Higher Education / University: Taking the Skills March Forward in India – Transitioning to the World of Work

Mona Khare

1 Prologue

This chapter tries to capture the changing profile of Indian higher education seekers and the system per se. It is argued that Higher Education (HE) in India needs to make a leap from education for the sake of education to education for better livelihood to education for better living to provide for smoother transition to work for HE graduates. The chapter discusses some interesting issues that HE needs to confront. These can be highlighted upfront as (1) on one hand there is excessive dependence on non-formal system of vocational training and on the other hand young graduates coming out of the formal HE system are unable to meet the industry expectations on job readiness. (2) On one hand the percentage of educated job seekers is increasing while on the other a very miniscule percent is getting placed. (3) The limited size of professional courses is revealed by the ratio of professional to non-professional enrolment being 1:3. (4) The problem of employability skill gaps is higher in the general academic non-professional graduates that constitute the majority. This certainly demands a relook at a policy level change to rationalize and reduce the existing disparity and focus on Vocationalisation of education.

The chapter will first introduce the theoretical background for linking Education Growth and Human capital in the light of changing global priorities. Looking at the education and training profile of educated job seekers in India the chapter then describes the existing Higher education system to showcase its preparedness/lack of preparedness to produce industry ready graduates. It then discusses the new initiatives taken for rejuvenation and Vocationalisation of HE in the country concluding with the challenges herein being faced for preparing HE graduates for work.

M. Pilz (ed.), *India: Preparation for the World of Work,*
DOI 10.1007/978-3-658-08502-5_7,

2 Introduction

Debates over the differential outcomes afforded by a university education, the market value of a liberal versus technical and vocational education, the humanistic knowledge based versus skill based teaching learning approach are of an eternal nature. While there exists a body of academics that argue for the importance of a humanistic education in the personal and intellectual growth of students and the employers too are equally divided in their assessments of liberal or vocationally oriented university programmes, but all value employees who possess the 'employability skills' needed to meet the demands of the new economy – that is, graduates who are socially adept and who have the capacity to solve problems, judge merit, and make decisions. This concept is fast engulfing both employers and employees in developed as well as the developing world.

2.1 Good Quality Human Resource

This section gives a brief account of the rationale for this theme and its salience in the policy debate along with its treatment in existing literature. The fact cannot be denied that a good quality human resource base is extremely important in today's highly competitive environment. The very concept of development has evolved in this direction in the past two decades moving from income and income distribution to human resource development. This is the very reason for the marked shift in the welfare approach of education to the right based approach – providing the foundation for the right to dignified living. Investment in education to develop human capital and its contribution to economic development and growth is evidenced in literature by many authors (Shultz 2000; Becker 1964; Hanushek and Kimko 2000; Krueger and Lindahl 2001; Hanushek and Woessmann 2007; Kingdon and Soderbom 2007; Chadha 2004; Mathur 1990). Macro-economic evidence shows that human capital leads to economic growth (Mankiw et al. 1992; Barro 1997; Barro 2000; Krueger and Lindhal 2001; Stevens and Weale 2003).

The new wave of linking 'education to work' resultant from emerging labour market needs, evidences of higher salaries (income elasticity of HE higher than all other levels of education) and better quality jobs with rising 'skills hierarchy' from the primary to the tertiary levels (World Bank 2002; Chadha 2004; Varghese 2012; Khare 2012) has been quite evident in global education debates in the past decade. Social and economic returns of human capital (generally measured by education attainment levels) are at least as important as those of physical capital (De la Fuente 2003). There are not just direct but also indirect educational benefits

to growth as also type quality and efficiency of education matter (Sianesi and Reenen 2003).

2.2 Shifting Global Priorities

Two emerging shifts that have taken shape in deliberations on Post 2015 Education For All (EFA) / Millennium Development Goals (MDGs) on education seem to reflect the above ideology. These being-Shift in global emphasis from Elementary to higher and Vocational education (18th CCEM) and from access, completion to 'Learning Achievements' post 2015. In fact, in the light of the fact that The United Nations (UN) has made employability one of its four priorities for national policy action on youth employment, the UN's Youth Employment Network has suggested that all countries need to review, re-think and re-orient their education, vocational training and labour market policies to facilitate the school to work transition and to give young people a head start in working life (UN 2001) The close connect between HE and the economy, in particular the labour market has had a long standing. The famous Robins Report as back as 1963 had made an opening observation on the four aims of HE as, "We begin with instruction in skills suitable to play a part in the general division of labour (Robbins 1963) and went to the extent of stating "few would enter HE without an eye to subsequent employment."

3 Education and Employment

3.1 Skills for Employability

Turn of the century, particularly the nineties brought many changes in the world economy. As a result, gradual withdrawal of the State financing and increasing private participation and expenditure coupled with a socio-politico shift towards a more dynamic post- industrial knowledge driven economy has set new aspirations in the society and the resultant demands from the HE system. Both the labour market and the HE system have become more segmented in recent years. While the labour market has become more flexible and limited (jobless growth), the HE systems have become more specialised and costly thereby generating greater concerns over the 'value and returns of a University degree' as against the social prestige attached to it traditionally. The relative looseness in the relationship between HE and the labour market of the yesteryears has thus got ruptured and new questions are being posed on the "specific role of HE in regulating skilled labour, and the overall matching of the supply of graduates leaving HE to their actual economic

demand and utility" (Bowers-Brown and Harvey 2004). Today's universities thus have wider missions than creating and disseminating 'knowledge for its own purpose' 'create good citizens' – the Humboldt's *Bildung*. They are expected to educate build expertise; participate in development of knowledge, and ensure that both the knowledge created and the experts educated are relevant to society. In the context of above stated developments, the realization on wide gaps in 'learning' further extended to ' Employability Skills' in the last decade. The World Bank had defined them to be important for progress of self and nation as back as 1990.

> *"Whether or not expanded educational opportunities will translate into meaningful development – for an individual or for society – depends ultimately on whether people actually learn as a result of those opportunities, i.e., whether they incorporate useful knowledge, reasoning ability, skills and values." (UNESCO WCEFA Declaration 1990)*

According to the Bank, Learning outcomes, refer not only to the "3Rs", but also to soft-skills (teamwork, critical thinking, problem solving etc.) and to 'specific technical or vocational skills related to an occupation' (see chapter 2). This has resulted in changing skills needs (with 'soft skills', such as interpersonal and communication skills increasingly valued (Belt and Richardson 2005) and also a shift towards part-time and more flexible work practices.

3.2 Building the Indian Case

India is today one of the fastest growing economies fuelled by a service sector growth. With a huge human resource base and one of the youngest populations in the world, youth aspirations are riding high on higher education and high-class life style. India's demographic bulge at the centre – with a growing proportion of people in the age group of 15-59 can become its biggest advantage; if handled properly. With a median age of 25 years, India has over 550 million people below the age of 25 year (Pwc 2012). Presently about 11 million students are in the Higher Education system which is barely 20% of the 17-23 year old population which the Government plans to increase to 30% by 2020. Thus the biggest challenge lies in harnessing this so called "demographic dividend" (Pwc 2012).

The changing landscape of the Indian labour market also calls for a broader set of employability skills and their constant up gradation. The role that a responsive as well as dynamic higher education sector can play in harnessing this so called "demographic dividend" cannot be debated at any platform. But, the industry has been rather disappointed with the kind of graduates emerging from our HE particularly for want of the right kind of employability skills. Ironically, it is

not just the uneducated and untrained that have been said to lack skills but it is also the educated that consistently lie below the required standards.

Although, Graduate Employability is not just a rising concern in India but all across the globe, the challenges of skill development and education advancement in countries like India are all the more complex given its large population, vast geographical, cultural, social diversities and gender ethnics. These multiple challenges severely limit the chances of gainful employment – be it paid employment or self-employment. With the gradual withdrawal of the public sector in generating new employment, increasing privatization and globalization, emerging new job responsibilities of a 'Knowledge society', HE in India has come under tremendous pressure for want of giving renewed impetus to lifelong learning and development of skills and competencies. Boston Consultancy Group's study in 2007 had clearly indicated that by 2020 while India will have surplus of 56 million working people, the rest of the world would encounter a shortage of 47 million working people. A more recent estimate of the number of people to be skilled by Mehrotra et al. (2013) puts this figure at 580 million by 2022 with two million getting added every year. The projected numbers required to be skilled by 2022 is about half of this quoted numbers of which a major proportion is to come through formal training and HE (Table No.1).

Formal Vocational Training	136
VT for those informally trained	55
General education higher secondary and beyond	100
Total	291

Table 1: Numbers to be skilled by Education Level in 2022 (in Million). Source: Mehrotra et al. (2013)

However, Skilling this large and growing young population from an exceedingly small base would be a big challenge for India.

4 Overview of Education and Training of Indian Labour Force

4.1 Low Knowledge Base

An important element of India's labour force is its poor education levels. As evident from the Figure 1 it is only 17% who have education higher than secondary level (including HS, diploma, certificate, graduate and above education) – a minimum benchmark level globally accepted for work skills.

