Feedback

A purposive selection of 26 faculty members from the ITI/ITC and 350 faculty members from the Vocational Junior Colleges was made. Feedback on the following aspects was sought from these teachers/instructors:

- Areas of interest of students in pursuing higher education after completion of the certificate/higher secondary vocational courses of study.
- Desired weightage of practical component in the ITI/ITC and VJC courses.
- Aspirations of the faculty members for training, career and skill development.

The were total 17 questions.

The sampling was done on the 'pure random sampling basis'. All the faculty members were interviewed with the help of a pre-prepared questionnaire. The questionnaire comprised clear, specific and brief questions.

Table B – 1

Students' interest areas for higher education

Sr. No.	Type of Higher Education	No. of ITI/ITC faculty reporting	Percent	No. of VJC faculty reporting	Percent
1	Technical	22	85	196	56
2	Agriculture	-	-	7	2
3	Paramedical	-	-	8	2
4	Business & Commerce	-	-	95	27
5	Home Science	-	-	9	3
6	Unclear	4	15	35	10
	Total	26		350	
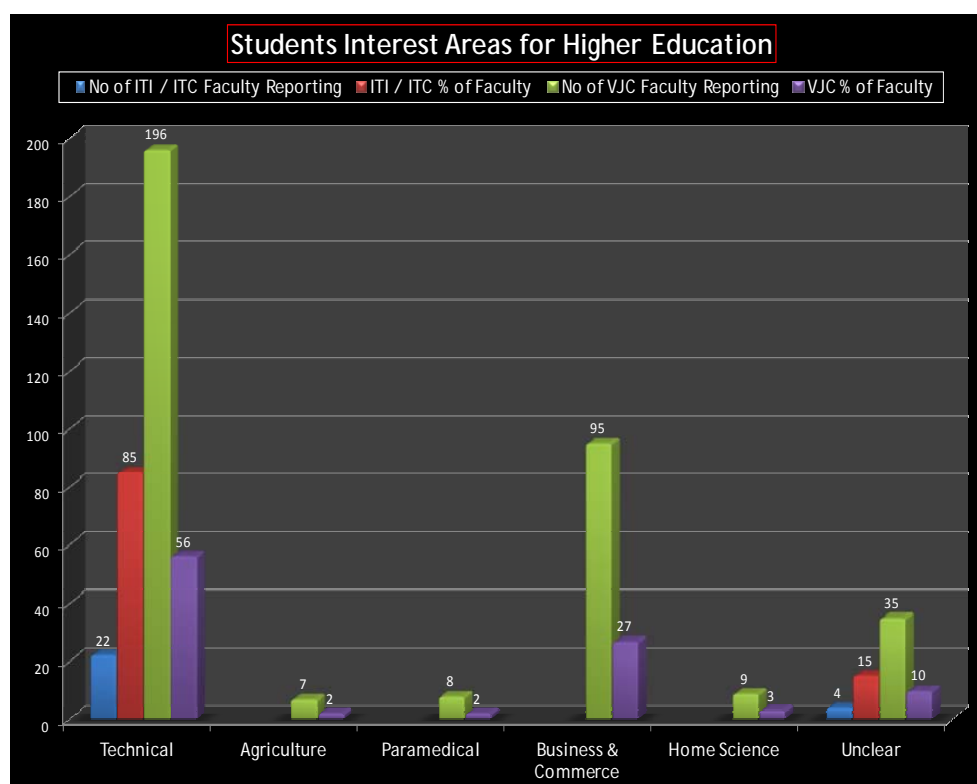
So far as ITI/ITC faculties are concerned, 22 (out of 26 selected) responded to this aspect. All of them stated that all the students doing the certificate courses in the ITI/ITC are interested in technical courses, even at the higher education level. This is obvious, since the present system allows limited vertical mobility in the form of entry into Polytechnic and similar technical diplomas for the ITI students. As such the faculty from ITIs believes that many ITI students would prefer to pursue higher education (under graduate degrees at 10+2 level) in technical streams especially in their chosen trade.

On the other hand, 315 (out of 350 selected) teachers of the VJC responded to this question in the following manner:
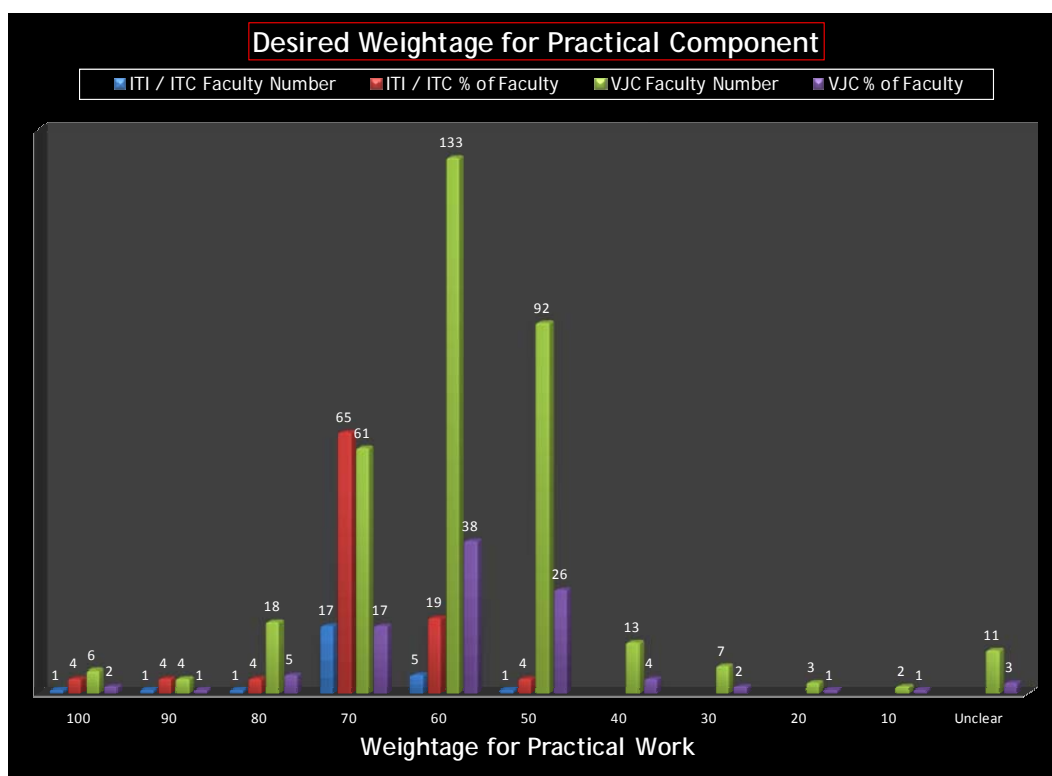
Among them 196 (56 %) stated that students of the vocational junior colleges would prefer to go in for the technical courses at the higher education level (ie. Undergraduate degree programs at 10+2 level), 7 (2%) of them felt that some may prefer to study agriculture at the higher level, 95 (27 %) were of the opinion that students may opt for Business & Commerce related courses while 9 (3 %) thought that Home Science may also be opted by some of the VJC students.

Earlier we have presented the responses of the students to a similar question and it would be noted that their responses are similar, with majority choice for technical courses/trades and then commerce streams for higher education (10+2-undergraduate) level.

Table B – 2

Desired Weightage for Practical Component

Weightage For Practical work	ITI/ITC Faculty (Number)	Percent	VJC Faculty (Number)	Percent
100	1	4	6	2
90	1	4	4	1
80	1	4	18	5
70	17	65	61	17
60	5	19	133	38
50	1	4	92	26
40	-	-	13	4
30	-	-	7	2
20	-	-	3	1
10	-	-	2	1
Unclear			11	3
Total	26		350	

Desired Weightage for Practical Component

An important question as to what weightage should be assigned to the practical component in the ITI/ITC and VJC course curriculum was asked to all the faculty respondents.

All 26 ITI/ITC faculty responded to this question, 64 per cent of them felt that the practical component should be at least 70 per cent. About 19 % of them felt that the weightage should be 60 per cent. One each favoured 100, 90 and 80 per cent weightage respectively for the practical component. Only one faculty member was of the view that the practical component should have a weightage of only 50 per cent.

As for the VJC college faculty, 339 out of 350 selected for this survey, responded to this question. Among them as many as 133 (38 %) were of the opinion that the practical component in the vocational courses should be 60 %, 61 faculty members felt that the weightage should be higher at 70 %, while 18, 4 and 6 faculty members, respectively, preferred to have 80%, 90% and 100 % weightage for the practical component. Those who favoured 50 % weightage, numbered 92. Interestingly, there

were also faculty members of the VJC who thought that the weightage for the practical component can be less than 50%; 13 favoring 40 %, 7 favoring 30 % while 3 favoring 20 % weightage for the practical component.

It was not surprising to note that not a single selected ITI/ITC teacher favoured less than 50 practical components. A large majority favoured much larger weightage for the practical component – as large as 70 or 60 per cent. Since all the courses offered in these institutes are of technical nature, the faculty members gave significant emphasis to the practical component.

On the other hand, teachers of VJCs where vocational courses are offered were divided as to the proportion of practical component in the curriculum. Only one third of the selected teachers thought that 60 per cent was the desired weightage of practical component, followed by one-fourth who preferred 70 per cent weightage. A few also favored higher weightage for the practical component; about 80, 90 and 100. Less than half of the selected teachers opted for 50 per cent or even less weightage for the practical component.

From the data collected and response of the ITI and VJC faculty it is apparent that practical component is considered to be of significant importance and hence should have a solid weightage in the curriculum of courses taught in ITIs and VJCs. Although the response of VJC faculty is disbursed, when it comes to the exact percentage of practical component weightage, the data clearly indicates that they too give tremendous importance to hands-on or practical approach in the teaching-learning of a vocational course. This data is suggestive of the fact that the curriculum of vocational and technical courses must have large practical component of hands-on training. It is seen that foreign institutions also follow similar approach. The researcher has later suggested an ideal vocational teaching learning pedagogy where hands-on training or practical component has a significant importance in the curriculum.

Career development & training aspirations of Faculty

Sr. No.	Career Aspiration	ITI/ITC Number	Percent	VJC Number	Percent
1	Consultancy	22	85	308	89
2	Research/Ph.D. Vocational stream	22	85	311	90
3	B.Ed. in Vocational Stream	22	85	242	71
4	Advanced personal Skill Development	26	100	339	97
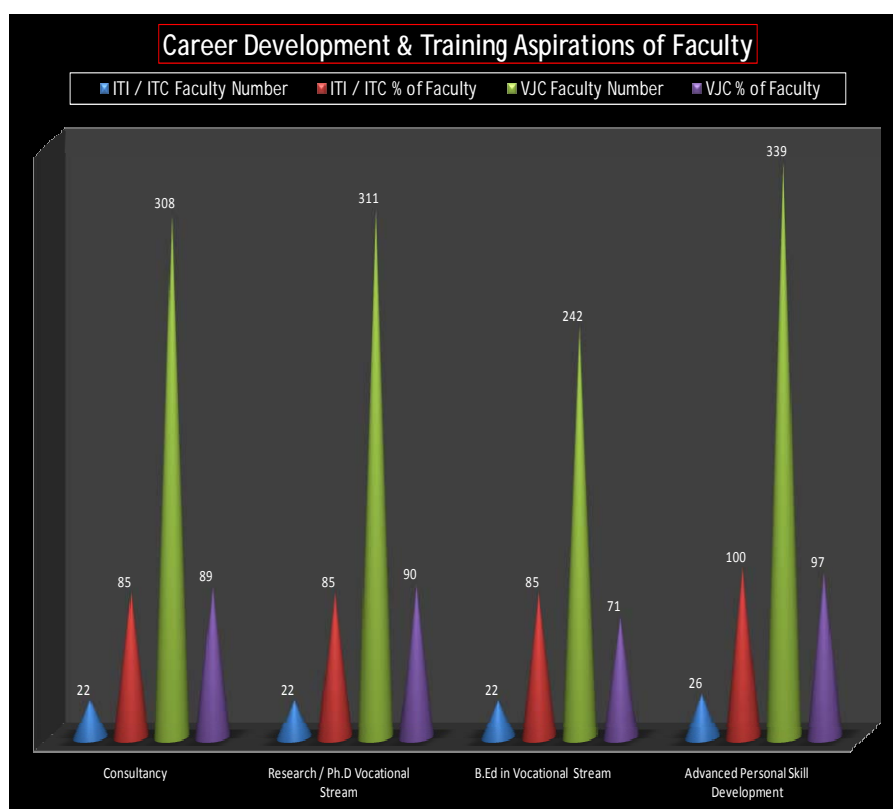
All the faculty members were asked to state whether they have any aspirations for developing their own career while working in the institution concerned. It was gratifying to note that almost all of them aspire for career development & advanced skill training, if given a chance.

Among the ITI/ITC teachers 85 % expressed the view that they would like to undertake consultancy work while teaching in the institution. This, in their view, will broaden their practical knowledge, help them acquire advanced and updated skills and thus develop their career. Almost the same number of teachers expressed their interest in undertaking research including Ph.D. degree as a part of their career development aspiration. A Vocational University if established can provide faculty with research opportunities leading to a PhD degree. It is observed that in foreign countries such as China, Korea and Germany several products are the result of innovation in a Vocational University. Hence the researcher feels that a Vocational University will create an environment which will foster research and innovation and later entrepreneurial spirit among many students as well as faculty. Again, almost the same number also expressed their interest in doing B.Ed. in the vocational stream if such a facility is made available to them. Interestingly, almost all the teachers (100 %) have shown interest in advanced skill development in the trades/technical subjects they are teaching in their institutions. Many foreign countries provide for vocational degrees such as Bachelor in Vocational Education, a specially designed degree for vocational teachers. However, in our country the present system does not provide for such degrees. The researcher has recommended later about such specialized degrees for faculty development of vocational and technical teachers.

