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Human Resource and Skill Requirements in the
**Education & Skill Development
Services** Sector (2022)

– A Report



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Human Resource and Skill Requirements in the Education and Skill Development Services Sector

Study on mapping of human resource skill gaps in
India till 2022

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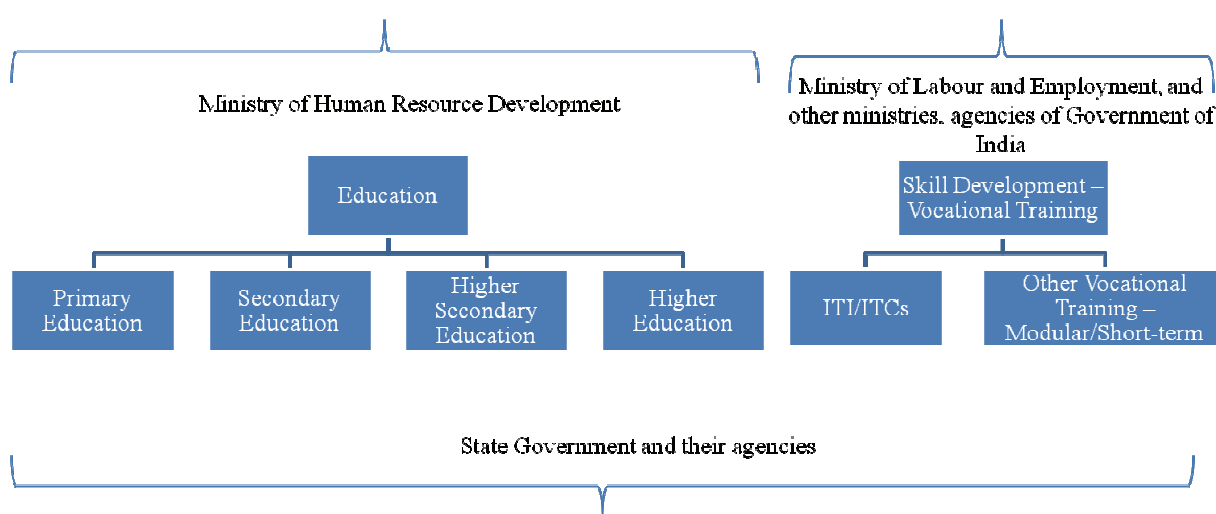
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1. Introduction

The Education and Skill Development Services Sector broadly comprises of School Education, Higher Education, and Industrial/Technical Training, including Vocational Training. It should be noted that while, in general, ‘skill development’ refers to the larger objective of ‘equipping an individual with marketable skills’, however, in recent times ‘skill development’ has been largely used in the context of technical/vocational training for the manufacturing/industrial or services sector.

The following figure presents an overview of the structure of the Educational and Skill Development Sector in India.

Figure 1: Structure of Education and Skill Development in India



As seen from the above figure, various aspects of Education, right from Primary to Higher Education, falls under the ambit of the Ministry of Human Resource Development. Vocational Training, largely offered through Industrial Training Institutes (ITIs) and Industrial Training Centres (ITCs), falls under the ambit of the Ministry of Labour and Employment through the Directorate General of Employment and Training (DGET). The All India Council for Technical Education (AICTE), set-up in November 1945 is the national level apex advisory body to conduct survey of the facilities in technical education¹ and to promote development of education in the country in a coordinated and integrated manner. With respect to industrial/vocational training, the DGET is the apex organisation for development and coordination at the national level for the programmes relating to vocational training with curriculum being set and implemented by the National Council for Vocation Training (NCVT). There are also several initiatives being undertaken by various other ministries and agencies of the Central and State Governments.

¹ Here, ‘technical’ refers to craftsmanship, diploma, degree, post-graduate and research in specialised fields.

In this document, we shall review the ‘as-is’ scenario and current capacity of Education and Skill Development systems in the country, and estimate the need for teachers and trainers to provide Education and Skill Development Services.

2. Overview of the Education and Skill Development Sector in India

2.1. Current Capacity and Enrolment in School Education

There are close to 1.3 million schools in India with a total enrolment of over 227 million² students right from the Primary School (Standards I to V) to Higher Secondary Schools (Standards XI and XII). Given, that a large proportion of students drop-out at Primary School level (at Standard V) and at Middle School (at Standard VIII), it is evident that a large portion of the capacity and enrolment is up to these two levels of education.