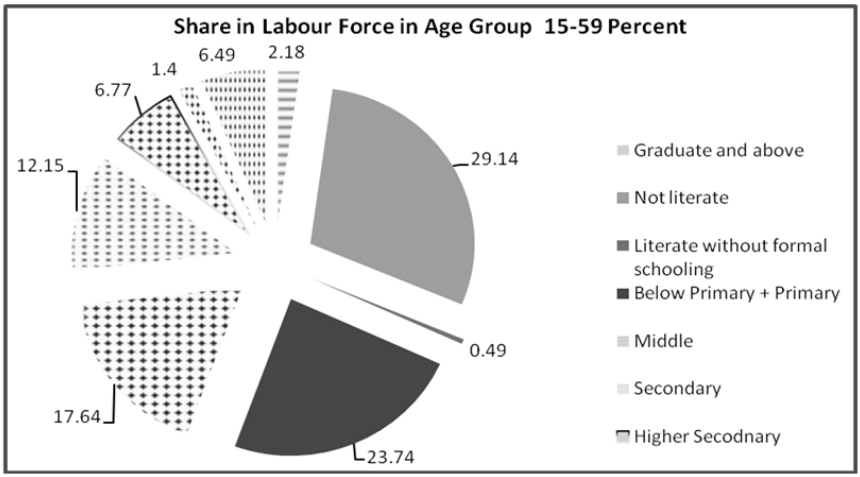


Figure 1: General Education Level of Labour Force. Source: Based on NSS 66th Round (2009-10)

Of these it is only about 8% that possess a formal college education with a graduation plus degree. The proportion receiving any kind of vocational training in this age-group is even worse merely 10% as per 66th Round of NSS (2009-10). Here, too a vast majority of workers received non-formal vocational training.

4.2 Sectoral Share of Educated and Trained Labour Force

A break-up of the data by major sectors – Agriculture and allied occupations, Manufacturing, non-manufacturing and service sectors reveal a far more interesting picture (Figure 2).

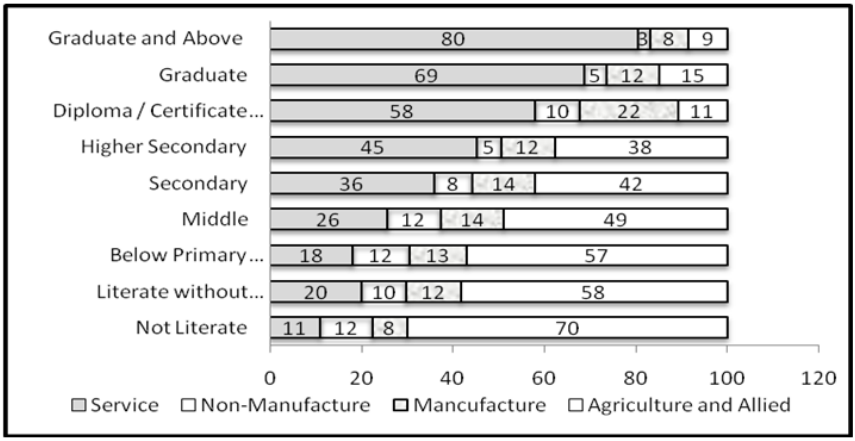


Figure 2: Sectoral Share in Labour Force in age group 15-59 by education level (%). Source: NSS 66th Round (2009-10)

A clear-cut preference of highly educated in the service sector can be deduced with almost reversal of the percentage occupied in the service sector from the higher secondary level (42% of secondary graduates being occupied in agriculture sector and 45% of HS graduates employed in service sector). This percentage is as high as 70% and more for those that possess a college degree.

What is even more worrisome is the fact majority have been trained informally. Formal system includes: (i) higher technical education being imparted by professional colleges (ii) vocational education being imparted in schools (iii) technical training being imparted by specialised institutions and (iv) apprenticeship training provided by the industry. A number of agencies provide vocational education/training at various levels (GoI 2008). "Dependence on non-formal vocational training to such an extent highlights the grossly inadequate system of vocational training that currently exists in the country" (GoI 2013). In the agriculture sector, the most predominant source of informal training is hereditary sources while in the manufacturing it is on the job. Among the trained, as high as 86% in agriculture and 91.7% in manufacturing sector are those that have only received non-formal training. It is only in the Services sector that the share of formally trained is reasonably high (64.4%) (NSS 2009-10).

This clearly reveals the preference of highly educated and formally trained workers in the fast growing services sector. This preference is a fall out of both-service sector employees preferring highly educated trained employees and vice versa. Unfortunately, it would not be correct to claim that this is because of

India's economic transition directly from agriculture to the services sector that today contributes about 75% of India's Gross Domestic Product (GDP). Because, the case on the employment front is not the same where still a majority are occupied in the agriculture and allied activities a major section of which is subsistence level traditional agriculture. However, future projections reveal that 60% increments in the jobs would be in the services sector. This should be considered positive in the light of India's demographic bulge at the centre – with a growing proportion of people in the age group of 25-50 who are constantly craving for white collared jobs. Similar, sectorial shifts towards various service industries elsewhere in the world should also be considered a welcome trend for India's HE graduates provided they are able to reap the benefits by their competitive edge. The current picture although is far away from being rosy.

On one hand there is an excessive dependence on non-formal system of vocational training and on the other hand the young graduates coming out of the formal HE system are unable to meet the industry expectations on job readiness (see chapter 12). The huge gap between the supply of educated and also employable human resource and its demand by labour market in the country is indeed an early warning signal. This gap is almost 50% for most of the high growth tech sectors in the country. As per a NASSCOM report only one fourth of India's engineering graduates and only 10% of its other graduates are employable. Another recent study by PurpleLeap reveals that one third of graduates from the Tier II, III and IV engineering colleges are not employable even after interventional training. The number of readily employable graduates in Tier II, III and IV colleges equal the number of the total talent pool in tier I engineering colleges (TOI 2012) which jointly contribute to less than 1% of the engineering graduates in the country. On a scale of ten the gap between the employability of technical graduates between Tier I and Tier II cities is worrisome.

The situation is far worse in case of graduates from other streams. A slide in India's global ranking in the 5th pillar of global competitiveness Index pertaining to Higher Education and training, from 55 in 2007-08 to 85 in 2010-11 is further testimony to the above observations. (The Fifth pillar: Higher education and training of this index measures secondary and tertiary enrolment rates, quality of education as evaluated by the business Community and the extent of staff training for ensuring a constant upgrading of workers' skills.) The growing number of educated job seekers is bound to aggravate the above crisis.

5 Education Profile of Indian Jobseekers and Labour Market Trends

5.1 Educated Job Seekers Increasing

Though, even today a large chunk of India's labour force is engaged in the informal sector, the percentage of illiterate workers is continuously decreasing from 57.5% in 1983 to 48.5% in 1993-94 to 44.1% in 1999-00 to a further down to 38.8% in 2004-05 with a corresponding increase in the educated workers. Not only the headcount number but also the percentage of educated job seekers to total jobseekers has increased from 70.7% in 2000 to 76.5% in 2009. On one hand the percentage of educated job seekers is increasing (Figure 3) while on the other a very miniscule percent is getting placed (Figure 4). Out of the ones that registered themselves with the employment exchange, not even 5% are getting placed. This is a rather scary picture.

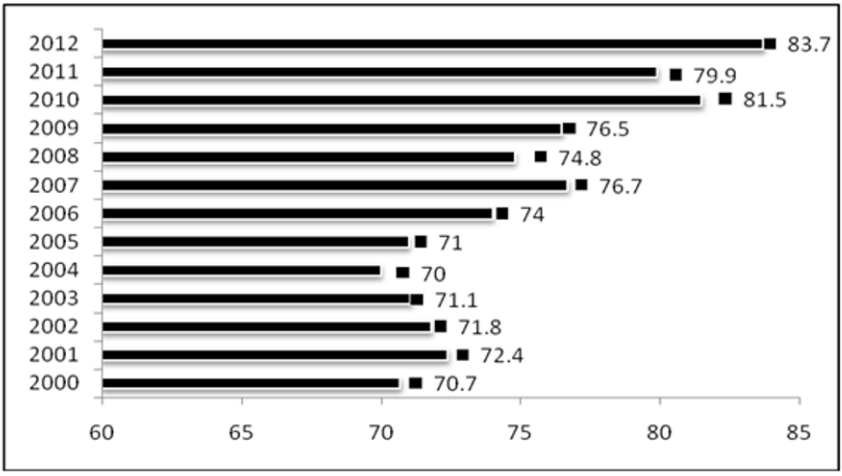


Figure 3: Percent of Educated Live Register to Total Live Register in Employment Exchange. Source: DGET (GoI) (various years)

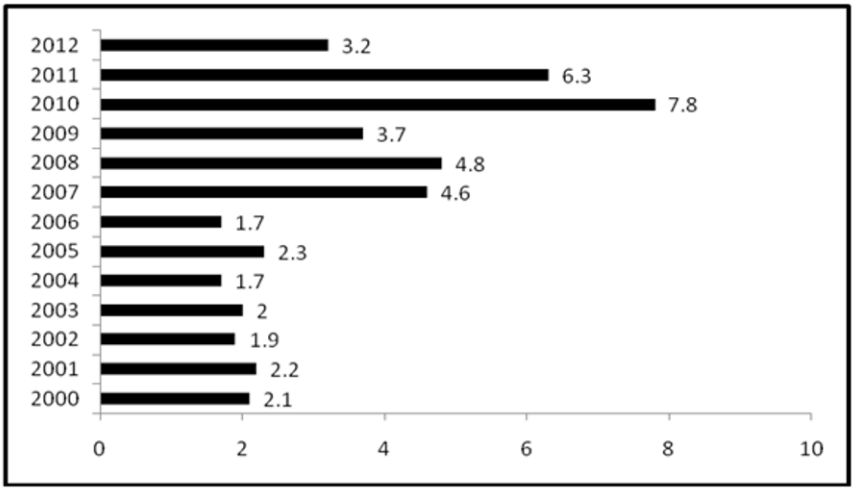


Figure 4: Percent placement to Total Live Register in Employment Exchange. Source: DGET (GoI) (various years)

5.2 Increasing Share of Higher Education Graduate Job Seekers

Today, increasing number of persons is registering themselves in the employment exchanges in the country, a major share of who are educated. Though, not all educated job seekers register themselves with the employment exchanges, the figures give a fairly good picture of the educated jobseekers, given the fact that out of the total number of vacancies notified during 2010 (0.71 million) around 72% (0.51 million) were filled through employment exchanges.