So far as the teachers of the Vocational Junior Colleges are concerned, the trend is more or less the same, as can be seen in the above table. About 89 and 90 per cent of the teachers have shown interest in consultancy work and research work. As far as B.Ed. in the vocational stream is concerned,

71 %of teachers expressed their interest. Almost 97 % expressed their desire to improve their personal skills in the vocations they are teaching in the institutions.

This analysis fortifies what is already stated earlier – that there is urgent need to provide higher educational institutions in the form of vocational universities, which will have a Department of Teacher Training that provides faculty with opportunities for advanced skill development, research and specialized training or degrees in vocational pedagogy.

A large number of teachers – both ITI/ITC and VJC - have shown interest in consultancy work also. Such opportunities will enable faculty to acquire up-to-date and advanced skills by liasoning with the industry and also may generate an

additional income opportunity for them. The consultancy work will also allow faculty to closely interact with industry there by taking up research/ joint collaboration projects benefitting both. The researcher feels that teacher training and quality of faculty is a critical component as far as the success of any vocational activity is concerned and has later recommended various means for faculty training and development.

Part C

Industry Feedback

Industry plays a vital role in the VET model. As such the researcher decided to gather feedback from a small group of select companies in Pune seek response on important areas related to vocational education and skill development vis-à-vis the topic of thesis. A pre-prepared questionnaire comprising 13 questions was sent to select companies in Pune but response was received formally only from 2 companies namely Praj Industries Pvt Ltd and Cummins Ltd. Sample of formal industry feedback received by the researcher has been attached as Annexure- II (A) and II (B).

Feedback was gathered on the following aspects:

- Concept of Vocational University to provide teachers training and curricula development.
- Role of industry in mapping of occupational standards.
- Inclusion of general academic skills in the curricula.
- Training/ apprenticeship of vocational students at Industry premises
- Industry aid for setting up Production Oriented labs
- Utilization of University premises for in-service training of employees.
- Employability of vocational degree holders in the industry.
- Role of industry in governance of Vocational University.
- Provisioning of industrial employees for conducting hands-on training for Vocational University.
- Utilizing Vocational University expertise to undertake R & D projects for the Industry.

Both Cummins India Ltd and Praj Industries Ltd have submitted a detailed and comprehensive feedback. The concept of Vocational University has been appreciated by both industries. Praj Industries has stated that Vocational University passouts will have an edge over other graduates as they will have a blend of practical and theoretical skills as well as competencies. Mapping of occupational standards by industry was identified as an important activity and responsibility of the industries.

Cummins India Ltd felt that this would be an interactive process and industry will have an important role to play. Praj Industries has emphasized the need for constant review of curricula by industry to keep the Vocational University abreast with changing market needs.

In regard to the industrial partnership in Vocational University, Praj Industries have advocated a PPP Model and has cited ITIs/ITCs under which Praj Industries has adopted an ITI in Velhe. Cummins India Ltd also feels that industry will be the biggest customer and benefactors of the Vocational University and hence Industry Partnership is essential. Both industries have also recommended inclusion of academic skills in the curricula.

Setting up of Production labs, training of vocational students in the industry premises, provision of individual instructors and outsourcing of individual projects to a Vocational University were recommended in the industrial feedback. Both the industrial feedback reflect that a vocational degree holder will have a higher demand in the market considering the practical approach being adopted by Vocational University.

In the governance of Vocational University, Praj Industries has recommended representation of the industries on the governing body as well as on the Board of Studies. Cummins India Ltd also believes that industry will bring with it certain professionals and practices which will be helpful in the governance model.

The feedbacks from the industries indicate that the industry is ready to contribute towards a alternative model of Vocational Education and Training system and address the issues with the present conventional systems of education.

The researcher also conducted informal meetings and discussions with other industry representatives/bodies including but not limited to MCCIA, CII and FICCI.

Feedback from Industry and related representatives/bodies was sought on various aspects of the VET sector, issues, challenges and possible solutions. The industry concurrence was sought on the recommendations related to the Vocational University and engagement of industry in this regard.

It is seen from the feedback received that some of the major concerns of the industry related to the VET sector are:

- Poor quality of training
- Curricula of training not aligned to industry needs, lack of input of industry in academics
- Lack of general academic skills such as numeracy, problem solving, presentation skills, entrepreneurship etc.
- Lack of global awareness and understanding of specific industry needs
- Lack of standardization in certification or content
- Inability to judge competency or skill level
- Lack of incentives from Government for industry participation
- Lack of engagement from other stakeholders of the VET sector such as community and Government.

In spite of the above issues there is no denial that industry plays a vital role in the overall development and growth of the VET sector. The researcher has later given many recommendations to increase industry participation and solutions to address concerns of industry.

After having collected primary data the researcher also conducted various meetings with relevant authorities, officials and representatives of Government, Corporate, Community, International and other bodies in order to collect information, validate data and ratify findings. Reports are available about skill development in India and abroad and also about Government initiatives, however, the researcher could gather information, data about regulatory, administrative and governance aspects only after conducting detailed meetings with concerned officials at the State and Central Govt. Departments and Ministry for Human Resource Development.

The officials from various Government bodies with whom meetings have been conducted to gather and validate information are as follows:

- Smt. Ujjwala Devi Patil, Chairman, Maharashtra Higher & Secondary School Examination Board.
- Mr. Mahesh Pathak, Secretary, Higher & Technical Education, Maharashtra

- Dr. Ravindra Balapure, Deputy Director, Vocational Education.
- Mr. Chandrakant Ninale, District Vocational Officer, Pune
- Mr. G. B. Dhanorkar, Director, MSBTE
- Mr. S. G. Devadkar, Director, Vocational Education
- Dr. Asawa, Director, MSBVE
- Dr Alka Bhargava, Director (VE), MHRD
- Shri. D. K. Bhawsar, Deputy Education Advisor, MHRD
- Dr. V. S. Mehrotra, Associate Professor, PSSCIVE
- Mr. Dilip Chenoy & Mr Basab Banerjee, NSDC
- Dr. V.C. Kulandaiswamy, Former VC, IGNOU

The researcher also had meetings with various International Government and Industry authorities, officials, representatives of organizations etc to collect and validate information and findings pertaining to the international models for Vocational Education and Training. The researcher had meetings with authorities of:

- Sri Lanka's Tertiary Vocational Education Commission (TVEC) namely its Director General Dr. T. A. Piyasari and his staff
- Dr. Kapila, Vice Chancellor, Univotec University and his staff
- Mr. Geoffrey Conaghan, Commissioner to India, State Government of Victoria, Australia and his staff member Ms.Annie Santhana
- Mr. Ernst Pfister, Minister of Economic Affairs of the State of Baden-Wuerttemberg & Prof. Dr. Dennis De, Reutlingen University, Germany.

The Researcher has gathered information about the Vocational Education and Qualification Model successfully implemented by Sri Lanka through the various meetings.

Sri Lanka has successfully formulated a model to offer unified national vocational qualification through National Vocational Qualification Framework. This has enabled the Government to provide upward vertical mobility to students through establishment of University of Vocational Technology and assure quality through competency based curricula and assessment system.

The highlights of the findings are given in succeeding paragraphs.

1. Tertiary and Vocational Education Commission (TVEC) in Sri Lanka

The Commission was established under the provisions of the Tertiary and Vocational Education Parliamentary Act No 20 of 1990 and is the apex body in the Technical and Vocational Education and Training sector.
The NVQF model is administered and delivered through various
organizations as under:-

Organization	Function
Tertiary and Vocational Education Commission (TVEC)	- Policy direction - Administration of NVQF - Labour market Analysis - Identification of fields in demand for Competency standard development - Endorsement of Quality standards - Registration and accreditation - Quality assurance
National Apprenticeship and industrial Training Association	- Develop Competency standards and assessment resources - RPL assessment
University of Vocational Technology(UNIVOTEC)	- Development of curricula - Development of teaching and learning resources - Teacher training - Assessor Training
Vocational Training Providers	Training delivery

The findings made by the researcher through the interactions are as under:-

(a) A single statutory body like TVEC to make policies, administer NVQF, carryout labour market analysis, ensure maintenance of quality standards, endorse competency standards and assessment and accreditation of vocational training providers (VTPs) is required to be set up for smooth functioning and implementation of NVQF in the vocational sector.

(b) The registration and accreditation model for VTPs is implemented by Quality Standards and Accreditation division of TVEC. All the VTPs both in public and private domain are required to follow the standards set by TVEC.

(c) Implementation of NVQF has been successful at the national level and the option of vertical mobility to vocational students has been successfully provided by the Vocational University.

(d) NVQF offers a unified national qualification and leads to standardization of the curricula being provided by various VTPs. The industrial acceptance for these competency standards makes the students more employable in the labour market.

(e) The labour market information system enables identification of high demand sectors in line with the local industrial needs. This enables the TVEC to identify the courses to be offered and allotment of vacancies to VTPs. The labour market information system has thus proved to be a useful tool for identifying the occupations for which national skill standards are required to be developed.

(f) The vocational colleges and institutes are required to follow the quality standards laid down by TVEC for obtaining accreditation. The Quality management system developed by TVEC provides quality assurance to the industries. The quality is further ensured by external assessment carried out by assessors registered with TVEC. This has been the main reason for the maintenance of standards by all VTPs both public and private and standardization of training being imparted. This system can also be replicated in the Indian context.

(g) Recognition of prior learning (upto NVQ level 4) has enabled the vocational sector to bring the labour force in the informal sector in the mainstream education system by providing them an opportunity to enhance their skills and obtain a degree in their chosen occupational sector.

Industrial involvement in the implementation of NVQF has been an important factor in the success of the model. The demand for skilled workforce is being met by NVQF qualified students thereby encouraging students to enroll for these programs.

2. University of Vocational Technology (UNIVOTEC) in Sri Lanka

The University was established in 2008 by an act of Parliament with an aim to provide NVQ level 7 degree qualification. The main mission of the University is to provide professional services in human resource development offering undergraduate, post graduate and extension programs and curriculum development, research and consultancy, establish liaison with the academic community, TVET sector and industry to promote an innovative environment of mutual respect and ethical behavior.

The various degree programs offered by the University are:-

(i) **Bachelor of Education Technology (B.Ed.Tech)** - B.Ed.Tech is aimed at training educational instructors in the TVET sector.

(ii) **Bachelor of Technology (General)** – B.Tech (General) is aimed at those who are NVQ level 5 or 6 qualified and working in the industries. B.Tech degree is offered in training technology, manufacturing technology, mechatronics, building services technology, network technology, software technology and multimedia and web technology.

(iii) **Bachelor of Technology (Special)** - B.Tech (Special) is a four year degree program which enables the student to specialize in a selected technology area for an additional period of one year with a project component in the selected field of specialization.

The sample curricula developed by the Faculty of Industrial & Vocational Technology, at the University of Technology, Sri Lanka (UNIVOTEC) for B.Tech in Building Services Technology is attached as Annexure I. Also the Sample Curricula of Retail Sector is attached as Annexure III

The entry level for Vocational University is NVQ level 5. The level 6 qualified students are given entry into second year of degree program. Diploma holders can also apply to the Vocational University but they require two years of compulsory industrial experience.

The findings made by the Researcher through the interactions with the Vice Chancellor of UNIVOTECH and his staff are as under:-

(a) The University of Vocational Technology has achieved the objective of providing vertical mobility to the students in the Vocational stream.

(b) The University has received an overwhelming response from the students, with more than 1000 students applying for a vacancy of 50. The clear mobility pathway being provided by the University has encouraged the students to enroll for NVQF certified courses and apply for degree programs at the University.

(c) The curricula of degree courses is based on the European standard of credit (1 credit = 25 notional hours) and is modular in nature with a credit system. The curriculum was found to be very different from conventional bachelors' degree in its content. All subjects covered at Vocational University were application based and relevant to the occupational sector. The curriculum is jointly developed with industry input. The subjects/courses are catered to the industry requirement and less emphasis is given to theoretical subjects.

(d) Besides offering degree programs, the University is also an apex body for curricula development and teachers training for vocational/skill based courses offered under TVEC. The assessors registered with TVEC are required to undergo compulsory training at the University. Teachers' training is thus an important function of the University. This model is unique to Sri Lanka. The partnership between academia and industry has proved to be very successful.

(e) UNIVOTECH offers a multi entry exit option through its continuing education division. The University allows students from informal sector entry into the mainstream programs offered at the University.

(f) The researcher also observed that it is important to set up a Vocational University to undertake the following important functions in the vocational sector:-

    (i) Offer degree programs with multi entry-exit option to provide vertical mobility in vocational education sector

    (ii) Curricula development in consultation with the industry in manner that makes the students immediately employable.

    (iii) Teachers training and development

    (iv) Continuing education for the informal sector.

The Researcher had detailed discussion with Mr. Ernst Pfister, Minister of Economic Affairs of the State of Baden-Wuerttemberg & Prof. Dr. Dennis De, Reutlingen University, Germany to understand the model of German Universities of Applied Sciences.

The Universities of Applied Sciences offer practical university-level education and training focusing more heavily on teaching rather than research and by offering degrees tailored to specific jobs and industries.

The salient features of these Universities as highlighted during the discussion are as under:-

➢ Universities of Applied Sciences offer Bachelors and Masters Degree Programs in various streams. Two year degree program comprises of 6- 8 semesters including phases of practical instruction and examinations. Teaching takes place in the form of lectures, seminars, practical courses and practical training. Two practical semesters are a compulsory component of degree program integrated within study courses where students work in companies, administrations etc in their chosen occupational fields.

➢ The Universities represent a close relationship between higher education and the employment system. The students' up-to-date knowledge of the field and practical orientation makes them very attractive for employers.

➢ In teaching staff, the Professors require specific qualification profiles. Professors must have pedagogical aptitude and a total of at least five years of career experience, including at least three years outside of the higher education sector. They also have the option of taking six-month leaves of absence from teaching and research, at regular intervals (usually, every four years), to carry out work aimed at bringing their knowledge up to the latest standards in their field.

➢ University of Applied Sciences undertakes implementation - oriented research and development projects either funded by public or are Industry sponsored. The research is focused on the regional industrial requirement with majority of funding from the local industries. Professors keep their knowledge up to date and in line with the market needs through this industry based research projects.