Table 1: No. of schools in India

	Board of Intermediate Secondary Education	Pre-Degree Junior Colleges/ Higher Sec. Schools	High/Post Basic Schools	Middle / Senior Basic Schools	Primary/Junior Basic Schools	Pre-Primary/ Pre Basic Schools*	Total
No. of institutions	41	53,643	106,024	288,493	772,568	67,157	1,287,926
Proportion (%)	-	4.17%	8.23%	22.40%	59.99%	5.21%	100.00%

Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMaCS analysis

Out of the over 227 million students enrolled across different levels of education, about 60% of the enrolment is in the level of Primary Education.

Table 2: Enrolment in various levels of Education in India (in ‘000s)

	Pre-Primary	Class 1-V	Class VI-VIII	Class IX-X	Class XI-XII	Total
Enrolment (in ‘000s)	5,264	132,049	52,195	24,972	13,414	227,894
Proportion (%)	2.3%	57.9%	22.9%	11.0%	5.9%	100.0%

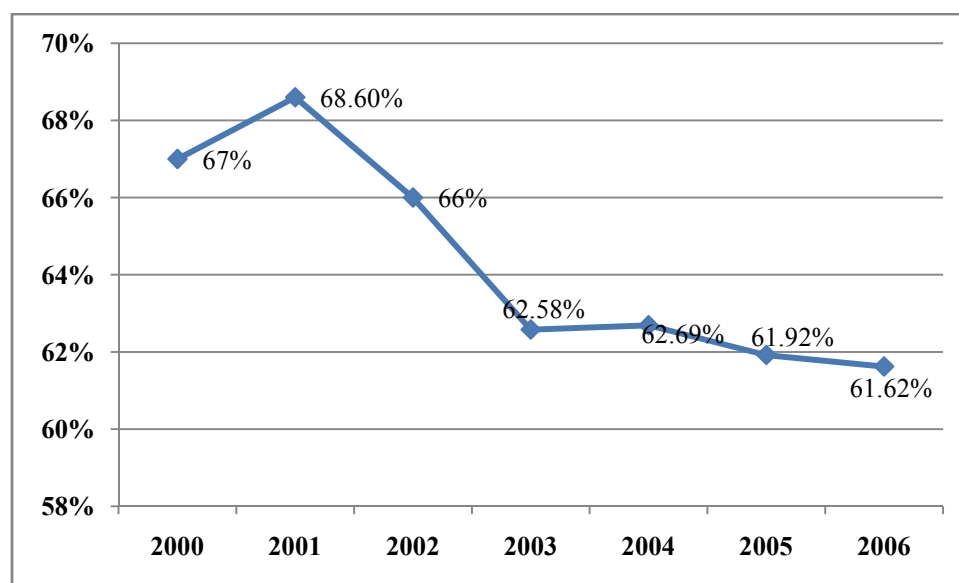
² As of 2006

Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMAcS analysis

The country has witnessed a steady increase in the Gross Enrolment Ratio, a steady decrease in Drop-Out Rates, and a steady increase in the enrolment in Education.

The Drop-Out Rates between Standards I to X have fallen from about 67% in 2000 to about 62% in 2006.

Figure 2: Drop-Out Rates in Education in India



Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMAcS analysis

The enrolment in Education in India has witnessed a Compounded Annual Growth Rate (CAGR) of about 3.3%, with High and Higher Secondary Education (Standards IX-X and Standards XI-XII respectively) recording a higher growth rate of 5.4%.

Table 3: Enrolment in Schooling in India (in million)

	Primary	Middle	High and Higher Secondary	Total School Education
2000	113.6	41.3	28	182.9
2001	113.8	42.8	27.6	184.2
2002	113.9	44.8	30.5	189.2
2003	122.4	46.9	33.2	202.5
2004	128.3	48.7	35	212
2005	130.8	51.2	37.1	219.1
2006	132.1	52.2	38.4	222.7
CAGR	2.5%	4.0%	5.4%	3.3%

Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMaCS analysis

In addition to the above, there is also a ‘Vocational Education’ stream. The Vocational Education Programme (VEP) is offered through the National Institute of Open Schooling (NIOS). However, the Vocational Education stream has a capacity of only about 22,000 students. Even if the entire capacity under NIOS is considered, this totals to about 3 lakh students only³. As is obvious, Open Schooling and Vocational Education contribute a minimal portion of the enrolment as compared to regular schooling (without a ‘vocational’ component).

2.2. Current Capacity and Enrolment in Higher Education

Higher Education in India comprises of the following colleges/institutions: Arts, Science and Commerce colleges (general college education), Engineering, Technical and Architectural colleges, Medical colleges, Teacher Training colleges, Polytechnics, Others (Law, Management, etc.), apart from education directly delivered by Universities, Institutions of National Repute (such as National Institutes of Technology), and Research Institutions.

The following tables illustrate the number of institutions available and the enrolment at various streams of Higher Education.