As is evident from Fig. 5 amongst the educated job seekers it is the percentage of graduates that has witnessed greatest increase in the past few years. This percentage has gone up from 17.85% in 2004 to 26.64% in 2008, registering a 8.79% increase. Also the number of graduate and above in the workforce increased from 23.6 million in 2001 to 33.3 million in 2005 to a further of 50.5 million in 2010.

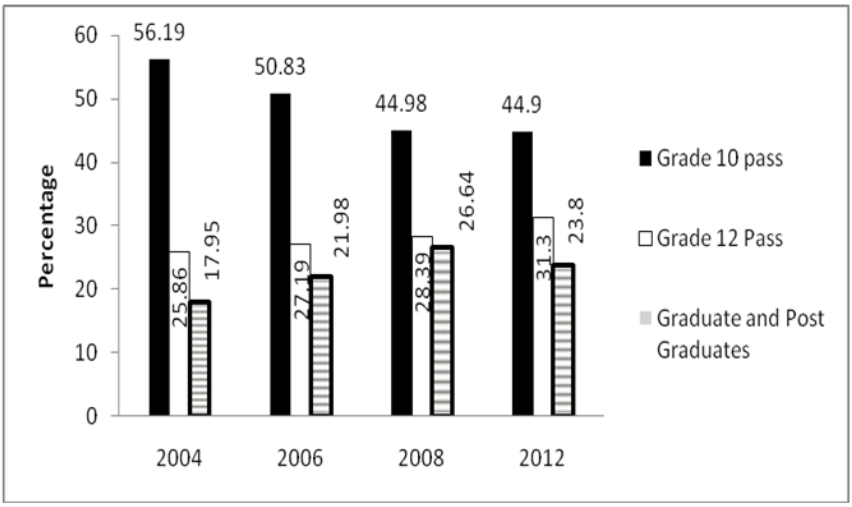


Figure 5: Educated Job seekers by Education Level. Source: Employment exchange statistics, DGET (GoI) (respective years)

While 10th grade pass still comprise the major chunk of educated jobseekers, their percentage is falling with each passing year. This increase can be explained by two facts, one rising graduate population in the country and two better quality of employment for those with higher education degrees. Studies across globe have proved that income elasticity of HE is much higher than all other levels of education (World Bank 2002; Varghese 2012). The type of work that HE graduates are engaged in reveals one distinguishable positive feature. Almost 50% are regular workers closely followed by self-employment. Only a very small percentage (less than five) are casual workers (Khare 2014).

5.3 Educated Job Seekers by Major Disciplines

A break-up of graduate job seekers by streams of study reveal that majority are from general academic disciplines with Arts graduates topping the list comprising about 40% of the graduate job seekers (Khare 2014). Also, last few years have hardly seen any change in their percentage shares by major disciplines. Only a marginal dip is observed in the percentage share of science, engineering, veterinary and education graduate job seekers. This is indicative of the fact that it is comparatively easier for engineering and science graduates to get employed may be for the simple reason that industries and occupations related to engineering and

science have been amongst the top five on employment index across major regions of the world. It can be seen that there is a heavy congregation of industries like IT/ITES, Health and community services, environment, Architecture, Bio tech, life sciences, Pharmacy, Ago-based and allied in the top growth group across all major regions of the world, all of which draw from the graduate pool of science and technology. In addition these graduates are also employed in large numbers even in non-engineering occupations and industries (Khare 2014).

5.4 Skills Challenge of Higher Education Graduates

Of the 500 million to be skilled by 2020 in India 25% is at the college plus level which translates to 125 million in figures (IMaCS 2008). Educating and skilling this huge mass in new knowledge and skill domains would be a huge challenge for the Indian higher education sector. The Planning Commission has identified twenty high growth sectors expected to provide employment to the burgeoning labour force in the coming years. These are Auto and Auto, Building and Construction Materials, Building and Construction, Real Estate Services, Electronics and IT Hardware, Education and Skill Development Services, Food Processing, Gems and Jewellery, Healthcare, Textiles, Leather and Leather Goods, Organised Retail, Tourism and Hospitality, Transportation and Logistics, Media and Entertainment, BFSI, Chemicals and Pharmaceuticals, Furniture and Furnishings, IT and ITES. Out of these, currently in India, graduate workforce is concentrated in limited sectors. After the IT/ITES where the percentage of graduate workers is much higher than one half closely followed by financing services, no other sector is employing a sizeable proportion of graduate workers except for community and personal services, power, trade and hotel. Education sector, which has quite a high share of graduate and above employee, has been kept out of this comparison (Figure 6).

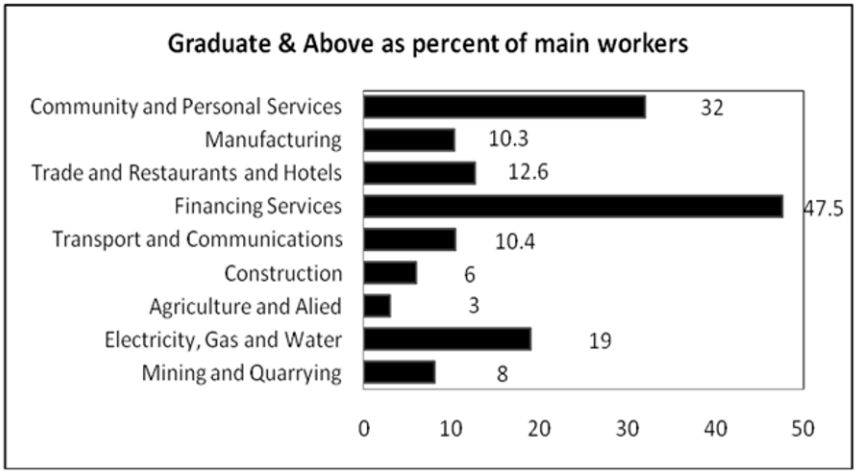


Figure 6: Sector wise Share of Higher Education graduate plus Workers. Source: Khare (2012)

Low percentage of graduate and above workers in certain sectors is self-explanatory for they may require skilled but not highly educated workers. These include Agriculture and allied, Transport and construction. A low percentage of only 10% graduate and above workers in manufacturing can be explained by way of a sizeable share of House Hold Industries (HHI) in Indian Manufacturing. Out of a total of 41.6 million, 16.9 million fall in the HHI category.

An industry wise breaks up of just the incremental human resource requirement till 2022 in India. IMaCS, *National Skill Development Corporation (NSDC)*) shows that Auto and Auto component, building and Construction, textiles and clothing, transport and logistics, organised retail, real estate and healthcare are going to be on the higher end of the spectrum adding up to a total of 155.9 million additional jobs. Most of these sectors currently employ very low percentage of graduates as main workers. But, as per a recent report on hiring intentions for graduates in India, (Graduate Development Service Newsletter 2012) though manufacturing, insurance and chemical segments will have strongest hiring intentions but technical and engineering functions will have the greatest headcount increase. The most sought after jobs will be in sales, engineering, and research and development functions at the junior-management level. Thus, even if demand in the traditionally robust sectors in India as per past trends, namely BFSI, IT and ITES, Electronics is going to be lower in no way will it undermine the importance of these sectors, for if not locally, additional demand would be generated globally as most developed countries are fearing acute shortage of engineers

and professional technicians. Skilled trades positions are currently the most difficult to fill in Europe, the Middle East and Africa (EMEA). While employers in America find engineering posts the hardest to fill, those in Asia Pacific term them to be sales representative (Talent Shortage Survey Research Results Manpower 2012).

Any attempts at making the transition of the HE graduates to these trades easier and smoother would require to keep these macroeconomic employment projections in mind. It is only of lately that attempts to capture these trends and developing occupational skills classification has been undertaken. But, for the university and college systems to gear themselves to this kind of teaching and training may take a longer time for two major reasons – convincing as well as training the teaching faculty for this educational transition.

6 Education to Work Transition in India

A brief profile of the Indian HE system would in itself throw light on the sector's preparedness for producing job ready graduates.

6.1 Education System in India

India has one of the largest education systems in the world by numbers. Historically it has been a three phased segmented system of General (academic) education, Technical and professional education and vocational education in the country. The General academic education comprises of Arts, Science, Commerce, Humanities and Social Sciences; Technical Education consists of courses and programmes in engineering, technology, management, architecture, town planning, pharmacy and applied arts and crafts, hotel management and catering technology and vocational education comprises of vocational courses offered at secondary school and HE level largely by way of certificate and diploma programmes by the Ministry of Labour and Employment (MoLE) as well as few other ministries and stand-alone institutions of the Ministry of Human Resource Development (MHRD). The role of university sector in imparting vocational education and training is very miniscule. Therefore, it is the last two segments which traditionally worked with the objective of preparing students for the world of work, while the first system is generally oriented towards preparing individuals with humanistic and social values. The main objective of the technical and professional education system is to prepare qualified manpower for the organised manufacturing and that

of vocational education is to prepare trained workers for the lower end organised/unorganised sector jobs.

The present education system in India mainly comprises of primary education, secondary education, Higher/senior secondary education and HE. Elementary education consists of eight years of education. Each of secondary and senior secondary education consists of two years of education (see chapter 3). HE in India starts after passing the higher secondary education or the 12th standard. Depending on the stream, HE graduation in India can take three to five years (three for academic programmes, four for engineering and five for medical). Post graduate courses are generally of two to three years of duration. Post-graduation, pre-doctoral, and doctoral programmes as well as research opportunities exist in a wide range of subjects in various educational institutes. In the past two decades there has been a massive expansion as well as diversification of the Indian Higher education system (see chapter 1).