CHAPTER 6
FINDINGS, CONCLUSIONS & RECOMMENDATIONS

The Vocational Education, Training & Skill Development sector is rapidly gaining significance in the present scenario. The Central Govt. has realized the direct correlation of skill based education and gainful employment for the youth of our country. The rising unemployment amongst youth educated in conventional streams has further accentuated the importance of Vocational Education and Skill Development. The present scenario around this sector is quite dismal and there is scope for significant reforms. During the course of over 2-3 years of in-depth research, the Researcher has been able to identify problems with the governance, regulation, administration, planning, policy, standards and other aspects related to the Vocational Education, Training and Skill Development sector. The Researcher has given recommendations for each problem area with clear direction for implementation. These are narrated in this chapter.

6.1 Problem Areas in present Vocational Education and Training System

❖ Vocational Education is presently offered at Grade 11, 12th – however students reaching this Grade aspire for higher education. Since the present system does not allow vertical mobility, skills obtained are lost. Enrollment in 11th & 12th Grade of vocational education is only 3% of students at upper secondary level. About 6900 ITIs & ITCs enroll about 9.5 lakhs students. Students with 12th std vocational/two-year ITI certification are not given lateral entry into equivalent academic year in polytechnic diplomas.

❖ International experience suggests that what employers mostly want are young workers with strong basic academic skills and not just vocational skills. The present system does not emphasize general academic skills. The relative wages of workers with secondary education are increasing.

❖ Private and Industry Participation is lacking. There are no incentives for private players to enter the field of vocational education.

❖ Present regulations are very rigid. In-Service Training is required but not prevalent today. There is no opportunity for continuous skill up-gradation.

- ❖ There is a lack of experienced and qualified teachers to train students on vocational skills. In foreign countries Bachelors of Vocational Education (BVE) is often a mandatory qualification for teachers. However, in India no specific qualifications are being imparted for Vocational Education teachers.

- ❖ Vocationalization at all levels has not been successful. Poor quality of training is not in line with industry needs.

- ❖ There is no definite path for vocational students to move from one level / sector to another level / sector. Mobility is not defined and hence students do not have a clear path in vocational education.

- ❖ No clear policy or system of vocational education leading to certification / degrees presently available for the unorganized/ informal sector. No Credit System has been formulated for the same.

- ❖ Social acceptability of skilled manpower is another issue which has affected the growth and popularity of this sector.

- ❖ Expansion of vocational sector is happening without consideration for present problems.

6.2 REGULATORY FRAMEWORK

The Researcher feels that in order to plan, promote, effectively regulate, develop and popularize the Vocational Education, Training and Skill Development sector, it is essential to create an administrative structure and framework through State legislation. The same is narrated below.

6.2.1 LEGISLATION FOR A VOCATIONAL UNIVERSITY

The Researcher believes that a separate Umbrella or enabling Act for establishment of a Vocational University is required to be enacted at State level. The Act should enable the State to establish one or more Vocational Universities in a PPP Model.

6.3   REGULATORY BODY – STATE LEVEL COMMISSION

The Researcher studied the various implementation strategies that must be designed, developed and implemented to meet the objectives of achieving a single

comprehensive and integrated Vocational Education and Training system from secondary school level to tertiary level in the State of Maharashtra.

The Researcher feels that a comprehensive Vocational Education and Training Act must be formulated for the State of Maharashtra.

The scope of Vocational Education and Training Act should be:-

1. To achieve integration of Vocational Education, Training and Skill Development and create a Unified System.

2. To lay down policy and norms for development and coordination of Vocational Education, Training and Skill development (VETSD) at all levels.

3. To evolve a mechanism to regulate and maintain uniform standard of quality, research and development, examinations, certification, affiliations, registration and accreditation across all levels of VETSD.

4. To provide for establishment of a regulatory body, namely, the Maharashtra Vocational Education and Training Commission (M-VEC).

5. To provide for establishment of the Maharashtra Vocational University.

6. To provide for establishment of the Maharashtra Vocational Education and Training Quality Council.

6.3.1 MAHARASHTRA VOCATIONAL EDUCATION & TRAINING COMMISSION (M-VEC)

The Researcher feels that a single regulatory body namely, Maharashtra Vocational Education & Training Commission (M-VEC) hereafter referred to as the "Commission" or "M-VEC", should be established to plan, promote, regulate, develop, co-ordinate and standardize vocational education, training and skill development at all levels in the in the State of Maharashtra. All vocational education, training and skill development courses/programs presently run by various Boards should come under the purview of the Commission (M-VEC). A joint certification program can be evolved for this purpose. The Commission should also collaborate with the industry and community for understanding labour market needs and trends thus creating a robust Labour Information System (LIS).

6.3.2 MAHARASHTRA VOCATIONAL EDUCATION & TRAINING REGISTRATION AND ACCREDITATION BOARD (M-VETRAB)

The Researcher has recommended that a separate Board be established namely, the Maharashtra Vocational Education & Training Registration and Accreditation Board (M-VETRAB). This board should be responsible for framing rules, regulations, policies, norms, procedures and conditions for Registration, Recognition and Accreditation of VTPs and ensuring that all registered VTPs follow the general policies and guidelines of the Commission.

6.3.3 MAHARASHTRA VOCATIONAL EDUCATION AND TRAINING QUALITY ASSESSMENT COUNCIL (M-VETQC)

The Researcher recommends the creation of a separate quality council, namely, the Maharashtra Vocational Education and Training Quality Assessment Council (M-VETQC) which can be an apex body for quality assessment of institutes, organizations, centers, agencies and establishments the Vocational University offering courses/programs at all levels, in the Vocational Education, Training and Skill Development sector and for coordinating with the Commission to the extent of meeting the Commission's objectives related to maintenance of Quality Standards by the VTPs and for participating in the Accreditation process of VTPs.

The Researcher feels that the creation of such regulatory bodies including the Commission, Accreditation Board and Quality Council will help in integrating the Vocational Education and Training sector. It will also enable the standardization of courses, curricula and certificates in this sector thus bringing about a qualitative change. In the long run, this model legislative and regulatory framework will help in creating large number of skilled resources in line with industry needs thus establishing a successful Vocational Education and Training system in the State of Maharashtra.

6.4 RECOMMENDATIONS ON SECONDARY SCHOOL EDUCATION (SSC)

The Researcher has made the following recommendations:-

1. Students should be given choice of many more vocational subjects to opt for. It would be desirable to offer non-technical vocational subjects in the high growth sectors also.

2. The vocational subjects introduced at secondary school level are recommended to be credit based and modular in nature.

3. It is recommended that the vocational subjects offered at SSC level should be linked to high growth sectors and also to HSC level vocational groups. This mapping of vocational subjects offered at secondary (9th & 10th) level to the HSC (Vocational) groups to be taken at 11th & 12th level will enable students and their parents to clearly understand the vertical mobility available to them and will help in popularizing this scheme as an alternative to the academic sector.

4. Vocational subject option should be provided as an alternative to third language within the core group so as to take effect in the overall weightage of SSC marks.

5. The proposed scheme for SSC is as follows:-

Proposed SSC scheme:

Sr. No.	Subject	Max. Marks
1.	Language I	100
2.	Language II	100
3.	Elective(Vocational Subject)	100
4.	Mathematics	150
5.	Social Science	100
6.	Science	100
	Total	650

6. The above proposed scheme will enable students to opt for vocational subject as an Elective / as an alternative to third language and should also carry weightage in the final SSC marksheet thus increasing their motivation to opt for such vocational subjects.

7. NVEQF certificate I (level 1) may be introduced as an elective for 9th std and NVEQF certificate II (level 2) may be introduced as elective for 10th std. This will enable students to enter the NVEQF framework and obtain dual certification at school level.

➢ **Benefits of the new proposed SSC scheme**

1. By introducing vocational subject as an Elective vocational subject carrying weight age in the final SSC mark sheet, the students will be motivated to opt for the vocational stream at secondary level. Further, the linkages to HSC (Vocational) stream will enable them to pursue vocational stream as a viable alternative.

2. It will enable students to obtain additional certificates of pre- vocational training in line with NVEQF.

3. It will lead to introduction of vocational education at school level similar to education models in other foreign countries like China.

4. Introduction of vocational electives at school level will enable promotion of vocational education and expose the parents to alternate streams of education.

5. It will provide students with an opportunity to understand and make the right choices in selecting vocational courses at senior / higher secondary or tertiary levels during their academic tenure.

6. It will provide students with an opportunity to pursue new streams in Vocational Education at higher education level and get exposed to the world of work.

7. Vocational education at school level will provide students some basic pre-vocational skills which can be further developed at higher secondary level.

8. It will help expand the vocational education base at school level and will be in line with the national policy of skill development of Central Government and Vocationalization of secondary education policy of the Government of India.

9. It will enable integration of academic and vocational education and training systems.

6.5 RECOMMENDATIONS FOR HIGHER SECONDARY EDUCATION (HSC) – MCVC SCHEME

1. Research has indicated that Industry require people with not only vocational training but also those having basic academic skills and life coping skills like problem solving, numeracy, analytical skills, computer literacy, team work, basic communication skills, leadership etc. It is thus recommended that general academic skill based courses should be included as a compulsory component of HSC Vocational syllabus. These general academic skill based courses should have different teaching-learning pedagogy based on practical, role play, interactive method and separate continuous assessment system.

2. In order to create opportunities of vertical mobility, the syllabus should comprise of applied subjects such as applied mathematics, applies sciences etc. These subjects may be introduced as electives as core component of the syllabus. The 'Applied' subjects should ensure coverage of core topics required for vertical mobility into respective undergraduate programs.

3. Conventional Universities and colleges should give equivalence to HSC Vocational students in order to facilitate lateral/vertical entry into undergraduate / bachelors programs in respective academic areas. Presently in Maharashtra this lateral/vertical mobility is only possible for Arts and Commerce stream however; other streams such as Nursing, Medical, Para Medical, Engineering, Agriculture etc do not allow entry to HSC Vocational students.

4. HSC Vocational students should be allowed in Maharashtra, to appear for Engineering and Medical entrance exams as well as other relevant entrance exams for admission into conventional bachelors degree programs.

5. HSC Vocational scheme should be expanded to cover high growth sector related courses such as Construction, Service, Retail, Banking & Insurance, Hospitality etc.

6. Courses of the HSC (Voc) curriculum should be modular and credit point based. A facility for credit banking and transfer should be created and available for students to make the curricula flexible and open.

7. In order to facilitate both vertical and lateral mobility into conventional academic sector, the following changes in HSC Vocational scheme are recommended.

These changes will allow students to choose suitable groups as per their desire for mobility to other education sectors.

A. **RECOMMENDATIONS FOR 11th Std (VOCATIONAL)**

Sr. No.	Subject	Teaching Period/Week		Examination	
		Theory	Practical	Theory	Practical Internal
1.	English	5	--	80	20
2.	Elective I	5	--	80	20
3.	Elective II	5	--	80	20
4.	Vocational Subject I	4	8	100	100
5.	Vocational Subject II	4	8	100	100
6.	Vocational Subject III	4	8	100	100

Student can take any one subject in Elective I & II:-

Elective I	Elective II
Language viz Marathi, Hindi etc.	General foundation course
Information Technology	Applied Science (Phy& Chem)
Applied Mathematics	Computer Application
Physical Biology (Botany & Zoology)	Business Mathematics
Business Economics	

B. RECOMMENDATIONS FOR 12th Std (VOCATIONAL)

S.No	Subject	Teaching Period/Week		Examination	
		Theory	Practical	Theory	Practical
1.	English	5	--	80	20
2.	Elective I	5	--	80	20
3.	Elective II	5	--	80	20
4.	Life Coping Skills / Generic Skills	2	10	50	150
5.	Vocational Subject II	4	8	100	100
6.	Vocational Subject III	4	8	100	100

8. The students desirous of obtaining equivalence with NVEQF levels 3 & 4 may be given an exemption for the common modules covered under the HSC (Voc) syllabus.

9. It is also recommended that the HSC Vocational courses should be modified to be more 'competency-based' and in line with the NVEQF requirements in the future.

10. It is recommended that the focus should be on 'work-centered' education such as on-job training, industry visits, production-oriented training, apprenticeship, and industry liasoning etc thus creating industry-ready youth.

11. It is recommended that each college/school providing HSC Vocational should have tie-up with the local industry, NGOs and other community stakeholders through the Industry Management Committee thus facilitating inputs in project work, teacher training, guest lectures, student grooming, summer placements, in-service training of industry employees etc.

12. It is recommended that each college/school providing HSC Vocational should have a Placement Cell, Entrepreneurship Development Cell and Finishing School/Department.

13. Liasoning with Sector Skill Councils of National Skill Development Corporation (NSDC), to engage industry and community is recommended to be carried out. PPP models with incentives for industry participation may be encouraged.

14. The HSC Vocational pass out should be given parity (declared as alternate qualification) to ITI and Polytechnic pass out students for the purposes of recruitment in Govt. and Non-Govt. organizations.

15. The recruitment rules of the Public Service/ Govt. / Semi-Govt. Departments should be suitably modified to recognize HSC Vocational qualification for employment purposes.

16. Teacher training is required to orient the vocational teachers to the new teaching learning methodology, scheme and curricula.

17. It is recommended that in the future the activities related to assessments, examinations and declaration of results of HSC (Voc) students or other students pursuing courses / diplomas at 10+2 level may be conducted by MSBTE.

Since the implementation of the MCVC scheme has been left to the State, it would be possible to implement above recommendations in Maharashtra, in order to ensure success of this scheme.

➢ **Benefits of the new proposed HSC (Vocational) scheme**

1. The above recommendations will provide an impetus to the enrollment of students in the vocational education sector.

2. The changes and enhancements to the HSC Vocational syllabus will improve the employment opportunities to students. The inclusion of general academic skills and industry liasoning will result in better acceptability of students within the local industry.