Table 4: No. of institutes in Higher Education in India

Institution	No. of institutes
Universities and other institutions	
University	236
Deemed University	101
Institutes of National Importance	13
Research Institutions	140
Higher Education Institutions	
Arts, Science, and Commerce Colleges	11,698
Engineering, Technical, and Architecture Colleges	1,562
Medical Colleges, Dental and Pharmacy	2,053
Teacher Training Colleges	1,669
Polytechnics	1,274
Others (Law, Management, etc.)	2,513
Total Higher Education	20,769

³ Source: NIOS

Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMAcS analysis

The total enrolment in different years of study in Higher Education in India is about 14.3 million students. It should be noted that Diploma Polytechnics are also categorised under Higher Education.

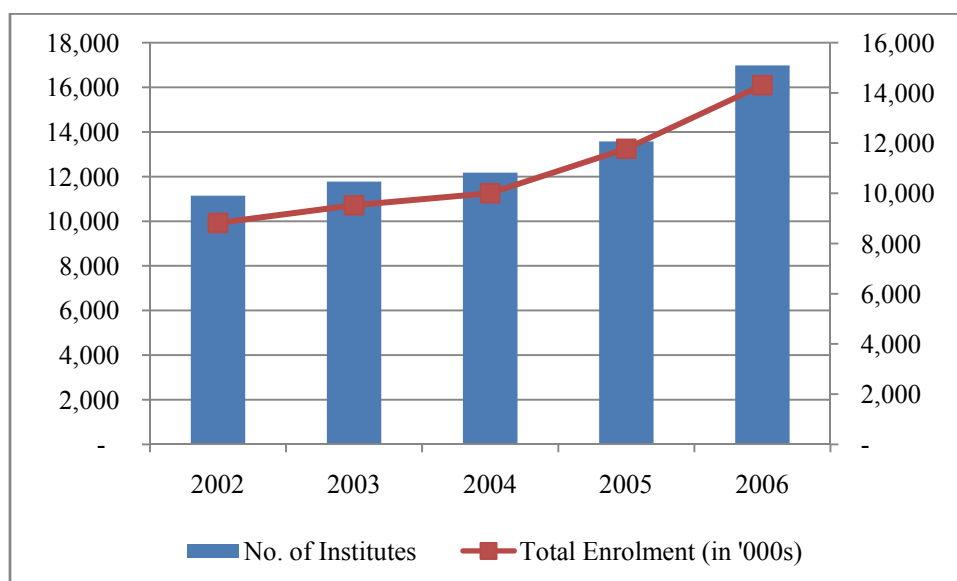
Table 5: Enrolment in Higher Education in India (in '000s)

Course	No. of students (in '000s)	Proportion (%)
Ph.D/D.Sc/D. Phil	36	0.3%
MA	482	3.4%
M. Sc.	230	1.6%
M.Com	157	1.1%
BA	3,728	26.0%
B.Sc.	1,579	11.0%
B.Com.	1,455	10.2%
BE/B.Arch	1,668	11.6%
Medicine, Dentistry, Nursing, Pharmacy	306	2.1%
B.Ed./BT	245	1.7%
Enrolment in Open Universities	774	5.4%
Polytechnics	690	4.8%
Others	2,974	20.8%
Total Enrolment in Higher Education	14,324	100%

Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMAcS analysis

The number of Higher Education Institutions has grown at a CAGR of 11.1% between 2002 and 2006 while the enrolment in Higher Education has grown at a CAGR of about 13%

Figure 3: Growth of Higher Education in India



Source: Time Series Data – 2005-06, Ministry of Human Resource Development, IMAcS analysis

2.3. Current Capacity in Vocational Training

Vocational Training in India is being offered by the DGET under the Ministry of Labour and Employment. The DGET is the apex organisation for development and coordination at national level for the programmes relating to Vocational Training.

The DGET undertakes Vocational Training through several schemes. The schemes available are:

- Craftsmen Training Scheme (CTS) – ITI/ITC training
- Apprenticeship Training Scheme
- Craftsmen Instructor Training Scheme
- Advance Vocational Training Scheme
- Women Training
- Research and Staff Training
- Instructional Material Development
- Hi-Tech Training
- North Eastern States
- Modular Employable Skills (MES)
- Centre of Excellence and World Bank Assistance
- Upgradation of ITIs through Public Private Partnership (PPP).

Vocational Training is primarily imparted through Industrial Training Institutes (ITI) and Industrial Training Centres (ITC). The administration of Industrial Training Institutes rests with the State

Governments/Union Territories Administrations (as this is a Concurrent Subject as per the Constitution of India).

Several initiatives have been taken in recent times - such as the introduction of a framework for imparting short-term 'Modular Employable Skills', developing ITIs through the PPP route and enhancing their capacity as Centres of Excellence (CoE).