6.2 Higher Education System in India

Under the overall ambit of the MHRD the higher education institutions in the country can be classified under the following major types – University (Central, State, Private Deemed, Open), Colleges and Stand-Alone Institutions. The number of Universities has increased 34 times from 20 in 1950 to 677 in 2014 and that of colleges 74 times with just 500 in 1950 to 37,204, as on 31st March, 2013 (MHRD 2013). As per the All India Higher Education Survey (AIHES) 2011-12 there are an additional 11,126 Stand Alone Institutions in the country. The current status of various types of universities is depicted in Table 2.

Type of University	**Number**	**% share**
Central Open University	1	0.2
Central University	42	7
Government Deemed University	38	6
Institution Established Under State	5	1
Institution of National Importance	59	9
Private Deemed University	79	12
Private University	105	16
State Open University	13	2
State University	286	45
Govt. added Deemed University	11	2
Other	3	0.5
TOTAL	642	100

Table 2: Type wise details of Universities. Source: AISHE (2011-12)

Although, most universities are under public domain, private universities are fast increasing. In fact, private sector growth trends are more dominant in the case of colleges affiliated to public universities. All private universities are only non-affiliating unitary in nature. Of the 642 universities, 195 Universities are privately managed and 232 are located in rural areas. Eight Universities are exclusively for women. An all women Technical university was opened in 2012 at the national capital. Few universities are of unitary types with single or multiple campuses, domestic and overseas extension centres, but more are of affiliating type. The colleges may be Government or private aided or unaided as well as Autonomous. Most universities and colleges offer programmes in multiple disciplines under three major faculties of Arts, Science and Commerce. Specialised universities and colleges offering single discipline programmes like engineering/Technology, management, Agriculture, Law, Medical, language, pharmacy, Performing arts, Design etc. also co-exist. There are 88 Technical, 50 Agriculture and Allied, 29 Medical and 18 Law Universities (AISHE 2011-12).

The Table 3 shows the major categories of HE institutions in the country – the three broad categories being Industrial Training Institutes (ITI), University sector with affiliated colleges and Stand Alone Institutions of National Importance.

1. ITI (Boards of Apprenticeship Training-BOAT)	NITs
2a. Central Universities	AIIMS
2b. Public Sector Universities	National Institutes of Planning and Architecture
2c. Private Universities	NITTTRs
3. Institutions of National Importance (stand Alone)	Planning
IIMs	Sanskrit and Vedic Institutions
IISc. Bangalore & IISERs	UNESCO
IITs	Institutions related to Hindi and other Indian Languages
IIITs	others

Table 3: Categories of the institutions. Source: Compiled by author from UGC website (2015)

With the aim to reach out to the masses in an economical and faster manner, another, new feature is the emergence of distance education Higher Education Institutes in recent times. In 2005, there were 12 open universities (including the Indira Gandhi National Open University – [IGNOU)]) and 106 dual mode university distance education institutes / centres in the country, catering to over 2.8 million students. Today, the numbers have increased to 14, 182, and 3 million respectively.

In addition to one Central and 13 State Open Universities, there are 108 Dual mode Universities, which offer education through distance mode.

Entry of Foreign education providers is a relatively recent phenomenon but mostly by way of twinning arrangements and programme –based collaborations with hardly any offshore or branch campuses. In 2005 there were around 131 such foreign education providers offering mostly vocational or technical programmes. These were mainly from the USA or the UK but none from the top bracket of universities in these countries (Bhushan 2006). The size of this sector though still small and elitist is all poised to increase fast with the passage of the long awaited foreign education bill.

Many of the new universities and colleges particularly in the private sector run job oriented courses. Single discipline professional universities and colleges, twinning arrangements with foreign universities etc. have come up both in public and private domain but more in the latter.

ITI (BOAT): These institutes are running under the overall purview of the MoLE and are categorised as Vocational Training Institutes. Vocational education normally refers to vocational programs at school and higher education level, while vocational training refers to trade/craft education.

The training and education under various schemes and programmes here are open not only to school graduates ranging from class V to class XII but few schemes are available to HE graduates also. Three important schemes to be mentioned here are the Craftsmanship Training Scheme (CTS), Apprenticeship Training Scheme (ATS) and the SIDBI Training of Graduate and Diploma Engineers as 'Graduate' and 'Technician' Apprentices and also of the 10+2 vocational stream graduates / students as 'Technician (Vocational)' Apprentices is provided (see chapter 4).

Stand Alone Institutions: These fall under two categories those offering degree equivalent diploma programmes and the ones offering degree programs. Table 4 provides a list of the ones awarding both undergraduates, postgraduate as well as Ph.D. degrees as also Post Graduate Diplomas considered equivalent to post graduate degree.

Name of the Institute	number
Indian Institute of Technology (IITs)	16
Indian Institute of Information Technology (IIITs)	4 Govt. + 16 (PPP)*
Indian Institute of Management (IIMs)	13
Indian Institute of Science (IISc)	1
Indian Institute of Science Education and Research (IISERs)	5
National Institute of Technology (NITs)	30
Indian Institute of Information Technology and Management (IIITMs)	4
National Institute of Technical Teacher's Training & Research (NITTTRs)	4
All India Institute of Medical Sciences (AIIMS)	7
Others (SPA, ISMU, NERIST, SLIET, NITIE & NIFFT, CIT)	9
Total	**82**

* MHRD as on 05/06/2015
** MHRD as on 23/04/2015

Table 4: Major Stand Alone degree awarding institutes. Source: MHRD (2015)

In addition there are few others offering highly specialised education in special disciplines. To name a few Indian Statistical Institutes, Rajiv Gandhi National Institute of Youth Development, Academy of Scientific and Innovative Research, Tamil Nadu, Dakshina Bharat Hindi Prachar Sabha all of which fall under one or the other types mentioned in Table 4.

The Stand Alone Institutions offering mainly diploma programmes which are largely market oriented with a view to give the students a comparative advantage in the job market are another important category when it comes to imparting work relevant education. Most of the Stand Alone Institutions 78.7% are privately run. 68.3% are private unaided and only 10.4% are private aided. Only 21.3% are Government run. 55% are in rural areas. As is revealed by the table, the teacher training institutes top the list followed by the technical training institutes i.e. polytechnics.

Polytechnic education: Most of the polytechnics offer three year generalized diploma courses after Class X in conventional engineering disciplines such as Civil, Electrical and Mechanical Engineering. But, keeping in line with a more specialised and diversified labour market they have started offering courses in other disciplines such as Electronics, Computer Science, Medical Lab technology, Hospital Engineering, Architectural Assistantship etc. post 1990. In addition to these there are many single technology institutions that offer diploma programmes in non-engineering areas like Leather Technology, Sugar Technology, and Printing Technology etc. also exclusively for women in Women's Polytechnics such as Garment Technology, Beauty Culture and Textile Design. Polytechnics are meant

to provide skills after class X and the duration of diploma programmes is 3 years, which means, the trainee becomes employable at the age of 19 years. Some Polytechnics also offer post diploma and advanced diploma programmes of one to two years duration in different specializations. The aim of the polytechnic education is to create a pool of skill based manpower to support shop floor and field operations as a middle level link between technicians and engineers. Few studies have shown that these diploma holders are preferred by small and medium Industry for their special skills in reading and interpreting drawings, estimating, costing and billing, supervision, measurement, testing, repair, maintenance etc. (Goel 2009).

However, here too the anomaly is that the ratio of degree to diploma holders is around 2:1 as against the ideal 1:3. Two major reasons behind this unwarranted imbalance is the societal perception that degrees command a premium in the job market rather than diplomas, along with the stigma attached to a diploma vis-à-vis an engineering degree. The problems of quality and relevance as in the ITI sector also plagued the Polytechnic education in the country so that they started deteriorating and stopped attracting youth talent.

Another important type of work specific education that started growing by leaps and bounds in recent past is *Teacher education* (see chapter 9). This type of education is specially imparted to train Elementary teachers (Diploma in Teacher Education or a Primary Teacher Certificate, P.T.C.) post class XII; Secondary teachers (one year Bachelor's degree in Education – B. Ed. or Bachelor of Teaching) post undergraduate degree or four year integrated programme; upper secondary teachers (M. Ed i.e. master's degree in their area of teaching specialization). The NCTE is the regulatory authority concerning all matters related to teacher education, including quality, content and evaluation.

One thing that needs a special mention regarding the Stand alone Institutions is the fact that maximum of them (more than 50%) are offering only engineering and technology related education followed by Management education. Here, too quality is a major problem in mostly the diploma awarding institutions. While amongst the degree awarding ones many are top brand globally recognised. These include few IITs, IIMs, IIITs, NITs, AIIMs, IISc etc.

6.3 Trends in Higher Education Growth

Massification: Massification in terms of both number of institutes and enrolments, (Varghese 2014; Khare 2012, 2014; Agarwal 2010) privatization and professionalization (Khare 2012, 2014; Agarwal 2010) have been three well-recognised trends in Indian HE in the past few years. Under the on-going 12th Five Year plan (2012-2017) the proposition is to expand the higher education sector in all its

modes of delivery to increase the Gross Enrolment Ratio (GER) in HE to 21% by the end XII Plan and 30% by the year 2020.

Although, post liberalisation the professional education sector has been growing fast yet there still is heavy concentration of students in the general academic sector. Vocational education sector has been the least in demand for a variety of reasons stated in the previous sections.