3. The change in recruitment rules will provide guaranteed employment options to vocational students.

4. Lateral and vertical mobility into and from academic sector to vocational sector will be achieved through introduction of applied subjects as electives.

5. The options of vertical and lateral mobility will also popularize and expand the vocational sector amongst students and thus facilitate higher enrollment into this sector.

6. The linkage to NVEQF will also ensure alignment with Central Govt. plans. Credit based and modular curricula will be of great benefit to students especially the provision for credit banking and transfer.

7. Popularization of vocational education will lead to increase in GER at the 10+ level.

8. Higher enrollment into the vocational sector will reduce the burden on conventional colleges and universities and will open new opportunities of learning for students.

9. The affiliation to the Vocational University will create opportunities of higher education in the form of diplomas for students while continuing to study in the same school or Junior College.

6.6 RECOMMENDATIONS FOR BIFOCAL SCHEME

1. The curriculum revision should take place periodically in consultation with industries to keep it in line with the market needs.

2. It is recommended that the focus should be on 'work-centered' education and on-job training, industry visits and production-oriented training must be made a compulsory component of the curriculum

3. The marking scheme of bifocal stream must give 50% weightage to theory and 50% weightage to practical.

4. Options of various vocational subjects as electives must be given to students without any restrictions. A multi-disciplinary approach is recommended to be adopted.

5. Separate infrastructure with state of art equipment must be established to conduct hands on training for the bifocal students.

6. The theory workload of the teaching staff should be increased by atleast one hour per week. The teaching staff must also take responsibility for project work and industry visits of the students.

7. The scheme must be continued with 200 marks allotted for vocational subjects.

6.7 RECOMMENDATIONS FOR INDUSTRIAL TRAINING INSTITUTES

1. It is recommended that students undergoing 2 year ITI courses after passing 10th std may be given an option of obtaining HSC pass certificate by meeting the following compliances:-

(a) The students can have to appear for following subjects   externally:-

   -      English (core subject)

   -      Applied Mathematics/Information Technology (Elective I)

   -      Life Coping and General Academic Skills (Vocational Subject I)

(b) Exemption can be given for Elective II against Trade theory II covered   under the ITI scheme.

(c) Exemption for Vocational subjects II and III can be given against   Workshop practice.

Sr.No	HSC(Vocational)	Mapping for ITI two -year Engg Courses
1.	English	Appear Externally
2.	Elective I	Applied Maths/Information Technology (Appear Externally)
3.	Elective II	Trade Theory (exempted)
4.	Life Coping Skills / General Academic Skills	Appear Externally
5.	Vocational Subject II	Workshop Practical (exempted)
	Vocational Subject III	Workshop Practical (exempted)

Note:

1. The proposed scheme for ITI students to get HSC (Voc) certificate is applicable only for Engineering trade -two year courses and three year courses only. Non Engineering trades – Certificate courses of ITI in this group are only upto one year duration and as such they should not be considered for HSC (Vocational) mapping.

2. Systematic skill mapping and labour market analysis is required to be carried out and curriculum revised in line with NVEQF.

3. The existing qualification of ITI faculty needs to be of higher standard with compulsory component of industrial experience. Emphasis should be given to

teachers training and skill upgradation. Vocational University can undertake the responsibility of faculty training and development

4. The curriculum revision should be undertaken on annual basis in line with the industry needs. The curriculum should be modular, competency based with multi entry exit option.

5. Research has indicated that Industry require people with not only vocational training but also those having basic academic skills and life coping skills like problem solving, numeracy, analytical skills, computer literacy, team work, basic communication skills, leadership etc. It is thus recommended that general academic skill based courses should be included as a compulsory component of ITI syllabus. These general academic skill based courses should have different teaching-learning pedagogy based on practical, role play, interactive method and separate continuous assessment system.

6. The equipment and machinery used to impart training should be advanced, modern and similar to machinery used in industries for production purposes.

7. Strong linkages are required to be developed with local industries through in-service training of employees, industrial visits for students, apprenticeship training, guest lectures, skill exchange and placements, production oriented training, industrial consultancy projects etc.

8. Private organizations should be encouraged with relaxed norms to establish ITCs.

9. Formalization of Recognition of Prior Learning scheme must be done by ITIs.

6.8 RECOMMENDATIONS FOR MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION (MSBTE)

1. Students pursuing MSBTE programs of 2/3 years duration should be given mobility options to enter the academic sector – that is into undergraduate degree programs in their respective disciplines in conventional Universities/Institutions.

2. MSBTE courses in non engineering sectors should be increased to meet the requirements of high growth service sector.

3. Students completing Polytechnic may be allowed to appear for HSC exam externally if they desire to enter academic sector.

6.9 RECOMMENDATIONS FOR COMMUNITY COLLEGES

1. The Community Colleges abroad especially in USA have become extremely successful in creating employable youth required by local industry, thus contributing to the local community development. This scheme in its spirit is highly effective and beneficial provided the implementation meets the objectives. It is therefore recommended that Community Colleges be setup under the aegis of the State Govt. with linkages to the proposed State level Regulatory Body (referred to as Commission) and the Vocational University, especially for award of certificates /degrees, quality assessment, accreditation and standardization of curricula.

2. The Community Colleges should be affiliated to the Vocational University for the purpose of offering diplomas and associate degrees.

3. State Govt. should ensure that local universities and colleges give recognition to diplomas and associate degrees awarded by the Community Colleges for the purposes of admission into their system.

4. Community Colleges should ensure that the vocational teaching learning pedagogy is followed by recruiting trained faculty and must also ensure quality of education provided to students. The college must emphasize hands-on and on-job training, field visits, project work etc for students pursuing vocational courses.

5. The Community Colleges must establish linkages with the local industry, NGOs and other community stakeholders for the purposes of placement, internships, project work, guest lectures, filed visits etc.

6. The Community Colleges must emphasize on localization and contextualization of content and curricula so as to benefit the local community and industry.

6.9.1 Benefits of proposed implementation of the Community Colleges

1. By ensuring that the certificate/diplomas/degrees offered by the Community Colleges are regulated, the students will be benefited by getting a standardized curricula and quality. Students and industry will also benefit through creation of employable youth who have skills that have been measured and assessed.

2. Community Colleges will benefit by being affiliated to the Vocational University for providing vertical mobility options to all their students. This will also increase the popularity of the courses and thus the Community Colleges.

3. By allowing Community Colleges to be opened, the State Govt. can ensure localization of vocational education & training while at the same time the local community and industry will benefit and grow.

4. Localization and contextualization of content and curricula will enable the Community Colleges to contribute to the local community & socio-economic development as well as industrial growth.

6.10 RECOMMENDATIONS FOR HIGHER/ TERTIARY EDUCATION

6.10.1 VOCATIONAL UNIVERSITY

The primary objective of the Vocational University should be to provide vertical mobility to students in vocational stream by offering Bachelors, Masters and Doctoral programs in vocational studies and offer various specializations as required by local community & industry.

The Vocational University can be established:-

(a) To provide a teaching learning pedagogy focused on hands-on training and skill development in line with market needs.

(b) To conduct research in labour market requirements in order to understand emerging trends and offer suitable curricula, courses & programs.

(c) To offer facility for recognition of prior learning and credit banking/transfer system

(d) To provide students an opportunity of life long and continuous training through University courses.

(e) To employ flexible modular approach to training thereby enabling multi entry and exit option.

(f) To conduct pedagogical and skill enhancement training and development programs for faculty and trainers who are involved in imparting vocational education & training.

(g) To encourage industrial participation through establishment of innovation labs, in-service training centers and active participation in all aspects of governance, curricula design, placement, internships etc.

(h) To offer vocational degrees in order to improve social acceptability of skilled manpower and students.

A. Mode of Education & Teaching – Learning Pedagogy

1. Vocational University should emphasize on a different teaching – learning pedagogy with a special focus on skill based and hands-on learning and training. Teaching should take place in the form of lectures supported by practicals, seminars, filed visits, etc. At the same time the University should ensure that a strong foundation of required theoretical inputs is given to students.

2. Vocational University should offer vocational programs through online, distance and life-long learning mode in addition to face-to-face mode. This will be especially helpful for continuous skill up-gradation.

3. Vocational University Curriculum should emphasize life coping skills, general educational skills such as English competency, analytical skills, problem solving, entrepreneurial skills, team work, leadership, management, soft skills etc. A 'Finishing School' concept can be implemented as part of each program of study. Multi skilling shall be emphasized.

4. Vocational University should offer flexible modular courses with credit banking and transfer facility. Flexible timings including evening classes shall also be conducted.

5. There should be a compulsory component in each program in the form of 1-2 semesters of practical training integrated within the study courses. During these 'practical semesters' the students would work in industry / organizations / administrations etc to obtain on-job training and become market-ready.

6. Research at the University should be in the form of industry driven projects done by faculty and students in collaboration with industry partners.

7. The University should also encourage 'Production oriented labs' setup in collaboration with industry partners. Practical and training in such labs will be integrated as part of the program curriculum.

B. Model

The Vocational University may be established in a PPP (Public-Private-Partnership) Model. Private Participation is critical to the success of a Vocational University. A Government –Academia –Industry partnership model may be adopted. Industry can

collaborate for setting up of labs, equipment, trainers, internships, placements for students, training of students & faculty, participation in governance, quality checks, curricula design etc. Collaboration with government bodies and banks can be established for fund support to students.

C. Salient Features

The Vocational University should focus on the following aspects in addition to the above:-

(a) Faculty Training & Academic Development – University can conduct various training programs for faculty including assessors training.

(b) Providing Life Long Learning Opportunities for working professionals

(c) Applied Research for taking up projects in collaboration with local industry and community

(d) Industry Collaboration for purposes of student and faculty training, research, community initiatives, placement, apprenticeship etc. production oriented labs should be setup in collaboration with local industry. Localization and contextualization should be emphasized.

(e) Entrepreneurship Development Cell can be created to encourage innovation amongst students.

(f) Recognition for Prior Learning cell can be established to recognize and map previously obtained skills of students coming from the working sector who wish to pursue courses at the University.

(g) Credit System with modular courses and facility to bank and transfer credits.

D. Specific Recommendations about a Credit System

1. The vocational courses offered at SSC, HSC, certificate, diploma and degree level are recommended to be credit based and modular in nature thereby creating flexible learning pathways. The curricula and assessments systems need to re-design in order to introduce credit based courses.

2. The students may be allowed to accumulate and transfer their credits across various VTPs as well as the Vocational University as per the policies laid down in this regard. The credits given by one institution /VTPs may be recognized for credit exemption by another institution/VTP. For example – If a student has done a course in Engineering Mechanics worth 4 credit points in a polytechnic institute

his 4 credits may be recognized by all engineering colleges for credit transfer thereby enabling student to accumulate and transfer his credits for obtaining a degree.

3. For the informal sector, credit based modular courses of varying duration may be provided by Vocational University or any other Vocational Training Providers (VTPs). These short duration courses can enable the workforce in the informal sector who are unable to pursue full time courses, to accumulate and transfer their credits for obtaining a degree/diploma/certificate over a period of time. This can also encourage life-long learning and continuous skill up gradation.

4. The Department of Recognition of Prior Learning (RPL) of a Vocational University can define the Recognition of Prior Learning policy. A 'certificate of mapping' can be awarded based on prior achievements or pre-acquired skills obtained by the applicant to enable the applicant to seek exemption or transfer courses across various VTPs with the objective of continuing further vocational education, training or skill development. The Department of RPL can facilitate measurement of credits earned by virtue of completion of learning or training. For example:- A beautician with 10 years of experience can obtain a certificate of mapping by getting her skills assessed and get exemption for some of the foundation courses associated with a beautician program offered by any VTP or a Vocational University.

E. Benefits of a credit system

1. **Standardization:** Credit System can enable standardization of student effort across various levels of learning. The credit points designated to a particular course will indicate the student effort required for the completion of that said course.

2. **Mobility:** Credit system will facilitate vertical and lateral mobility through credit transfer and accumulation. Mobility can be achieved between different educational sectors and contexts of learning i.e. formal, non formal and informal learning. Credit rating will make it easier to compare qualifications and facilitate the recognition of achievements from one VTP to another.

3. **Encourages Life-long learning:** Credit accumulation and transfer will enable life-long learning. A number of adult students who cannot pursue full time degree programs can undertake stand alone educational programs and can accumulate and transfer those credits to obtain a formal certification/degree over a period of time.

Credit system thus provides a clear learning pathway to part time students and encourages them to pursue life- long learning.

4. **Quality Assurance:** Credit system will ensure that quality standards are maintained and adhered by all institutions by clearly defining the learning outcomes and the student workload for each course in the curriculum.

5. **Framing of National Vocational Education Qualification Framework:** The National Vocational Education Qualifications Framework (NVEQF) sets out the levels against which a qualification can be recognized. All accredited qualifications are awarded an NVEQF level. If a qualification shares the same level as another qualification, they are broadly similar in terms of the workload a student is required to complete. However, qualifications at the same level can still be very different in terms of content and duration. Therefore, to formulate the National Vocational Education Qualification framework it is important to frame the credit system in which each level of qualification within the NVEQF is assigned its credit worth.

6. **Non formal and informal sector:** Credit system will enable institutions of higher education to recognize and grant credits for learning outcomes acquired outside the formal learning context through work experience, provided that these learning outcomes satisfy the requirements of their qualifications or components. The Recognition of Prior Learning scheme will allow the informal sector to come into the mainstream by assessing and mapping their prior learning or pre-acquired skills and giving exemptions in credits for courses thus enabling them to pursue further education and training. This scheme will provide opportunities of learning for the blue collared unorganized sector by creating learning pathways for acquiring certifications, degrees and advanced skills.

7. **Flexible learning pathways:** The credit system will provide flexible learning pathways to students by providing them multi-entry exit option, the ability to accumulate and transfer credits and lateral and vertical mobility across VTPs.

F. Academic Degrees at the Vocational University

1. Vocational University can offer all kinds of Bachelor, Masters, Doctoral degrees and Diploma programs in vocational higher education sector. The University can also offer a separate Bachelors degree for Vocational Education teachers.