Enrolment by major disciplines reveal that about 80% students are enrolled in undergraduate level programme and less than 0.5%, are enrolled in Ph.D. programmes. Maximum numbers of Students are enrolled in B.A. programme followed by B.Com. and B.Sc. programmes. Only 15 programmes out of approximately 150 cover 83% of the total students enrolled in HE. At Undergraduate level the highest number (40%) of students is enrolled in Arts/Humanities/Social Sciences courses followed by Engineering and Technology (17%), Commerce (15%) and Science (12%) (AISHE 2011-12).

Professionalization: Growing professionalization of HE in recent decades is usually claimed as fallout of industry requirements. The growth trends in the HE being largely determined by the skill needs of a growing economy with greater emphasis on operational knowledge rather than scientific/academic knowledge as in other parts of the world.

YEAR	GENERAL	PROFESSIONAL	VOCATIONAL
2001-02	-0.71	19.08	11.96
2002-03	6.57	36.05	8.60
2003-04	5.95	8.62	-0.75
2004-05	5.67	16.97	1.26
2005-06	5.30	12.36	1.24
2006-07	5.01	12.38	3.69
2007-08	4.76	12.24	2.05
2008-09	4.54	12.05	2.17
2009-10	4.33	11.78	2.20
2010-11	4.14	11.65	2.22
2011-12	3.98	11.39	2.25

Table 5: Annual Growth in enrolments by type of education. Source: Khare (2014)

As is evident from the table 5 the growth in general academic enrolments has remained even less than half that of the growth in enrolment for professional courses through the entire decade; the growth in the vocational courses being much lesser.

The distribution of students, across various faculties, clearly reveals concentration of students in Arts Faculty followed by science, commerce/management. In fact, in the year 2012 13,74% of the total enrolment had been in the three faculties of Arts, Sciences and Commerce / Management while the remaining 26.70% had been in the professional faculties, Engineering/Technology recording

the highest (16.05%), followed by Medical courses (3.52%), etc.(UGC annual report 2012-13). Thus, although there may be a wide variety of institutions offering job oriented, specialised courses but they are not for the majority because of being limited in number with more being fee charging private institutions, merit based standard admissions tests, higher fee structure. The limited size of this sector as revealed by the ratio of professional to non-professional enrolment (1:3) certainly demands a relook at a policy level change to rationalise and reduce this disparity and need to focus on Vocationalisation of education (UGC Annual Report 2012-13).

All the more, even though there has been rapid professionalization of HE this has been skewed in favour of just engineering technology and management programmes (Khare 2014).

This skewed growth of the HE has serious ramifications for the job potential of the graduates coming out of various disciplines. The first three places in enrolment is occupied by Arts, Science and Commerce as also in terms of jobseekers. Since they form the major chunk of graduate enrolments they also constitute the major chunk of job seekers. But, more important is to note the mismatch between these percentages in engineering/ technology and education streams. Though the percentage share of engineering enrolment is high their share in jobseekers is low. In contrast to this though the share of student enrolment in education stream is pretty low but its share in the jobseekers is much higher. This shows that while engineering and technical graduates are able to find jobs more easily, many directly through campus placements, even the small percentage of graduates in certain other streams are unable to do so (Khare 2014).

The growing popularity of engineering courses is thus, in no way surprising. Medicine and veterinary sciences is fast catching up but Arts, science and even commerce and management enrolments could not grow at half the pace of engineering technology. A look at five yearly growths of enrolments between 2006-07 to 2010-11 speaks volumes on this disparity (figure 6).

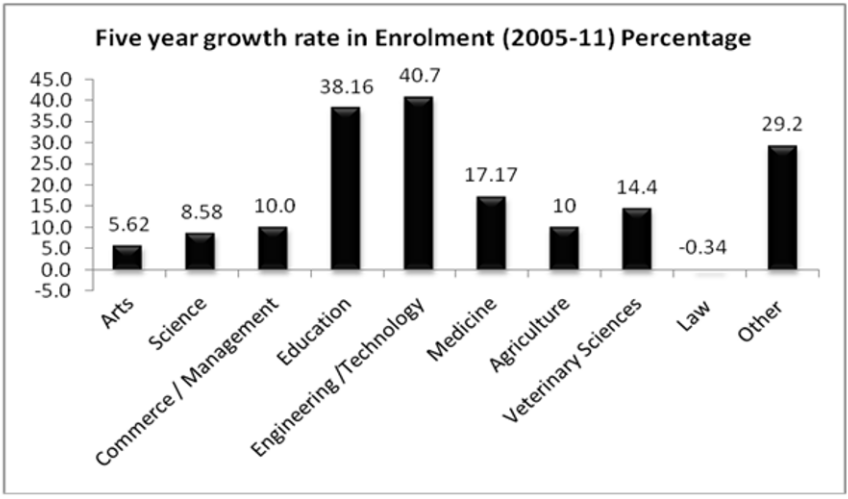


Figure 7: Growth in enrolments by major disciplines. Source: Authors' calculations (based on UGC Reports 2005-06 and 2010-11)

Such trends in India match with experiences elsewhere in the world. Carnoy (1987) in his study showed that the graduates from the arts faculty had the highest unemployment rate, followed by science and commerce. Compared to this, students graduating in education, engineering, law, or medicine had better employment prospects. Another, undesirable observation made by him is that such students with professional qualifications were often from higher socio-economic background.

However, recent years in India have seen some change of course with few non-traditional disciplines like Music/Fine Arts, Library Science, Physical Education, Journalism, Social Work, and Travel and Tourisms, etc. clubbed under others witnessing remarkable growth in enrolments. This is reflective of the changing mind set of the society at large and the youth in particular. The youth today have become more enterprising and open and are ready to experiment with new job spheres. They take bold decisions to follow their hearts and aptitudes in choosing their lines of study followed by careers. Yet another stream of study that has caught the fancy of our young learners is education as evidenced by the high rate of growth of student enrolments in education stream. This sudden popularity in education discipline may be explained by way of growing number of educational institutions requiring huge mass of school/college and university teachers and other non-teaching educational professionals.

Privatisation: Increasing participation of private sector in offering such professional and vocational courses as an easier and faster recourse to profiteering by claiming to plug the demand supply gap of ready to work graduates is also a concern. Not that Government has made any efforts in this direction (see chapter 8). A scheme of Vocationalisation of education at the university / college level was started in the mid-nineties and made more flexible and elaborate in the year 2003-04. The idea was to allow the students to pursue utility oriented certificate / diploma courses along with their regular study programmes. A large number of universities and colleges, since then, have received assistance under this scheme particularly in the last two decades but the quality of delivery of vocational programmes has by and large been poor with very little industry linkage.

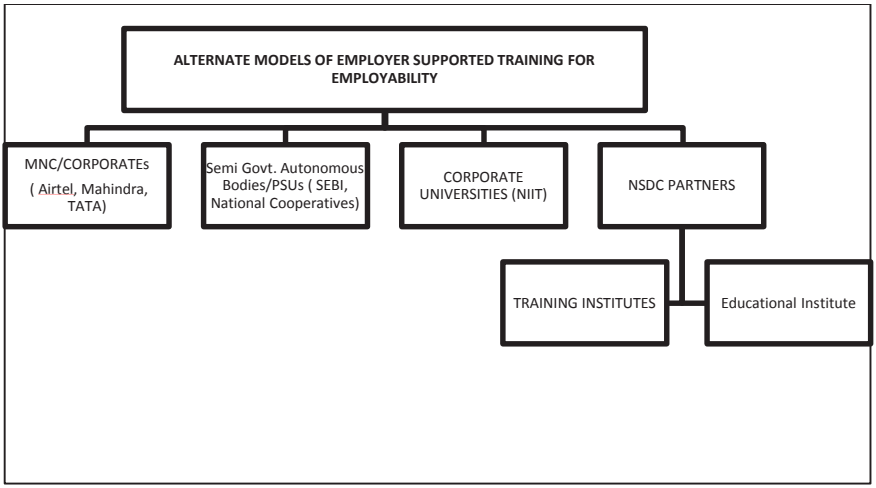
Additional on campus support: In addition to these job specific specialised education attempts were made at the university and college levels to provide some additional support by way of opening Cells for Career counselling and guidance, equal opportunity cells, special schemes, remedial classes etc. for the minority, women and other underprivileged groups in order to provide them guidance and training in English communication, computer skills as well as preparation for entrance tests to higher levels of education/research and Government jobs. Career and Counselling Cell in Colleges and Coaching Classes for entry in services for SC/ST/OBC (non-creamy layer) and minorities need a special mention here. The schemes were formulated to address the diverse socio-economic challenges and geographic backgrounds of the heterogeneous population of students coming to the Colleges vis-a-vis equity of access and placement opportunities through availability of appropriate institutional support information. The coaching scheme aims to prepare students belonging to SC/ST/OBC (non-creamy layer) and Minority communities to get gainful employment in Group 'A', 'B' or 'C' Central services, State services or equivalent positions in the private sector. It is therefore required that the coaching under the scheme should be oriented for particular examinations conducted for selection to services, such as the IAS, State Public Services, Bank recruitment, etc. and may be crafted around specific requirements of a particular competitive examination. There was also a proposition that colleges may develop an Employment Information Cell for providing information about various competitive examinations in the area of its operation (UGC 11th Plan guidelines, UGC Annual Report 2012-13).

Unfortunately, the implementation of these schemes too remained just a routine business with little interest of faculty in charge or other resource persons inside and outside the institutions to contribute genuinely and effectively in these activities because of poor remunerations attached. Non-serious and conventional system of providing information or training in a routine repetitive manner year after year made even the students wary of taking benefit of such schemes. In the

absence of active guidance and use of modern methods including information technology to quickly retrieve and circulate information details for the benefit of all concerned, these cells became almost non-functional. In contrast, the private institutions, at least the good and reputed ones spend a lot of time and energy in maintaining the Placement cells for pre preparation and on-campus recruitment of students.

HE Reforms: Some changes were also made by way of curricular and examination reforms. Most universities adopted semester system, CCE (comprising internal and external assessment – mostly internal assessment based on attendance, ex-curricular participation, assignments and presentations, group work etc.) some compulsory courses on general, value based subjects like environment science, foundation courses, English language were made compulsory at the UG level.

Off campus Training: In addition to a university degree the students are in parallel approaching different types of training /educational institutions to augment their employability. Also there is an increasing awareness and attempt to provide such support on-campus by various public and private higher education universities and colleges. A broad classification of these institutions to support the above framework is given below (Box No. 1).



Box 1: Off Campus Training and Employer Supported Institutions (Compiled by author)

7 New Initiatives – Rejuvenation and Vocationalisation of Higher Education

Learning from past experiences and from good practices around the world recent years in India have seen not just a renewed emphasis on Vocationalisation of HE but a complete policy shift of making HE responsive to the labour market needs. While some piecemeal efforts were being made by various regulatory authorities like UGC, AICTE etc. in this direction from the decade of eighties but a well-structured approach to integrating skill delivery with formal education system made its presence felt only in 2009 with the formulation of the National Skills Policy in the country.

7.1 Skills Drive in India – National Skills Policy

With the aim to Enhancing Skills to Reap Demographic Dividend a comprehensive National Skill Development Mission was created during the Eleventh Five Year Plan and an all-encompassing comprehensive and inclusive Skills Policy was launched in 2009. As a result, a three-tier Institutional Structure consisting of (i) PMs National Council (ii) National Skill Development Coordination Board (NSDCB), (iii) NSDC has been put in place. The policy aims to enable effective coordination between different ministries, the Centre and the States and public and private providers for creating institutional mechanism for research, development, quality assurance, examination and certification, affiliation and accreditation and coordination of skill development across the country. The Policy has in its gambit to promote institution-based skill development including ITI/ technical and vocational institutions/ polytechnics/ professional colleges.

Sector specific Skills Councils have been created for each of the 20 high growth sectors identified by the GoI. The NSDC has geared to train youth with or without degrees through variety of activities via PPP mode of Financing Skill Development. The education sector has been revamped to implement the newly designed National Vocational Educational qualifications Framework – NVEQF to be operationalised as per the National Occupational Standards (NOS). The new framework provides for seamless movement from vocational to university education starting with level 1 certification from grade IX to University education. Moving from level 1 to level 7 the new framework ends with a Bachelor's degree (college undergraduate at the 7th level). Beyond these levels 8, 9 and 10 refer to post graduate and doctoral degrees.

Multiple Pathways have been created for exit and entry at different levels to allow for movement from education to work and vice versa (vertical mobility)

as also between vocational and academic education (horizontal mobility. The new framework also allows for Recognition of Prior Learning (RPL) by family and other informal routes. With assessment of prior learning a candidate can progress towards a community skill Diploma in a community college / Polytechnic in a special flexible curriculum as determined by UGC and AICTE from time to time.

Driving other stakeholders: The private sector too has stepped up to join the skilling brigade by entering into collaborations with universities/colleges or by way of taking their own initiatives a large number of industries/corporations/MSME have entered into partnership with NSDC (see chapter 7 and 8).

Building a continuum for skill delivery: A 'sector wide approach' and shift in focus from quantity to quality is clearly visible in all recent Government documents at all levels of education. Also measures have been taken to address the issue of employability skills by investing in infrastructural development, teacher training, faculty and curriculum development. Specific efforts have been made to integrate elements of skills delivery right from elementary to higher level of education. Emphasis on developing basic and life skills – basic numeracy and language, value based education, financial literacy at elementary level; renewed impetus to large scale Vocationalisation at secondary level; expansion of technical and vocational education, rejuvenation of huge network of existing universities are all geared towards making the transition from education to work easier and smoother.

7.2 Ministry of Human Resource Development Initiatives

There is now a renewed emphasis on Vocationalisation of education including HE. The vocational space would be deepened and widened in years to come.

Catching them young: Not only quantitative expansion of vocational education capacity but bringing it progressively downwards to lower classes. The NVEQF allows for a shift from two-year stream (classes XI and XII) to a four year stream that begins at Class IX thus facilitating to captures ninth class drop outs. It is also proposed that later vocational education can commence from class seven onwards. At the lower school level the emphasis would be given to impart generic soft skills that fall under the category of functional skills for getting employment viz. English language skills, quantitative skills, computer literacy, spread sheet, word processing, computer graphics, presentation skills, behavioural and interpersonal skills etc.

Boost to HE Vocationalisation: The two apex level regulatory authorities of general academic and professional technical education have initiated schemes and strengthened the existing ones to incorporated elements to skill delivery under

the new NSQF. The Scheme of Career Orientation to Education/ Career Oriented Programme/ Career Oriented Courses in Universities and Colleges that was started with the aim to provide knowledge, skills and aptitude for gainful employment in wage sector in general, and self-employment in particular to undergraduate pass-outs so as to reduce the pressure on institutions of higher learning for Master's Degree programmes and research just as a time pass activity has been expanded and redesigned to include more credits for practical training. These courses run parallel to the conventional B.A., B.Com. and B.Sc. degree and are inter-disciplinary in nature. The students shall have the freedom to diversify into various fields, not necessarily related with their core discipline e.g. a science student could side by side pursue a course in Event Management, and student of Arts background have the option to pursue a course in Science Journalism, etc. (UGC Annual report 2012-13). During the XII Plan, 793 courses have been approved for the next five years to 522 institutions (516 colleges and six universities) for introduction of Career Oriented Courses.

The scheme of Community Colleges (CC) and Bachelor of Vocation (B. Voc.) as well as KAUSHAL Kendras launched by UGC/ AICTE need a special mention here. With the aim to develop a synergistic relationship between Community, CC and Job market UGC and AICTE (2012-13) have approved CC to offer

> *"low cost high quality education locally, that encompasses both traditional skill development as well as traditional coursework, thereby providing opportunities to the learners to move directly to employment sector or to move to higher education sector. It offers a flexible and open education system which also caters to community based life-long learning needs." (UGC 2012-17)*

Allowing for certification at various levels of NSQF the courses offered should have a knowledge-skill mix and their duration be determined by the local industry needs (see chapter 13). The target group here are the students currently pursuing HE, but actually interested in entering the workforce at the earliest opportunity. The scheme would be of advantage to the higher Secondary School pass-outs not willing to join existing higher education system and also for the ones who wish to up-grade and certify their traditional/ acquired skills irrespective of their age or education. A minimal scholarship is available to the students. In order to ensure a local connect, those universities/colleges would be preferred to host CC which have proximity to local industry partners. A similar attempt has been made by AICTE too for opening CC offering engineering/ technical courses in engineering colleges. Financial assistance up to a maximum limit of 5.0 million per CC per year may be provided by UGC for guest faculty, training/ capacity building/ skill

upgradation, curriculum development, basic infrastructure creation including laboratory, workshop facilities, consumables and learner scholarships.

UGC has also proposed to establish as many as 100 'Deen Dayal Upadhyay Centres for Knowledge Acquisition and Upgradation of Skilled Human Abilities and Livelihood' (KAUSHAL) during the XII Plan period. The centres would allow for vocational education in a pyramidical structure starting from a minimum of Diploma to Advanced Diploma, B. Voc. and further studies at Post Graduate and Research level. The purpose is to provide threefold services focusing on skills for employability, developing entrepreneurship traits and acting as Centres of Excellence through critical innovative research for skill development in specialised areas.

These centres will also act as inter-university, inter-sectoral university-industry, HE system and industrial sector coordination facilitators. Under both these schemes the purpose is to enable students to pursue a bachelor's degree (B. Voc.) as part of college/university education, allowing for multiple exits such as Diploma/Advanced Diploma under the NSQF along with broad based general education. The course would be so designed as to also incorporate specific job roles and their NOSs. The course curriculum would have a greater component to skill based vocational education (60%) and a lesser (40%) component of general education and 60% in a credit based semester system (Table 7).

The whole idea is based on the premise that it is important to embed the competencies required for specific job roles in the higher education system for creating employable graduates.

Level	Course Name	Duration of The Programme
NSQF Level -4	Certificate	6 Months (30 Credits)
NSQF Level -5	Diploma	1 Year (60 Credits)
NSQF Level-6	Advanced Diploma	2 Years (120 Credits)
NSQF Level-7	B.Voc Degree	3 Years (180 Credits)

Table 6: Scheme of Community Colleges and Bachelor Vocation (B. Voc) Degree Programme. Source: Structure of Community College/ B. Voc. Course UGC, New Delhi (2012-17)

Although the institutions have been provided complete autonomy in identifying the courses to be offered but some indicative courses have been proposed by UGC by way of common guidelines (Box No. 2).

Science Stream: Information and Computer technology, Refrigeration, Biotechnology, Hospital waste Disposal Management and Sericulture etc.
Social Sciences and Humanities Streams: the courses could be of inter –disciplinary nature viz. applied Sociology, Applied Psychology, Tourism, Fashion Designing, Translation Proficiency, Television and Video Production.
Commerce Stream: Insurance, Banking, e-Commerce world, Trade, Foreign Exchange Trade, Retailing etc.