2. University can offer diverse vocational specializations.

3. Separate degree called Bachelors in Vocational Education or B.Ed with specialization in Vocational Education can be offered for vocational education teachers & trainers.

4. Vocational degrees will offer better social acceptability for skilled manpower by creating flexible learning pathways and bringing both organized and unorganized sector into the main stream of education. Vocational degrees will also make this sector popular as students and parents will not hesitate to pursue a vocational course if there is clear vertical mobility leading to a degree.

5. The researcher recommends that UGC should create separate vocational degrees at undergraduate and post graduate levels under List 22. Eg a Bachelor in Vocational Studies Degree can be created for a 3-4 year under graduate program. Much specialization can be offered under this degree. The curriculum should be market based with 1-2 semesters of practical component (hands-on Training). The faculty teaching such programs should also be having industrial experience and understanding of the vocational pedagogy.

G. Multi Entry - Exit Option

The Vocational University should offer a clear mobility pathway to vocational students with multi entry exit option at each level. The proposed mobility path from higher secondary to tertiary education is illustrated below-:
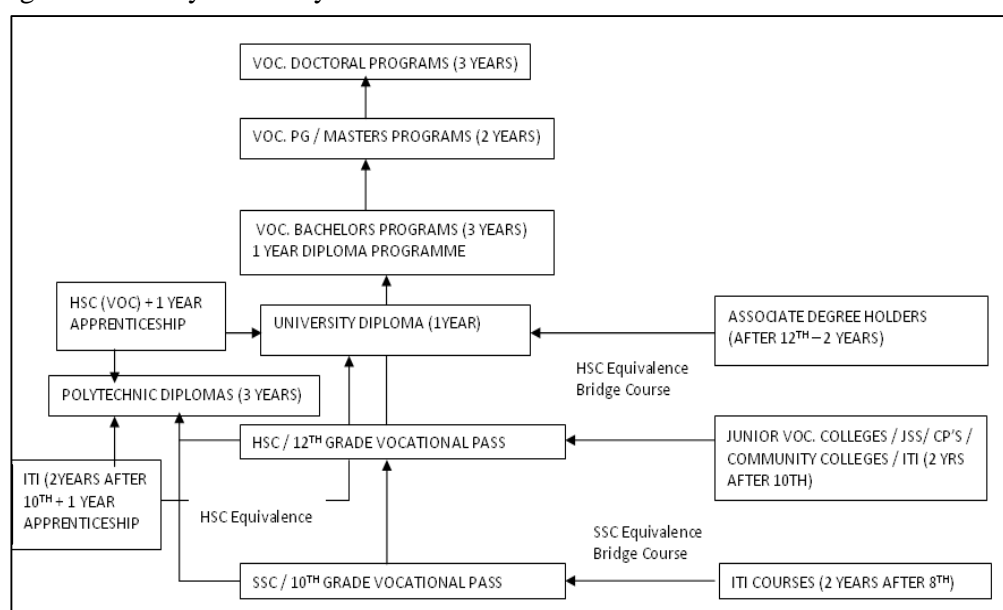
H. Industry participation

1. Industry participation is critical to a Vocational University.

2. Industry representatives should also be involved in governance and curriculum design. The learning outcome for each academic programs should be in line with the Industry requirement. The University should collaborate with the industry to understand labour market trends and needs on a continuous basis.

3. **Adjunct Faculty Service:** The industry should have the corporate responsibility to provide industrial trainers for training of the students of the University. Incentives may be given to the employees for undertaking this responsibility.

4. **Production Oriented Laboratories:** Production Oriented Research and Innovation Labs should be setup in collaboration with Industry to promote regional and economic growth. The industries can provide the latest state of art machinery and equipment for carrying out hands on training of the students. These laboratories should also pioneer new products and carry out research specific to the requirement of the Industry.

5. **In-Service Training:** In-service training should be organized and industry encouraged to send employees for regular skill development and up-gradation.

6. **On the job training:** On the job training in Industries should form a compulsory component of the curricula. The industry should undertake on the job training at least two times in a week.

7. **Apprenticeship Model:** Apprenticeship/Stipend/Scholarship/ Fellowship Models should be devised in consultation with the Industry partners.

A Vocational University will thus not only benefit the local industry, society, community and the State of Maharashtra but also our country as a whole. The Vocational University will improve the social acceptability of vocational students and skilled manpower. The Vocational University will popularize the Vocational Education and Training (VET) sector as an alternate career option by providing a clear vertical mobility pathway to students.

6.11 RECOMMENDATIONS FOR THE INDUSTRY & COMMUNITY

Industry plays an important role in the Vocational Education, Training and Skill Development sector. In the past, the Industry has not played an active role in the development of this sector. High cost of training, inability to afford downtime and increasing overheads and costs associated with poor efficiency are all factors which have driven the industry to demand skilled workforce. The Researcher makes the following recommendations for the Industry and community with regard to the VET sector:

6.11.1 Industry Participation in NVEQF:

The National Policy on Skill Development-2009 of Government of India identifies National Vocational Education Qualifications Framework (NVEQF) as the main instrument for linking various education and training pathways. The Ministry of Human Resource Development (MHRD) is in the process of establishing the NVEQF. The NVEQF proposes to provide a common reference framework for linking various vocational qualifications and setting common principles and guidelines for a nationally recognized qualification system and standards. The Government has set up an inter-ministerial group which would also include representatives of State Governments, including Maharashtra, to develop guidelines for such a National Framework. The NVEQF will create flexible learning pathways, which will permit individuals to accumulate their knowledge and skills and convert them through testing and certification into higher diplomas and degrees. NVEQF will support lifelong learning, continuous upgradation of skills and knowledge. The basis for NVEQF will be inputs from the Industry in the form of the NOS. Thus, industry has an important role to play in the future of the VET sector. For purposes of implementation the National Skill Development Corporation of the Central Government has formed Sector Skill Councils (SSCs) in all States. The SSCs are responsible for coordinating with various industry sectors to gather skill requirements, competency needs and occupation standards. They will also provide input to finalize the NOS for each occupation within each industry sector.

The critical factors for the success of NVEQF will however remain the input from industry, acceptance of the industry for vocationally qualified manpower,

participation and engagement of industry for implementation of NVEQF, curricula design for NVEQF based courses, designing competency based assessments and above all teacher training to deliver a competency based NVEQF course.

The Researcher feels that the challenge would be to develop a mindset for designing and administering competency based courses to students in the new model of NVEQF. The Researcher, after receiving feedback from the faculty, concluded that substantial training would be required for faculty in the VET sector to design and deliver competency based courses in line with NVEQF. The State and Central Government will have to play an active role in arranging such training programs prior to rolling out the NVEQF model.

The Researcher has recommended that the industry participation should be encouraged at all levels such as:

1. Curricula design and specifying needs for various job roles
2. Hands-on and on-job training for students
3. In-service training
4. Contribution by way of equipment, production oriented labs, research labs etc.
5. Internships, apprenticeship and placements for students
6. Participation in teacher training and skill up gradation
7. Continuous participation and contribution in the implementation of skill based training and vocation education courses to students.
8. Creation of Industry Management Committees for all VTPs including Vocational Junior Colleges and the Vocational University.
9. Participation in the PPP model for establishment of a Vocational University.
10. Active participation in all aspects of the VTPs and the Vocational University including governance, curricula, labs, teacher selection and outsourcing of research projects to the University.
11. Participation in defining skills and competencies required for each occupation within their respective industry/sector. This input will be useful for establishing the National Occupation Standards (NOS) and National Vocational Education Qualification Framework (NVEQF) levels.
12. Participation in labour market research and needs analysis.

13. Emphasizing the need for formal vocational qualification / certification as part of the recruitment rules or at the time of appraisal.

6.11.2 COMMUNITY PARTICIPATION

Initiatives for the VET sector:

The Community plays an important and integral role in the overall development and growth of the vocational education, training and skill development. In fact the success of the initiatives undertaken by any local government body related to the VET sector will largely depend on the participation of the community. Without localization and contextualization of the vocational education and training courses/programs the growth of this sector will be limited. Having regard to this important role played by the Community, the Researcher undertook interactions with important stakeholders of the local Community, students and faculty representing ITIs, ITCs and other Vocational Institutions/Colleges. The Researcher undertook a survey of approximately 2300 students and about 350 faculties from varied regions of Maharashtra – rural, semi-urban and urban regions. The results of the survey were extremely motivating. Both faculty and students wish to increase participation with the local Community and feel that this is an important criteria for overall success of the VET sector. The informal sector form a large part of the workforce and the Community can play an important role in training and skilling of this large section of the Community. The creation of local opportunities for population will further inhibit migration to cities. Thus, the active involvement of local Community in the implementation of vocational education & training will eventually lead to socio-economic growth of the region.

The Researcher therefore recommends that the local Community stakeholders such as NGOs, local government bodies, social workers and other locally operating agencies or establishments should be actively involved in defining the Community needs and designing vocational courses/programs. The Community should also be involved in other aspects such as:

1. Motivating local population for undergoing skill training
2. Arranging special skilling or training programs for informal workforce through local trainers

3. Arranging local trainers such as craftsmen, artisans and other highly skilled persons who can train students and workforce in the local community

4. Creating Community Skill Development centers, where local population can be skilled/trained and common infrastructure/equipment can be contributed by the local community and industry

5. Arranging workshops, seminars and counseling sessions from local experts for benefit of students and workers

6. Providing input about labour market needs local needs of skilled manpower so as to contribute to the Labour Information System.

6.12 RECOMMENDATIONS FOR THE UNORGANISED SECTOR

1. Recognition of Prior learning (RPL) is recommended to be given to the persons in the unorganized sector for the skills obtained by them through life experience and informal training. Department for Recognition of Prior Learning are required to be established in formal vocational training institutions to give credit to the students coming from the unorganized sector. Bridge courses can be designed to enable the students with informal training to enter the formal vocational training sector. The RPL will offer courses in line with NVEQF.

2. Specially designed modular courses must be provided through non-government vocational providers and NGOs to meet the diverse requirement of the informal sector.

3. In service training for the workers and apprentices in micro enterprises is recommended to be provided in public private partnership.

4. Non Formal education offering SSC or its equivalent certification in vocational stream is recommended to be created for the unorganized sector. Such students can be given bridge courses enabling them to acquire SSC or its equivalent 10th grade certificate. The Maharashtra Institute of Open Education (MIOE) has proposed to roll out such a scheme through SIOS. The Researcher recommends that MIOE considers existing problems of the unorganized sector and tailor its proposed scheme in line with the above recommendation.

5. The students appearing for SSC/10th grade through NIOS must be allowed admission to HSC (Vocational) by relaxing the academic requirements and norms.

6. At Vocational University level, Department of Recognition of Prior Learning and Department of Continuing Education will address the vocational training needs of the unorganized sector by offering specially designed modular courses.

7. Continuing vocational training programs must be offered through VTPs and the Vocational University, both in the public and private sector.

8. Formal educational requirements may be relaxed to give access to vocational education and training for the unorganized sector.

9. Industry needs to emphasize on formal vocational training for its entire workforce including those from the unorganized sector. Thus, it is important that the industry emphasizes a vocational training certification for the unorganized sector at the time of retaining them or within a stipulated period of time after joining the industry.

6.12.1 RECOMMENDATIONS FOR MODULAR EMPLOYABLE SCHEME (MES)

1. It is recommended that for each MES course the assessment criteria should be well defined. Standardization of assessment methodology must be done.

2. Synchronization of testing, certification and reimbursement of fees must be properly done.

3. The VTPs should take the responsibility of linking jobs to MES scheme.

4. The resource requirement such as infrastructure, teaching staff, labs etc must be pre-defined for each of the MES courses to enable standardization of quality of training being imparted by various VTPs.

5. A district wise survey is recommended to be undertaken to map the sector wise requirement of manpower in the unorganized sector. MES courses can be then designed to meet the specific market requirement.

6. After NCVT training and certification, six month industrial training must be made mandatory.

6.13 SUMMARY

In conclusion, the following important recommendations the details of which have been elaborated upon in the earlier pages, are being summarized below:

1. There should be a unified system of vocational education, training and skill development in the State offering standardized courses/programs at all levels for the benefit of students, industry and community as a whole.

2. There should be a single regulatory body such as, the proposed Maharashtra Vocational Education and Training Commission (M-VEC) to plan, promote, regulate, develop, co-ordinate and standardize vocational education, training and skill development at all levels in the in the State of Maharashtra.

3. There should be an accreditation board such as, the proposed Maharashtra Vocational Education and Training Registration and Accreditation Board (M-VETRAB) for registration, recognition and accreditation of all vocational training providers in the State.

4. There should be an independent quality council for the vocational sector such as, the proposed Maharashtra Vocational Education and Training Quality Council (M-VETQC) for quality assurance of vocational training providers in the State.

5. The State should encourage establishment of one or more Vocational Universities in the State to popularize this sector, create opportunities of higher vocational education and for providing vertical mobility to students from this stream.

6. Researcher has recommended introduction of pre-vocational subjects at secondary level with some minor modifications to the existing SSC scheme.

7. Researcher has recommended introduction of Electives and Life Coping Skills (Generic skills) in the HSC (Voc) curricula so as to enable vertical mobility for these students in conventional undergraduate programs and improve employability of students.

8. Researcher has recommended some bridge courses which can be done by ITI students as external subjects to obtain HSC (Voc) certification.

9. Researcher has recommended introduction of credit system including credit banking and transfers, modular course structure and introduction of life coping (generic) skills in all vocational courses/programs to enhance employability and create flexible learning pathways.

10. Researcher has recommended increased industry and community participation and engagement in all aspects of the VET system and especially with VTPs and the Vocational University.

11. Researcher has recommended that a Recognition of Prior Learning scheme be introduced for the informal sector to come into the mainstream. The creation of a single regulatory body, the Commission will enable the creation of an integrated system of vocation education, training and skill development in the State. The important suggestion of establishing India's first Vocational University in the State will create a landmark in the history of Maharashtra and India.