Box 2: B. Voc Indicative Courses (Streams wise)

7.3 Public Private Partnerships (PPP)

While experiments in PPP mode more prominent in the training sector, the concept is fast picking up in the HE sector. The GoI envisages greater role of private partners through PPP in the current 12th FYP through teacher education, use of ICT in education, TVET, international collaborations in research and development. UGC the apex level regulatory authority in HE, has recommended four models of PPP in HE: I. Basic Infrastructure Model (Private sector provides infrastructure); II. Outsourcing Model (Govt. outsources establishment and management); III. Equity/ Hybrid Model (both share infrastructure investment); IV. Reserve Outsourcing Model (Government invests in infrastructure and private partner manages). PPP in HE is thus all set to come up in a big way with 20 IIITs, 14 Innovation Universities, 300 Polytechnics planned to be set up under this mode.

7.4 Consolidation of Skills Delivery by Various Ministries

As stated in the earlier section there are more than 20 ministries that are involved in providing sector specific skills training by way of their own institutions via formal degree/ diploma programmes as well as non formal short term programmes. In addition to the MHRD and the Labour ministry that invest in the skill development via formal institutions many other ministries like the Ministry of Rural Development, Ministry of Micro, Small and Medium Enterprises, Ministry of Tourism and Culture, Ministry of Health and Family Planning, Ministry of agriculture and several others have their own establishments. While most training is meant for fresh job entrants some schemes are also open to college students. A consolidated list of such programmes offered to students by ministries including the MHRD. A new and separate Skills ministry has been created at the Centre recently to overlook and coordinate the entire Skills Action plan and to act as a link between all other ministry initiatives in this regard in order to plug in coordination gaps (see chapter 7).

7.5 International Collaborations

India is approaching the international community for collaborative ventures in the area of vocational education and skills training (US, UK, Germany, Australia) USAID partnership with the McKinsey Social Initiative (PPP) 'Generation' to design and deliver pioneering solutions to train and employ millions of youth. Another programme specially meant for Indian University students is pioneered by Private Sector Exchanges in Education and Skills Development known as Exchange Visitor Program (EVP). Through this privately-funded program about 300 Indian university students and recent graduates are provided with internship opportunities in prestigious U.S. companies, institutions, and organisations every year.

8 Pathways from Education to Work

Transition from education to work starts earlier than the compulsory education stage till class VII when many drop outs move out of school as unskilled workers. Some drop out at secondary levels as semiskilled workers. Of those who move to vocational streams, find low end jobs with no scope for moving to higher levels of education – undergraduate, PG or research. It is only those with technical diploma from polytechnics that are allowed to move higher up to undergraduate degree in engineering. But, seats for this type of lateral entry are very few. The flow chart below depicts the pathways from education to work in the country existing until now for technical and vocational education.

8.1 Silver Lining

However, everything on the Indian HE landscape is not dark. Industries that are poised for higher growth in future are the ones that are higher on the employability index for Indian youth (see chapter 8). Given its demographic advantage, even a small percentage of India's engineering graduates places it at number two positions in the world, only after US, as per their absolute numbers. Though, the ivy league institutions in India cater to only 1% of the student population, yet all top companies or institutes in the world have Indian brains on their rolls at middle as well as high positions be it be it NASA, IBM, Microsoft, Intel, Bell, Sun, Harvard, MIT, Caltech, Cambridge or Oxford (Inclusion 2012) all of whom are not necessarily engineers. The IITians have made such a mark in the US that May 2005 was termed as The IIT – Indian American Heritage Month by the states of Virginia and Maryland. Prominent persons like Jack Welch of GE, Larry Summers, President

of Harvard University, and Tom Friedman, the globalization columnist of New York Times attended their alumni function in US. Similarly, Indian doctors have supported the British Medical Service for many decades. In recent years, India's high band research base has diversified from R&D, scientific research to financial and economic research to medical and biomedic research. Indian medical schools in New Delhi are often quoted to be the best in the world. Though many graduates and postgraduates from the Indian soil have further honed their skills in foreign universities/colleges before reaching heights in career ladder, it cannot be denied that their foreign upskilling was built on their Indian foundation. World's best companies like McKinsey & Co. and AT Kearney Inc., have J.P. Morgan, Moran Stanley, Deutsche Bank etc. have already started spreading their Research base in India *(*Business World 2005). The issue is now of scalability of high-end research facility and quality education. Efforts in this direction have already started with companies investing and promoting PhDs. More than 150 international firms have set up R&D centres in India and Indian companies have started increasing their research budgets and collaborating with higher educational institutions on a commercial basis for e.g. SPREAD – Sponsored Research and Development of the ICICI Technology Financing Group, Nirma Labs (India Today International 2005). There is unanimous acceptance amongst all stakeholders of the fact that quality needs to be monitored in a more stringent manner.

9 Conclusion

Thus in recent years the skills landscape in India has widened but with interrelations with formal education system. Under the overall purview of the National Skills Ministry and policy with NSDC support educational institutions have geared themselves to join hands with other stakeholders in the labour market as well as society at large to take a plunge in preparing our youth for the world of work.

Although, many new players and processes have emerged in response to the changing needs of the society, the job-oriented education in India is very limited in size (available only to the elite and well off sections), space (urban centres and limited disciplines) as well as structure (curriculum, teaching learning methodology). The HE curriculum has remained more or less rigid and outdate in maximum institutions across majority disciplines. There exists high degree of resistance to change. Faculty is neither ready nor trained well to take up the additional responsibility of introducing effective job oriented courses, making meaningful industry academia linkages. Infrastructure has become obsolete or insufficient for making internationally competitive desirous changes. Academic and vocational, technical education remained distinct streams with very little scope of

either horizontal or vertical transitions across each other until recently. Massification of HE took place at the cost of quality such that employability of HE graduates is today one of the most talked after challenge.

Here too the proportions making to jobs of their choices/education levels or even getting one single job are very small. While only a small segment of HE graduates coming out of quality institutions are short in supply but high in demand thereby enjoying high wage premiums, a large body of highly educated graduates are found to be falling short of meeting employers expectations, thereby taking up jobs much below their educational qualifications or are forced into unsuccessful entrepreneurial pursuits. These are large in supply but least in demand. This has created a new kind of demand supply imbalance – *the double knife edged mismatch of over - skilling as well as under skilling of the HE graduates*. This has also forced the graduates to further supplement and complement their formal university degrees with other forms of skill based education thereby resulting in creation of new forms of post-secondary/ HEIs and degree provision.

Panchamukhi brought the problem of distorted job market/ education equilibrium to light as early as 1987 where he spoke of four such imbalances.

a) By way of greater unemployment among certain graduates, due to dualities of personal backgrounds (students from poor socio-economic and rural backgrounds); differentiated grading of universities and colleges (in large metropolitan areas being considered superior as they have additional advantages of a larger size of the employment market and more efficient means of integrating job seekers with the job market).
b) By way of devaluation of degrees in the job market due to over-expansion of HE or some of its branches. And such imbalances impacting students more from vulnerable backwards.
c) By way of lack of labour market connect some graduate employees may find that their education is regarded less or absolutely useless by employees.
d) In terms of a decline in educational efficiency by way of poor quality as an after-effect of over-expansion which in turn may induce employers to employ persons with still higher degrees and diplomas leading to further devaluation of HE

Unfortunately, all of the above seem to plague the Indian Higher Education system even today. The figures of unemployable graduates placed in earlier sections certainly point at lack of preparedness of the Students for work transition. A large number of studies in recent years also point at the gravity of the situation.

10 Challenges

The new initiatives of GoI have certainly created a roadmap to achieve its stupendous skilling targets but are beset with innumerable challenges beginning with changing the mind-set of the society towards vocational studies, teaching faculty towards the need for reorientation, creating awareness among the masses about the new frame of work. As of now the knowledge base of Indian society is very narrow compared to other parts of the world by way of low GER in HE and VE, high drop-outs and low graduation rates. Interestingly, even now the perception of both trainees under the recent system and employers on value addition from vocational training is nothing very great (India Skills Report 2014). The report highlights that of the trained, the percentage that receive placements if less than 50%, many of whom are highly disillusioned from the type of job received and their salaries. So much so that 'trainee drop out' has been stated as a critical problem. The study shows that a third of the trainees who were offered jobs either did not accept the offer or quit within a month.

In order to achieve the skilling target, increasing the base manifold would itself be much more challenging a task than visualized for its sheer magnitude. Quality control of the huge skill network that India has rolled out would be no less daunting.

Challenges of inclusion and equity are another consideration to be taken seriously. Currently there is huge gender, social and regional disparities in HE participation by way of both access to quality education and certain subject domains. Female enrolment in many job oriented diploma/degree courses with better wage premiums and social prestige is still much lower. Ironically, employability is a much larger problem with the greater pool of student's enrolled in general academic programmes (arts, commerce) and lower end diploma courses (polytechnics). It is an urgent need to give special emphasis on skilling this vast potential employable educated pool. Innovative and low cost ways of doing so for the concentration of students from underprivileged sections in these subject domains is much larger as compared to the others and also they have weak family grooming and schooling foundation and also lack resources for investing in open market training provisions. Now that a vast chunk of training would be provided by for profit organisations under the PPP model, certain checks and balances to overcome this imbalance need to be put. Public provisioning of such facilities, on- campus pre placement preparation and training support and greater emphasis on orienting university/ college education towards imparting holistic development is more desirable in Indian situation.

The disconnect between the three major stakeholders of the education – workplace network i.e. the employers, education providers, and youth is a major

cause for the lack of knowing each other's desires and needs. The three live in parallel worlds with little or no scope for regular communication lest aside any engagement with each other. Employers hardly ever communicate with the education providers clearly stating any of their needs nor do the education providers engage in any kind of industry need assessment before starting a course or designing the curriculum. Living in silos they are least able to guide students in making the choice of their subjects and disciplines. Very few students have a good understanding and awareness regarding the disciplines that lead to professions with good job openings and wages. Whatever, little information they have is in an informal manner from family and friends. There is hardly any structures forum comprising of both the school and employer representation of informed decision making for students. A robust open resource LMIS, online employer counselling may help plug in these gaps.