The Researcher hopes that this thesis and the recommendations therein will create an educated, trained and skilled human resource which will contribute towards productivity of the industry and growth of the society, community, State and our country as a whole.

CHAPTER 7
SCOPE OF THIS RESEARCH

Vocational Education, Training & Skill Development is a huge sector which is gaining tremendous importance in recent times. However not much research has happened in the past in India and in State of Maharashtra about the various aspects related to this sector. The researcher has attempted to study all aspects related to this sector, however, due to limitations of time, data availability, insufficient literature and limited previous research by other researchers has put forth the need for further research in this topic.

There is scope for further research in the following areas:

1. There is need for studying the models of regulation and administration system prevalent in other countries so a s to understand the benefits and linkages. This regulatory system is extremely imp from the standpoint of creating a unified integrated system of Vocational Education, Training and skill Dev. In Maharashtra or even at the centre such a unified does not exist at present, hence the need for further research in this area.

2. At present there is no dedicated and focused initiative at the state for centre for vocational faculty training and development. Can a separate National level Vocational Teacher Training Institute be established? Can State level Institute for this purpose be also established? Can special Vocational degrees such Bachelor in Vocational Education be created or BE.d in Vocational Education be created by UGC and made mandatory for all Vocational Teachers?

3. The National Skill Development Corporation (NSDC) is trying to create close linkages with industry in order to increase industry participation in the VET and Skill Development Sector. However there is a need for continuous research in understanding changing industry requirements for skilled manpower, labour market trends, employment opportunities, recruitment rules and concerns of industry. This continuous research will help in bringing out courses which meet industry needs.

4. Although the Central Govt. brought out the community college scheme few years back it has not become successful. However in concept the community college scheme is extremely desirable in order to bring in community stake holders into the development of the VET and Skill Development Sector. Community participation and close linkage with this sector is needed in order to bring about regional development. Further research is required to understand community problems and for effectively rolling out various schemes in line with the local needs. Community colleges in Tamilnadu, Kerala and other parts of India though few in number should be studied for further research.

5. More than 90% of India's workforce is in the unorganized sector. Further research is required to understand the skilling requirements of this sector and to suggest additional solutions for bringing this sector into the mainstream.

6. Vocational Education, Training and Skill Development is offered through ITI/ITCs and VJCs and VTPs in Maharashtra many more such institutions can be studied and researched to understand the parameter surrounding the quality of students.

The VET models of the foreign countries other than those studied by the researcher can also be studied to understand how these models have effectively implemented in the respective country.

The researcher feels that there is huge potential for this sector especially due to the national level initiatives taken up by our Government for Skill Development and therefore the need for not only additional but continuous research.

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List of Annexures

I. Sample curricula- B.Tech in Building Services Technology designed by Faculty of Industrial and Vocational Technology, Department of Construction Technology, University of Vocational Technology, Sri Lanka,

II. Industry feedback blank questionnaire –
   A. Feedback received from Cummins India Ltd. Pune
   B. Feedback received from Praj Industries Ltd. Pune

III. Sample curricula in Retail Sector designed by University of Vocational Technology, Sri Lanka

IV. Student survey blank questionnaire (English & Marathi)

V. Faculty survey blank questionnaire (English & Marathi)

VI. Industry feedback questionnaire.

UNIVERSITY OF VOCATIONAL TECHNOLOGY

Faculty of Industrial & Vocational Technology
Department of Construction Technology

B.Tech. in Building Services Technology

Program Structure

YEAR 1
Year 1- Semester 1

No.	Module Code	Module	Type	Credits	Notional Hours	Lectures	Practical (hrs)	Field Visits (hrs)	Self-Study (hrs)	Evaluation End Exam (%)	Evaluation Assignment (%)
1	BST01	Mathematics I	C	04	100	80	-	-	20	60	40
2	BST02	Mechanics of Materials	C	06	150	80	20	-	50	60	40
3	BST03	Construction Technology I	C	06	150	80	-	20	50	60	40
4	BST04	Building Environment & Human Comfort	C	04	100	60	12	-	28	60	40
5	BST05	Presentation of Engineering Information	C	04	100	40	30	-	30	40	60
6	BST06	Drafting Techniques & CAD	C	06	150	80	20	-	50	-	100
		Total		30	750	420	82	20	228		

C- Core Modules   E – Elective Modules

ANNEXURE - I

Year 1- Semester 2

No.	Module Code	Module	Type	Credits	Notional Hours	Lectures /Tutorials(hrs)	Practical (hrs)	Field Visits (hrs)	Self-Study (hrs)	Evaluation	
										End Exam (%)	Assignment (%)
7	BST07	Fluid Mechanics	C	06	150	80	20	-	50	60	40
8	BST08	Construction Technology II	C	06	150	80	-	30	40	60	40
9	BST09	Applied Electricity	C	06	150	80	24	-	46	60	40
10	BST10	Applied Thermodynamics	C	06	150	80	24	-	46	60	40
11	BST11	Architectural Aspects of Building Services	C	06	150	60	30	20	40	40	60
		Total		30	750	380	98	50	222		

C- Core Modules   E – Elective Modules

B.Ed.Tech. Building Services Technology

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2

YEAR 2
Year 2- Semester 1

No.	Module Code	Module	Type	Credits	Notional Hours	Lectures /Tutorials(hrs)	Practical (hrs)	Field Visits (hrs)	Self-Study (hrs)	Evaluation	
										End Exam (%)	Assignment (%)
12	BST12	Mathematics II	C	04	100	80	-	-	20	60	40
13	BST13	Lighting Systems in Buildings	C	04	100	60	10	10	20	60	40
14	BST14	HVAC Systems	C	06	150	80	10	20	40	60	40
15	BST15	Building Acoustics	C	04	100	60	10	10	20	60	40
16	BST16	Piped Services in Buildings	C	08	200	120	20	20	40	60	40
17	BST17	Building Services Integration Software	C	06	150	20	80	-	50	-	100
Total				32	800	420	130	60	190		

C- Core Modules   E – Elective Modules

Year 2- Semester 2

No.	Module Code	Module	Type	Credits	Notional Hours	Lectures /Tutorials(hrs)	Practical (hrs)	Field Visits (hrs)	Self-Study (hrs)	Evaluation	
										End Exam (%)	Assignment (%)
18	BST18	Electrical Installation Technology	C	06	150	80	20	10	40	60	40
19	BST19	Ancillary Services in Buildings	C	10	250	150	20	20	60	60	40
20	BST20	Energy Management in Buildings	C	06	150	60	20	20	50	60	40
21	BST21	Measurement Practice & Estimating	C	06	150	100	-	-	50	60	40
Total				**28**	**700**	**390**	**60**	**50**	**200**		

C- Core Modules   E – Elective Modules

YEAR 3
Year 3- Semester 1

No.	Module Code	Module	Type	Credits	Notional Hours	Evaluation
22	BST22	Industrial Placement	C	30	750	Final Evaluation (Report + viva) 100%
Total				30	750	

C- Core Modules   E – Elective Modules

Year 3- Semester 2

No.	Module Code	Module	Type	Credits	Notional Hours	Lectures /Tutorials(hrs)	Practical (hrs)	Field Visits (hrs)	Self-Study (hrs)	Evaluation End Exam (%)	Assignment (%)
23	BST23	Project Management	C	06	150	80	20	-	50	60	40
24	BST24	Business in Built Environment	C	06	150	80	-	-	70	60	40
25	BST25	Research Methodology	C	04	100	40	10	-	50	60	40
26	BST26	Project	C	14	350	350				Final Evaluation (Report + viva) 100%	
Total				30	750	200	30	-	170		

C- Core Modules   E – Elective Modules

B.Ed.Tech. Building Services Technology

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YEAR 4 (Optional)
Year 4- Semester 1

No.	Module Code	Module	Type	Credits	Notional Hours	Lectures /Tutorials(hrs)	Practical (hrs)	Field Visits (hrs)	Self-Study (hrs)	Evaluation End Exam (%)	Assignment (%)
27	BST27	Construction Economics & Financial Accounting	C	06	150	100	-	-	50	60	40
28	BST28	Contracts & Procurement	C	04	100	70	-	-	30	60	40
29	BST29	Interior Designing & Building Services	C	06	150	70	20	20	40	40	60
30	BST30	3D Modeling for Buildings	C	10	250	50	150	-	50	-	100
31	BST31	Provision of Services in Conversion & Adaptation of Buildings	E	04	100	60	-	20	20	60	40
32	BST32	Building Management for Sustainability	E	04	100	60	-	20	20	60	40
33	BST33	Quality Management in Buildings	E	04	100	60	-	20	20	60	40
		Total		**30**	**750**	**350**	**170**	**40**	**190**		

C- Core Modules   E – Elective Modules

Note: In the 4th year 1st semester, elective modules can be selected to satisfy the total credit requirement of 30. The electives to be offered in a particular year will be decided by the Academic Council of the UNIVOTEC.

Year 4- Semester 2

No.	Module Code	Module	Type	Credits	Notional Hours	Evaluation
34	BST34	Design Project	C	30	750	Final Evaluation (Report + viva) 100%
Total				**30**	**750**	

C- Core Modules   E – Elective Modules

CONCEPT OF VOCATIONAL UNIVERSITY
(Response from CUMMINS INDIA LIMITED)

1.   Concept of Vocational University to provide vocational education at tertiary level (NVQF level 7), teachers training and curricula development.

Vocational Education cannot be confused with Conventional Education and to provide the focus there is a need for separate campus/concept / curriculum. Vocational education at tertiary level (NVQF level 7) is workable. Teachers, training and curriculum should be aligned accordingly.

2.   Role of Industry in mapping of Occupational standards.

Industry has to engage itself in defining and mapping the Occupational standards. It would be an iterative process. Various section of the industry needs to participate and establish these standards. Clearly, they would need the support of the academia but ultimately as a user, they have a role to play.

3.   Partnership of Industry with Vocational University for curricula development and periodic review by Industry.

One of the big customers of Vocational University will be the industry. Certainly Vocational University should also be creating entrepreneurs as well as trainers. If the biggest customer is industry then they need to be sharing their expectation with the university in terms of knowledge and skill they expect from the students. Hence industry has to participate for the meaningful output that they can use immediately.

Technology, Business and Market changes all the time and so there cannot be a standard curriculum and hence the need to review.

4.   Inclusion of general academic skills in the curricula.

General academic skill provides a rigour and discipline required and hence they should be included in the curricula.

5. Training / apprenticeship of vocational students at Industry premises

In a structured manner, training /apprenticeship of vocational students should be included as is being done for the students who come from ITI (ACT Apprentices). The scope and depth in case of Vocational University's has to be much higher.

6. Industry aid for setting up Production Oriented labs

Industry aid for setting up Production oriented labs is a good concept but details need to be worked out to define the role of the industry.

7. Utilisation of University premises/labs for in-service training of employees

Make sense as employees also need refresher and upgradation.

8. Employability of Vocational degree holders in the industry

If the curriculum is linked to expectation and requirements of the industry, there is every reason to believe that employability of Vocational degree holder would be higher.

9. Role of industry in governance of Vocational University

Significant meaningful inputs can come from industry at all levels. It could go beyond curriculum development and participation of its employees. Industry brings with it certain professionals and practices which will be helpful in governance of Vocational University.

10. Provisioning of industrial Instructors (employees) for conducting hands-on training for Vocational University

Most certainly, this would make skills more relevant and students more employable. Industry will also effectively be upgrading its employees into good trainers.

11. Outsourcing industrial projects to Vocational University

Most certainly, as Vocational University upgrades itself, it could and should take up industrial projects.

12.	Utilising Vocational University expertise to undertake R & D projects for the Industry

Once again, as the level of expertise increases in the University, it should do sponsored and Research and Development projects.

13. Any other feedback/suggestions

Time for Vocational University has arrived. There is no way we can meet the requirements of our Manufacturing, Service and Agriculture sector through Conventional Educational Institutions. Government, Industry and Academia needs to collaborate to create this machinery of Vocational University. We should pilot one and thereafter replicate it in many States.

CONCEPT OF VOCATIONAL UNIVERSITY

(Response from PRAJ INDUSTRIES LIMITED, PUNE,

is given in blue text below)

1. Concept of Vocational University to provide vocational education at tertiary level (NVQF level 7), teachers training and curricula development.

This is a very novel concept and need of the hour not only from industry point of view but also from national point of view. It will have a great positive impact on overall employability of the youth and in turn on social health of India.

The last page of this response contains a snap shot of various opportunities available for a child after passing out 10th standard and one of which is to opt for ITI. The main reasons for children opting for ITI are socio-economical. Moreover, the post-school educational costs are rising day by day. There could be quite a lot bright and talented children who would be great engineers provided they have adequate financial support that time. This concept of Vocational University will provide a new opportunity for them to meet their ambitions.

Industry will be more than happy to have freshers who are productive from day one and would be ready to give fair chance to freshers coming from top class universities (IITs or regional colleges) , other engineering colleges, diploma holders and those from Vocational Universities. In our opinion, Vocational University pass outs would win because they will have blend of practical and theoretical skills as well as competencies.

2. Role of Industry in mapping of Occupational standards.

Industry would love take the responsibility provided adequate authority is provided by the university. It can be instrumental in upgrading the syllabus, providing opportunities for practical training, recruitment of faculty etc.

The constant flow of information from Industry to University to Industry is quite necessary. This will compel the University Faculty to upgrade itself constantly. The up gradation of Courses constantly will retain the relevance of the Courses and the Faculty will have to study as a routine. The Industry must constantly review its needs and requirements considering the ever changing environment. The University cannot be expected to be that flexible and agile all the times. The industry must take active part in settling the Course scope and coverage.

3. Partnership of Industry with Vocational University for curricula development and periodic review by Industry.

Under the Public Private Partnership program of Central Government, quite a few ITIs are adopted by the industry. These partnerships are benefitting the students, faculty and the industry. The details of this scheme are available on the web site of DVET (http://www.dvet.gov.in/Schemes/PPP.aspx). A partnership program on similar lines can be worked out for Vocational University also. ITI (Velhe) has been adopted by PRAJ INDUSTRIES under this scheme.