In the light of an extremely dynamic labour market, fast changing technology, that constantly put new demands on employability, a more sustainable model of creating not just employable HE graduates but a sustainably employable HE graduates by way of constant re-skilling and up-skilling in order to sustaining them in the industry is by far the need of the hour for we just do not want another mass of educated, trained job drop-outs.

Knowledge and skills have both became a matter of cumulative demand by employers as well as the society at large. The new terminology that has gained popularity with the world comprises of a set of both cognitive and non-cognitive attributes and skills in a knowledge framework to be upgraded as and when required – the *'Sustainable Employability Skills'***.** It is from here that the definition and understanding of the role of HE should take a new leap – from *'Education for the sake of Education' to 'Education for better livelihood' to 'Education for better living'*.

References

Agarwal, Y. P. (2010): INDIA: Rapid growth but misalignment. In: University World News. 6th June, Issue No. 127.

AICTE (2013-14): All India Council for Technical Education Approval Process and Handbook (vocational education and community college course(s) and SKP under NVEQF). New Delhi: AICTE.

All India Survey of Higher Education (AISHE) (2011-12): GoI, MHRD Department of Higher Education, 2014. New Delhi.

Barro, R. J. (1997): Determinants of Economic Growth. A cross-country Empirical Study. Cambridge: The MIT Press.

Barro, R. J. (2000): Education and Economic Growth. URL: http://www.oecd.org/data-oecd/5/49/1825455.pdf.

Becker, G. S. (1964): Human capital: A theoretical and empirical analysis, with special reference to education. New York: National Bureau of Economic Research.

Belt, V. and Richardson, R. (2005): Social labour, employability and social exclusion: pre-employment training for call centre work. In: Urban Studies. Vol. 42, No. 2, pp. 257–270.
Bhushan, S. (2006): Foreign Education Providers in India: Mapping the Extent and Regulation. London, UK: The Observatory on Borderless Higher Education.
Boston Consultancy Groups Study (2007): Employment and Skill Development. URL: planningcommission.nic.in/hackathon/Skill%20Development.pdf.
Bowers-Brown, T. and Harvey, L. (2004): Are there too many graduates in the UK? In: Industry and Higher Education. Vol. 18, No. 4.
Business World (2005): Business World. 31 October 2005, p. 24.
Chadha, G.K. (2004): Human capital base of the Indian Labour market: Identifying Worry Spots. In: The Indian Journal of Labour Economics. Vol. 47, No. 1, Jan-Mar.
Carnoy, M. (1987): Higher Education and graduate employment in India: A Summary of three case studies. IIEP Research Report No. 64. International Institute for Educational Planning. Paris.
De La Fuente, A. (2003): Human Capital and National Competitiveness: the State of the Evidence. URL: http://ec.europa.eu/employment social/news/2003/sep/fuente en.pdf.
DGET (various years): Ministry of Labour & Employment, Directorate General of Employment and Training: Various Employment Exchange Statistics. URL: http://www.dget.nic.in/content/innerpage/employment-exchange-statistics.php.
DGET (2011): Performance Evaluation of Industrial Training Institutes/Industrial Training Centres (ITIs/Private ITIs). Government of India, Ministry of Labour & Employment. New Delhi.
DGET (2012): Trade Apprenticeship Training in India (as on 31.12.2011). Under Apprenticeship Training Scheme. Government of India, Ministry of Labour & Employment. New Delhi.
DGET (2014): Schemes/Programs. Government of India, Ministry of Labour & Employment. New Delhi. URL: http://dget.nic.in.
Goel, V. P. (2009): Technical and vocational education and training (TVET) system in India for Sustainable Development. New Delhi.
Government of India (GoI) (2008): Eleventh Five Year Plan (2007–12), Social Sector, Volume 2. New Delhi.
GoI (2009): National Skill Development Policy. Ministry of Labour and Employment.
GoI (2013): Twelfth Five Year Plan (2012–2017) Social Sectors, Volume 3. New Delhi.
Graduate Development Service Newsletter (2012): India's Industry Trends Edition, May 2nd.
Hanushek, E. A. and Kimko, D. D. (2000): Schooling, labour force quality, and the growth of nations. In: American Economic Review. Vol. 90, No. 5 (December).
Hanushek, E. A. and Woessmann, L. (2007): The Role of Education Quality for Economic Growth. Policy Research Working Paper No. 4122. Washington, DC: World Bank.
ICRA Management Consulting Services Limited (IMaCS) reports (2008): Human Resource and Skill Gap Requirements (2022). Skill Gap Studies conducted for the National Skill Development Corporation (NSDC). URL: http://www.nsdcindia.org/knowledgebank/index.aspx.
India Skills Report (2014): Peoplestrong, CII and Weebox. The India Skills Report 2014. URL: https://wheebox.com/wheebox/resources/IndiaSkillsReport.pdf.
India Today International (2005): India Today International. 3rd Oct 2005.
Inclusion (2012): Alligning Skills with Jobs: URL: http://www.inclusion.in/index.php.
Kaul, S. (2006): Higher Education in India: Seizing the Opportunity. In: Working Paper, No. 179. URL: http://www.icrier.org/pdf/WP 179.pdf.
Khare, M. (2012): Aligning India's Higher Education to the employability needs of a Global Economy. Paper presented at the 18th (CCEM) Commonwealth Education Ministers Conference held in Mauritius University, Mauritius, August 27th – 30th.
Khare, M. (2014): Employment, Employability and Higher Education in India: The Missing Links. In: Higher Education for the Future. Vol. 1, No. 1, pp. 39–62.

Kingdon, G. and Soderbom, M. (2007): Education, Skills, and Labour Market Outcomes: Evidence from Ghana. Background paper. In: World Bank study "Linking Education Policy to Labour Market Outcomes." Washington, DC: World Bank Education Working Paper Series.
Krueger, A. B. and Lindahl, M. (2001): Education for Growth: Why and for Whom? In: Journal of Economic Literature. Vol. 39, No. 4, pp. 1101-1136.
Mathur, A. (1990): Human Capital, Spatial Disparities and Economic Development. In: Manpower Journal, Vol. 26, No. 3.
Mankiw, N. G., Romer, D. and Weil, D. N. (1992): A Contribution to the Empirics of Economic Growth. In: The Quarterly Journal of Economics. Vol. 107, No. 2, pp. 407-437.
Mehrotra, S., Gandhi, A. and Sahoo, B.K. (2013): Estimating India's Skill Gap on Realistic basis for 2022. In: Economic and Political Weekly. Vol. XLVIII, No. 13.
MHRD (2013): General Information. URL: http://mhrd.gov.in/university-and-higher-education.
MHRD (2015): General Information. URL: http://mhrd.gov.in/institutions.
NASSCOM (2005): Extending India's Leadership of the Global IT and BPO Industries. NASSCOM-Mckinsey Report 2005.
NSS 66th Round, Government of India (2013): Status of Education and Vocational Training in India. Ministry of Statistics and Programme Implementation. National Sample Survey Office.
Panchamukhi, P. R. (1987): Graduates and Job Markets. A Quantitative Study of two Universities in India IIEP. Occasional Paper No. 74.
Pricewaterhouse Coopers (PwC) (2012a): Private Limited India - Higher Education Sector Opportunities for Private Participation.
PwC (2012b): Taking Stock of Higher Education in India A sector wide scan. URL: www.pwc.in/en_IN/in/assets/pdfs/industries/education/publication/higher-education-report-nov-2012.pdf.
Schultz, T. W. (1961): Investment in Human Capital. In: American Economic Review. Vol. 51, No. 1 (March).
Sianesi, B. and Reenen, J. (2003): The returns to Education: Macroeconomics. URL: www1.worldbank.org/publicsector/pe/pfma07/sianesi.pdf.
Stevens, P. and Weale, M. (2003): Education and Economic Growth. National Institute of Economic and Social Research, London. URL: http://cee.lse.ac.uk/conference_papers/28_11_2003/martin weale.pdf.
Talent Shortage Survey Research Results Manpower Group (2012): General Information. URL: www.manpowergroup.us.
The Robbins Report (1963): Higher Education Report of the Committee appointed by the Prime Minister under the Chairmanship of Lord Robbins. URL: http://www.educationengland.org.uk/documents/robbins/robbins1963.html.
The Times of India (ToI) (2012): ASCENT, 31st July.
University Grants Comission (UGC) (2006): Annual Report 2005-06. New Delhi.
UGC (2012): Annual Report 2010-11. New Delhi.
UGC (2013): Annual Report 2012-13. New Delhi.
UGC (2014): Annual Report 2013-14. New Delhi.
UGC (various years): Annual Report 2012-17. New Delhi.
URL: http://www.ugc.ac.in/pdfnews/7814407 UGC-Skilled-Based-Vocational-Course.pdf.
Unesco WCEFA Declaration (1990): UNESCO (1990) World Conference on Education for All (WCEFA). World Declaration on Education for All and Framework for Action to Meet Basic Learning Needs. UNESCO: Paris.
United Nations (UN) (2001): Recommendations of the High Level Panel of the Youth Employment Network. New York: United Nations.
Varghese, N.V. (2012): Society for Educational and Economic Development, Foundation Day Lecture-Seminar on higher Education reforms: Global Initiatives. National University of Educational Planning and Administration. Aug 09.

Varghese, N.V.(2014): Challenges of Massification of Higher Education in India. Paper presented in the International Seminar on Massification of Higher Education in Large Academic Systems, Nov 10-11, 2014 organised by CPRHE/NUEPA & British Council, New Delhi.
World Bank (2002): Constructing Knowledge societies: New Challenges for Tertiary education. Washington, D.C.