4. Inclusion of general academic skills in the curricula.

It is very much desired and possible also.

The Practical Training must be imparted by Industry to Students and Staff on regular basis. The students must be given the feel of actual industrial working on regular basis. The passed out student must not be a novice when he enters the Industry.

5. Training / apprenticeship of vocational students at Industry premises

It is very much desired and possible also.

6. Industry aid for setting up Production Oriented labs

It is very much desired and possible also.

7. Utilisation of University premises/labs for in-service training of employees

This needs to be checked on case to case basis. Industry response would depend upon the facilities available with the University.

8. Employability of Vocational degree holders in the industry

In our opinion, it would be quite high as explained in response to question # 1

The Industry must give fair chance to students passing from such Vocational University and other engineering Colleges. The Vocational University Student may have adequate practical experience but lesser theoretical exposure and Engineering College student may have enough theoretical exposure but lacks practical exposure. The objective should be to attain golden mean of the two. Hence giving fair opportunity to all students will go a long way in establishing the Vocational University Credentials and Acceptance.

9. Role of industry in governance of Vocational University

In general, to some extent the educational institutes are also profit oriented now-a-days and it is very much required to sustain in a professional manner. The performance of the Vocational University will largely depend upon the industry's involvement in the governance. Profit sharing concept can be thought of while working out the model of Industry – University partnership program. The ITI adoption scheme referred above does not have this profit sharing.

Vocational University can also request the partner industry to nominate its competent employee(s) on the governing body on full time basis to give justice to the role they have to play.

The Board of Studies of the University should also be represented by Industry nominee.

10. Provisioning of industrial Instructors (employees) for conducting hands-on training for Vocational University

Highly recommended.

11. Outsourcing industrial projects to Vocational University

This needs to be checked on case to case basis. Industry response would depend upon the facilities available with the University.

12. Utilising Vocational University expertise to undertake R & D projects for the Industry

This needs to be checked on case to case basis. Industry response would depend upon the facilities available with the University.

13. Any other feedback/suggestions

We must keep in mind that this is not just an academic issue but a larger socio cultural shift in the Indian context.

In the Indian mind-set and context a person's social 'value' is determined by her/ his professional qualification, competence, skills and accomplishment. Unless we make efforts to promote dignity of labour we will face challenges in promoting this concept.

If the Vocational University charges commercial rates then there are no issues but if one has to charge subsidized rates then the passed out students must be required to pay differential costs when he starts earning.

The passed out students must be allowed to appear for higher studies by recognizing the Vocational degree. The Vocational University Student must join at some advantageous level for higher studies.

The mind set of Industry / Teachers and bureaucracy need to change to allow treating this as a profit earning and sustainable alternative to the present model of education. This will make the new initiative successful.

The response to each question above is gist of our thoughts. A meeting in person with our representatives would help to understand those in detail.

M-Power's
Career Path Finder
Author / Editor - Prof. Vijay Navale / Mahesh Narke
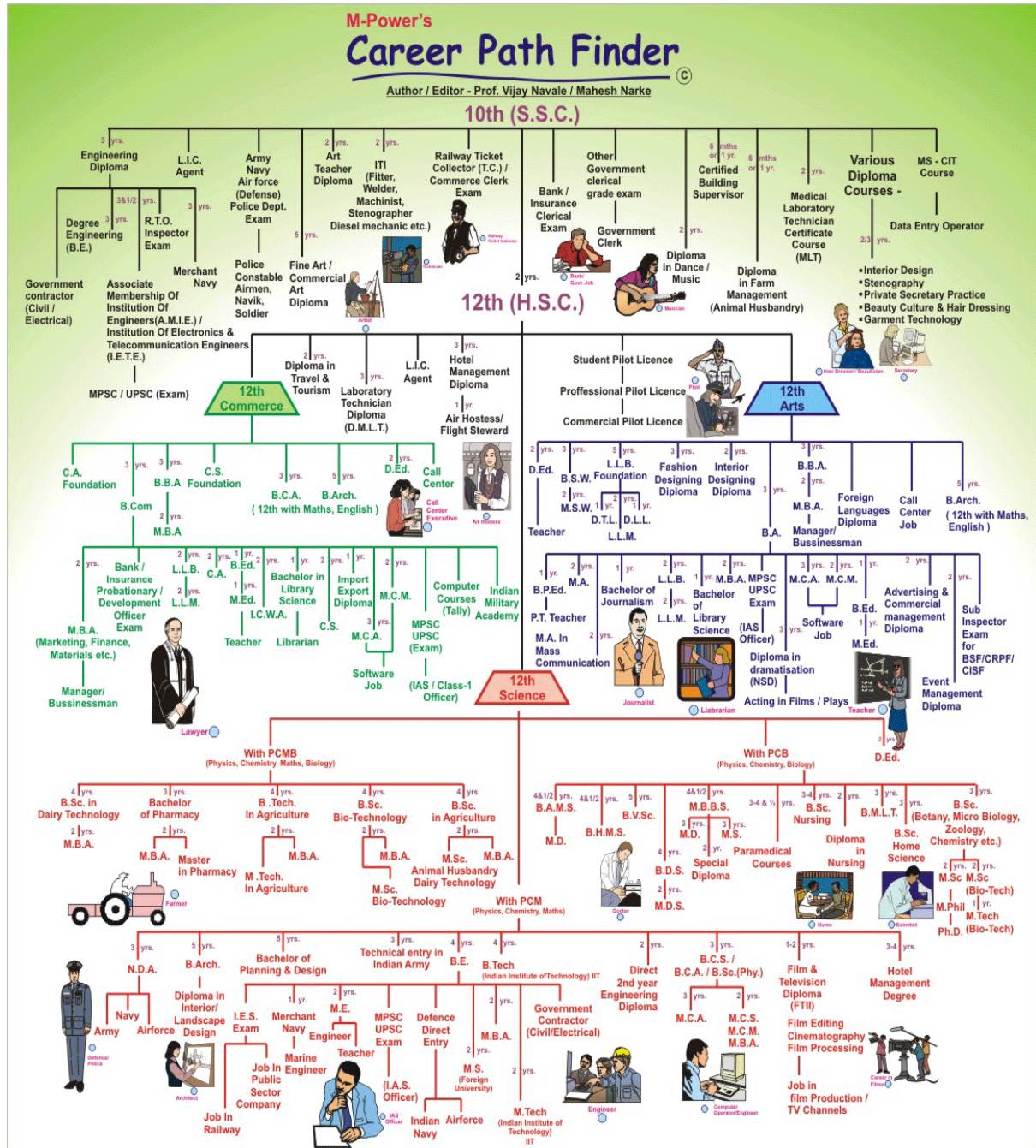
SAMPLE CURRICULA IN RETAIL SECTOR

Introduction

A retail industry involves material handling, production, sales and distribution as well as finance transactions conducted at stores. Each store requires an inventory control system, a Point of Sales (POS) system and an accounting system (maybe also a production system). Major procurement is conducted at the Head Office (HO), Material Receipt is done at the Stores and Bill Passing and Bank Payments are conducted at the HO. Some extent of local procurement is also sometimes being done at the stores. Sale is an activity which is being done completely at the stores. Most of this activity is handled through a POS system.

The Indian Retail Industry is the largest among all the industries, accounting for over 10 per cent of the country's GDP and around 8 per cent of the employment. Retail market in India as is observed in the form of bustling shopping centers, multi-storied malls and the huge complexes that offer shopping, entertainment and food all under one roof. Indian retail is expected to grow 25 per cent annually. Modern retail in India could be worth US$ 175-200 billion by 2016.

Sr. No.	Job Mapping			
	Level 1 & 2 (Class 9 & 10)	Level 3 & 4 (Class 11 & 12)	Level 5 (Diploma and Advanced Certificate)	Level 6 & 7 (Advanced Diploma & Bachelor)
1.	**RL1&2/J1:** Retail Bagger	**RL 3 & 4/J1:** Transaction Processing Associate / Billing Associate		
2.	**RL1&2/J2:** Stocking and Inventory Associate	**RL3 & 4/J2:** Retail Store Manager/ Department Manager		**RL 6 & 7/J1:** District Manager
3.	**RL1&2/J3:** Sales Associate/ Sales Person	**RL3&4/J3:** Retail Sales Merchandiser **RL3&4/J4:** Purchase and Merchandising Associate	**RL5/J1:** Visual Merchandiser	**RL 6 & 7/J2:** Merchandising Manager **RL 6 & 7/J3:** Merchandising Analyst
4.			**RL5/J2:** Supply Chain Manager	

Three pathways -Sales Professional, Visual Merchandising and Management.

	Qualification Profile	
1.	**Title**	**RL1&2/J2: Stocking and Inventory Associate**
2.	NVEQF Code	
3.	Level	This qualification has been accredited onto the **NVEQF Level 1& 2.**
4.	NVEQF Accreditation No.	
5.	Entry requirements	Class VIII or equivalent competencies as certified through RPL or recognized Board
6.	Qualification Structure	There are 10 Units for the qualification in <u>Stocking and Inventory Associate.</u> To achieve the qualification, candidates must achieve 5 units made up of 2 mandatory units and 3 optional units. Candidates can also undertake additional units, although these are not required to complete the qualification. Candidates achieving one or more units of competence but who do not meet the requirements for a full certificate will receive a certificate listing the units they have achieved.
7.	National Occupational Standards	As provided by the Retailers Association Skill Council of India (RASCI)
8.	Developed by	
9.	Last registration date	
10.	Proposed date for revision	
11.	Progression Opportunities	This qualification has been designed to develop the skills, knowledge and understanding required to enable progression to and from qualifications along the vertical and horizontal planes in the National Vocational Education Qualifications Framework (NVEQF). A candidate achieving a qualification at Level 1&2 NVEQ in <u>Stocking and Inventory Associate</u> Level 1&2 may progress to the qualification at Level 3&4 NVEQF in <u>Retail Store Manager/department Manager</u>.

RL1&2/J2: Stocking and Inventory Associate

The Work: Responsible for the flow of merchandise from the point of delivery to the sales floor or internal destination.

Reference Skills:

(i) Literacy Skills

- **Reading–Level 2**
- **Speaking and listening–Level 2**
- **Writing–Level 1**

(ii) Numeracy Skills

- **Number (some aspects)–Level 1**
- **Measure (some aspects)–Level 1**
- **Interpreting data (some aspects)–Level 1**

Pre-requisites: Nil

Tasks and Range Statement

Unit	Tasks	Range Statement
RL1&2/J1/U1	Working in Retail Sector	• Malls, Departmental Stores, Specialty Stores, Department Stores, Convenience Stores, Hypermarkets, Supermarkets, Multi Brand Outlets (MBOs)
RL1&2/J1/U2	Personal Presentation and Independent Living	• Sector/Company requirements.
RL1&2/J1/U3	Dealing with Customers & Staff	• Customer level, Management level, External organizations.
RL1&2/J1/U4	Completing and Processing Paperwork in the Store	• Basic documents such as filling in simple forms. • Assist in all administrative processes, which may be paper-based and/or electronic.
RL1&2/J1/U5	Organizing and Maintaining Work Area	• Work- routine, roastered or non-routine • Work area - temporary or permanent
RL1&2/J1/U6	Performing Stock Control	• Food and non-food products.

RL1&2/J1/U7	Working in Team	• Multi-cultural environment. • Multi-activity
RL1&2/J1/U8	Maintaining Work Ethics and Organizational Values	• Work ethics and organizational values may relate to modes of communication, store hours of operation, completing work out of hours, dealing with customers, team members and management, and occupational health and safety.
RL1&2/J1/U9	Maintaining Safe and Hygienic Working Conditions	• Various health and safety regulations
RL1&2/J1/U10	Operate Computer and Use Computer Programs	

Task Analysis

RL1&2/J2: Stocking and Inventory Associate			
Unit	**Task**	**Knowledge**	**Skill**
RL1&2/J1/U1	Working in Retail Sector	• Describe the different types of retail marketing businesses. • Describe the major departments typically found in a retail super market/mall. • Describe products (food and non-food products) thoroughly so they can be correctly explained to customers and properly cared for and displayed while in the store. • Explain the roles, functions and services of manufacturers, wholesalers, distributors and retailers.	• Identify the types of businesses in the organized retail industry-retail formats. • Identify the major departments typically found in a retail super market/mall/convenience store, etc. • Identify the major categories of products, typically stocked in each department of retail super market /mall.
RL1&2/J1/U2	Personal Presentation and Independent Living	• Describe daily personal care activities - what to wear, wash and iron clothes, shower/ bath, wash hair, dry hair, shave, put on make-up, eat nutritious and healthy food.	• Wear clean clothes • Practice personal grooming and hygiene. • Display confidence and positive attitude. • Demonstrate social behaviors such as tolerance, honesty, empathy and courtesy. • Assume personal responsibility in the work environment. Prioritize and manage multiple tasks and responsibilities. Adjust to new demands and unexpected situations.

RL1&2/J1/U3	Dealing with Customers & Staff	• Describe types of customers and their expectations • Describe the needs of customers • Describe the factors that affect customer choices in selecting a product (e.g., purchasing power, likes and dislikes, etc.) • Greeting customers • Describe the expectations of staff at various levels in various retail formats • Describe communication needs and strategies that impact different points of sale in the retail industry.	• Participate in workplace communication, including meetings and discussions • Receive, interpret and respond to verbal and non-verbal messages in a manner appropriate to a given situation. • Handle queries promptly and correctly in line with enterprise procedures. • Work to satisfy customer or client expectations. • Receive and pass on messages to facilitate communication flow. • Use strategies appropriate to a given situation to prevent and resolve conflicts.
RL1&2/J1/U4	Completing and Processing Paperwork in the Store		• Perform and apply numerical concepts and calculations and solve problems by choosing from a variety of mathematical techniques using mental, manual and technological methods. • Operate a range of office equipment to complete routine tasks.
RL1&2/J1/U5	Organizing and Maintaining Work Area	• Describe the features of various products – use, durability, display requirements, etc. • Explain the relationship between the product storage/ display and product	• Apply measures for reducing the risk of hazards and injury. • Monitoring and managing safety for the entire store, and training staff in safety procedures and equipment use. • Acquire, store, allocate and

		safety.	use materials and space efficiently. • Use resources effectively in organizing work schedules. Deal with irregularities and unforeseen difficulties.
RL1&2/J1/U6	Performing Stock Control	• Describe the content of the basic stock list for staple items that should always be in stock in a retail store. • Explain the process of how the receipt, marking and organizing of stock is done to keep it in good condition, properly recorded and stocked to required levels. Describe product ordering procedures using scanners and other electronic systems.	• Prepare stock list for staple items that should always be in stock in a retail store. • Identify problems incurred in product receiving and provide possible solutions to solve these problems. • Demonstrate general stocking procedures, case cutting, shelf blocking, facing, display rotations in all departments of retail store. Construct and maintain various types of food and non-food products display.
RL1&2/J1/U7	Working in Team	• Explain the benefits of team approach to work processes. • Describe how to build and maintain constructive relationships.	• Participate and interact as a team member. • Share knowledge and skills with others. Perform effectively in various environments with people of different cultural background, ages, gender, socio-economic background, attitudes and abilities.
RL1&2/J1/U8	Maintaining Work Ethics		• Follow ethical courses of action. • Take initiative to accomplish task in a timely manner. • Demonstrate honesty, adaptability, dependability and responsibility.

RL1&2/J1/U9	Maintaining Safe and Hygienic Working Conditions	• Explain the relationship between personal hygiene and product safety and sanitation. • Describe the methods employed for preventing security problems including shop lifting, employee pilferage, bad checks, and counterfeiting, etc. that occur in the retail store.	• Follow workplace safety procedures. • Identify and prevent or solve problems with electrical and electronic equipment. • Utilize a variety of technologies and equipment for preventing fire and occupational health hazards. • Demonstrate and perform basic housekeeping practices.
RL1&2/J1/U10	Operate Computer and Use Computer Programs	• Explain the benefits and various components of the information network used in the retail industry. • Describe the technological services offered in the retail industry including internet shopping, web van delivery systems and computerized self-check out stations.	• Demonstrate skill in operating computers. • Handle information to maintain access to and security of records. • Demonstrate skill in utilizing computer programs used in the retail industry, for example operate a spreadsheet application.

Elements

Unit	Task	Element	Indicative Nominal *Hours for Unit Credit
U1	Working in Retail Sector	E1: Introduction to Retail E2: Retail Environment E3: Retail Terminology	06 04 02
U2	Personal Presentation and Independent Living	E1: Personal Care E2: Health Care E3: Social Skills	02 06 02
U3	Dealing with Customers & Staff	E1: Communication with Customers E2: Communication with Staff	06 06
U4	Completing and processing paperwork in the store	E1:Balance the Register/Terminal E2:	06 06
U5	Organizing and Maintaining Work Area	E1: Product Knowledge E2: Receiving, Unpacking, Processing, Organizing and Storing Merchandise E3:	08 10
U6	Performing Stock Control	E1: Introduction to Stock Control E2: Maintaining and Ordering Stock	06 06
U7	Working in Team	E1: Team Building Exercises E2: Building a Committed Team	04 06
U8	Maintaining Work Ethics	E1: Acting responsibly E2:	06 04
U9	Maintaining Safe and Hygienic Working Conditions	E1: Workplace Health And Safety Regulations E2: Workplace Safety Procedures	06 04
U10	Operating Retail Equipment and Using Computer Programs	E1: Operate Retail Equipment E2: Use Computer Programs	08 06

- **Excluding work placement**

Performance Criteria

Unit 2: Personal Presentation and Independent Living

Element 1: Personal Care

Teaching and Learning method: Interactive Lecture, Demonstration

Performance Criteria	Yes	No
1. Wear neat/clean clothing suitable for the occasion		
2. Know which personal care items to buy that will improve personal appearance and fit within the budget.		
3. Take pride in personal appearance.		
4. Know which clothes should be hand-washed, dry-cleaned, or machine-washed.		
5. Maintain personal hygienic conditions/habits		
6. Know how to iron clothes and sew on buttons.		
7. Avoid situations leading to personal ill health and also prevent spread of germs to others		

Element 2: Health Care

Teaching and Learning method: Interactive Lecture, Demonstration, Visits

Performance Criteria	Yes	No
1. Know whom to call and where to go for emergency medical care.		
2. Can take care of self when gets cold, flu, minor cuts, etc.		
3. Know how to use an oral thermometer to take my temperature and know when a fever is serious.		
4. Know which non-prescription medications to take for colds, fever, headache, diarrhea, etc.		
5. Know how to get a medication prescription and follow the instructions on the label properly.		

	Yes	No
6. Lift heavy objects in a manner that protects back and neck from injury		
7. Know why smoking and chewing *gutka* is harmful to health.		
8. Keep own medical history up-to-date		
9. Know how and when to call a doctor for an appointment for a check up or for treatment of a medical or dental problem.		
10. Know what medical insurance is, why it's necessary and how it can be purchased.		
11. Understand how pregnancy occurs and know how to prevent pregnancy		
12. Know the importance of good nutrition and proper exercise in maintaining health.		

Element 3: Social Skills
Teaching and Learning method:

Performance Criteria	Yes	No
1. Can communicate and interact appropriately in various social situations.		
2. Can start conversations with new acquaintances.		
3. Identify and handle unwanted advances in a manner that does not cause the situate to escalate		
4. Know how to handle conflicts with a friend, teacher, supervisor, or family member without using physical aggression.		
5. Know how to make good decisions by weighing the pros and cons.		
6. Know what is important to me in friend/relationships.		
7. Participate in social activities with peers.		
8. Know where and how to get help if cannot handle or end an argument with a friend, teacher, employer, family member, etc.		
9. Can set personal goals and work to accomplish them with minimal help.		
10. Is honest with friends and say what is on my mind.		
11. Can set limits and boundaries with friends/peers.		
12. Aware of the consequences of teenage pregnancy.		
13. Can plan and invite peers to social activities.		
14. Report to supervisor/employer		

Unit 3: Dealing with Customers & Staff

Element 1: Communication with Customers

Teaching and Assessment method: Role Play & Visit

Performance Criteria	Yes	No
1. Did not interrupt the customer, while talking to him/her		
2. Take notes but maintained interest and eye contact		
3. Asks probing questions to ensure understanding		
4. Remain patient and extended help when the customer struggled with the problem		
5. Provided complete and clear information to the customer		
6.		
7.		

Element 2: Communication with Staff

Teaching and Assessment method: Role Play & Visit

Performance Criteria	Yes	No
1. Did not interrupt the staff member while talking to him/her		
2. Take notes but maintained interest and eye contact		
3. Provided complete and clear information to the staff member		
4. Remain patient and extended help when the staff member struggled with the problem		
5.		
6.		
7.		

Resources

(I) Facilities

- Audio-visual room
- Lecture room
- Stock room

(II) Equipment

Equipment will include but not limited to:

- Communication Equipment-Telephone, Fax, Computers, Xerox Machines, etc.
- Storage Equipment and Fixturing – Shelving, Wall Rack, Gondola, Star or Waterfall Rack
- Display and Promotion Equipment
- Electronic Bar Coding Equipment for Price Labelling and Stock Taking
- Electronic Scales/Weighing Machines
- Portable Data Entry Equipment
- Pricing Guns
- Cardboard Bailers
- Computers
- Printers
- Cleaning Equipment
- Wrapping and Packing Equipment
- Equipment for Carrying or Moving Merchandise

Point-of-sale equipment, such as:

- Cash Register (Manual Or Electronic)
- Cash Drawer
- EFTPOS terminals
- Scanner
- Electronic Scales
- Numerical Display Board.
- Security tagging equipment
- Trolley

(III) Supplies

- Uniforms
- Ball Pen
- Calculator
-    Pencil
- Record Book
- First Aid Kit
- Order Forms
- Sample Debit Card and Credit Card Vouchers
- Recording and Tally Sheets
- Promotional Materials
- Banking Deposit Forms
- Purchase Requisitions
- Purchase Orders
- Invoices
- Receipts
- Delivery Dockets And Receipts
- Credit Notes
- Statements
- Remittance Advices
- Cash Register Rolls
- Deposit Books
- OHS Guidelines
- Packing Materials
- Range of Stock and Merchandise for Display
- Shelf Tickets
- Shelf Talkers
- Written Labels
- Swing Ticketing
- Bar Coding
- Price Boards
- Header Boards

(IV) Documentation- stock inventory, stock sheets, price lists, financial transaction dockets and slips, store policy and procedures manuals, Industry codes of practice, etc.

- Planograms
- Timetables
- Lay-By Slips
- Credit Slips
- Product Return Slips
- Message Pads
- Staff Record Forms
- Wrapping and Packaging Materials
- Manufacturer Instructions

Teaching Methodology

- Interactive Lectures
- Role Play
- Group discussions
- Seminars
- Projects
- Tutorials
- Mock interviews
- Modeling – the performance of an activity by an expert so that students can learn from the expert how that task can/should be done.
- Coaching – a teacher observes a student performing a task and provides helpful feedback in the form of support, modeling, reminders, and suggestions of new tasks which could bring his/her performance closer to that of an expert.
- Scaffolding – support for the students so that they can carry out the tasks.
- Fading – gradual removal of support so that the students finally come to perform their tasks on their own.
- Articulation – means for providing students the opportunity to articulate their reasoning and their problem solving strategies.
- Reflection – any technique that allows students to compare their own problem solving process with that of an expert or another student, and ultimately an internal model of expertise.
- Exploration – any devise that pushes the students into a mode of problem solving on their own.

Industry Specific Training

Training should cover contemporary retail practices, merchandising, point of sale, and inventory management.

Evidence

Performance evidence can take the form of the following:

Direct observation of practice by a qualified assessor for specific units

Simulated activity may be used, within a retail setting itself for assessment purposes to allow candidates to demonstrate emergency drills, evacuation and accident procedures as part of the Health and Safety Units.

Group work can be used as evidence, but the candidate's contribution must be identified clearly.

Questioning the candidate

Written test

Rating a Candidate as Competent or Not Yet Competent

Example of Rating

Activity	Competent	Not Yet Competent
Talking to a customer	Did not interrupt the customer	Interrupted the customer
	Took notes but maintained interest and eye contact	Took notes but did not maintain interest and eye contact
	Asked probing questions to ensure understanding	Displayed boredom or lack of empathy.
	Remained patient when the customer struggled with the problem.	Assisted the customer to overcome the problem.
	Provided complete and clear information to the customer	Provided inadequate information to the customer

Further Reading

Title	Author	Publisher
Retailing Critical Concepts	Anne M. Findlay, Leigh Sparks	Routledge
Retail Marketing Management 2nd Edition	David Gilbert	Pearson

STUDENT SURVEY FORM

1. Name: _____

2. Course: _____

3. Name of Institute:_____

4. Educational Qualification: _____

Below 8th ☐   10th pass ☐   12th pass ☐

5. Medium of Education

Marathi ☐   Hindi ☐   English ☐

6. Can you operate a computer?   Yes ☐   No ☐

7. Monthly income of parents Rs._____per month

8. Are you interested in higher education?

Diploma ☐   Bachelor's Degree ☐   Master's Degree ☐

9. You want a degree in which vocational course?

_____

10. Do you want to start your own business?   Yes ☐   No ☐

11. Do you want to seek a job?   Yes ☐   No ☐

12. In your course, how many hours of practical training do you have?
_____hrs   _____days in a week

13. How is the quality of training being provided?

_____

_____

Do you go to an industry for training?   Yes ☐   No ☐

14. If yes, how many hours/ day in a week

_____hrs   _____days in a week

15. If no, would you like to go to an industry for training?   Yes ☐   No ☐

_____hrs   _____days in a week

16. Any other problems?

_____

_____

17. Any other feedback?

_____

_____

Signature_____

Name_____

Date   /   /

FACULTY SURVEY FORM

1) Name ---

2) Qualification ---

3) Specialization ---

4) Name of Institute --

5) How much should be the percentage of theory and practical in a vocational course on daily/weekly basis?

-------------------- % Theory   --------------------% Practical --------------------days Per week

6) How many students enrolled in vocational courses go for diploma/degree in Universities.

_____

7) In which vocational stream students go for higher education?
(Technical/Commerce/Agriculture/Paramedical/ Business & Commerce/ Home Science

_____

8) How many of your students got employment? ----------------------------% per batch

9) How many students start their own business? ----------------------------% per batch

10) What is the gender ratio (Male v/s Female)

-----------------------% of Males   -------------------------------------% of Females

11) For which vocational courses there is higher response from girls?

_____

_____

12) For which vocational courses there is higher response from boys?

----

13) Would you like to go for your own skill development training programs?

Yes ☐   No ☐

14) Would you like to pursue B.Ed. in Vocational stream?

Yes ☐   No ☐

15) Would you like to do research / Ph.D in vocational stream? Yes ☐   No ☐

16) Would you like to go for consultancy work? Yes ☐   No ☐

17) Any other feedback?

_____

_____

Signature -------------------

Name -------------------

INDUSTRY SURVEY FORMS

1. Concept of Vocational University to provide Vocational Education in tertiary level (NVEQF level 7), teachers training and curricula development.

2. Role of Industry in mapping of occupational standards.

3. Partnership of Industry with Vocational University for curricula development and periodic review by Industry.

4. Inclusion of general academic skills in the curricula.

5. Training / apprenticeship of vocational students at Industry premises.

6. Industry aid for setting up Production Oriented Labs.

7. Utilization of University premises / labs for in-service training of employees.

8. Employability of Vocational Degree holders in the industry.

9. Role of industry in governance of Vocational University.

10. Provisioning of Industrial Instructors (employees) for conducting hands-on training for Vocational University.

11. Outsourcing industrial projects to Vocational University.

12. Utilising Vocational University expertise to undertake R & D projects for the Industry.

13. Any other feedback / suggestions