There are a total of 6,906 ITIs and ITCs in India with a total seating capacity of 9.53 lakh. The region-wise and state-wise capacity (as of 31.3.2009) is shown in the table below.

Table 6: Total capacity of ITIs and ITCs in India

State	No. of Government ITI	Seating Capacity	No. of Private ITC	Seating Capacity	Total No. of ITI and ITC	Total Seating Capacity
Northern Region	705	107,986	1,116	107,937	1,821	215,923
Southern Region	338	85,916	2,427	264,830	2,765	350,746
Eastern Region	193	46,586	696	111,357	889	157,943
Western Region	761	167,662	670	61,610	1,431	229,272
Total	1,997	408,150	4,909	545,734	6,906	953,884

Source: Annual Report 2008-09 of Ministry of Labour and Employment, as of 31.3.2009

3. Key Trends

This section reviews the key trends in the Education and Skill Development Services Sector across:

- School Education
- Higher Education
- Vocational Training.

The following are the key trends expected in the above-mentioned areas in India:

- **Continued presence of Private Education:** The Private Final Consumption Expenditure (PFCE) on Education is expected to grow at a CAGR of over 13% till 2022⁴. A large portion of the Primary Schooling infrastructure has been developed by the Government and/or Government agencies/aided bodies. The proportion of Private investment is much higher in the Higher Secondary and Higher Education space as shown in the following table.

⁴ Source: IMaCS analysis

Table 7: Proportion of schools – by management

	Government	Local Bodies	Partly Aided	Private	Total
Pre-Primary Schools	55.8%	26.5%	4.8%	12.9%	100.0%
Primary Schools	42.6%	46.5%	3.1%	7.8%	100.0%
Middle Schools	43.2%	28.8%	6.1%	21.9%	100.0%
High Schools	31.6%	9.2%	27.9%	31.2%	100.0%
Higher Secondary Schools	33.4%	1.1%	30.8%	34.8%	100.0%

Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMA CS analysis

With rising incomes and changing demographic profile, the proportion of private sector spend on education as well as the overall spend of households on education is likely to increase. Increasing investment by the private sector is evident from their increasing share in the number of high/higher secondary schools and higher education institutions. Traditional, large chains of institutions include DAV, Delhi Public School, the Padma Seshadri group of institutions, etc. New schools with corporate identity include Zee International Learning Solutions, Educomp, Everonn, etc., to name a few. Apart from these, there are a large number of private trusts, including religious institutions, which also run schools.

- **Regulatory aspects to continue:** Educational institutions have to be run as a ‘Trust’ or a ‘Society’ as per legislation. This has to, a great extent, limited private sector participation. Regulatory and related controls are likely to stay in this sector even going forward though significant changes can be expected.
- **Increasing presence of well known private chains and International Schools:** Large, established, private/chains of institutions are likely to expand further. Also, there is an increasing participation of International Schools in the Indian market aiming to provide premium international education (example: Billabong High).
- **Corporatisation of coaching institutions:** Coaching and tuition institutions are likely to expand and many such large institutions such as FIITJEE, IMS, TIME, Career Launcher will continue to grow and more will be added.
- **Large private firms in Education:** Companies such as Educomp, Everonn, who initially started as teaching and training content providers are all set to expand into K-12 (Kindergarten to Standard 12) space as well as the Higher Education space. Many players have also started using innovative business models and corporate structures such as using indirect means like lease rentals, management fee, etc to extract the surplus stuck in a non-dividend paying educational trust.

- **Increasing use of Information and Communication Technology (ICT):** Many schools have started to use ICT enabled content to aid in delivery. This is also applicable to long distance higher education programmes such as those run by NIIT Imperia, etc. Going forward, this will play a major role in bridging the access to quality education as well as bridge the gap in the student to teacher ratio.
- **Increasing presence of large private players in Higher Education:** Players such as Manipal Education, Sikkim Manipal University, Amity, ICFAI have presence across different segments of Higher Education. This trend is likely to continue.
- **Opening up of Education Sector:** Opening of the education sector to foreign players, as and when it happens, as envisaged by the draft Foreign Education Bill, will also serve as a driver in transforming the sector.
- **Growing need for Skill Development and Vocational Training:** Besides strengthening the ITI/ITC system, there is also a growing need to increase employability through skill development programmes as evidenced by strong market linkages, institute industry coordination, specialised skill development, continuation of learning, etc. This is applicable to all sections of the workforce right from operators/workers to college-qualified students to junior-mid-and senior level executives. Additionally, there is a growing need for special focus on vocational training and skill development. The Government has duly recognised this in the ‘National Skill Development Policy’. The DGET has provided a framework to impart modular skills with focus on need-based-training and acquiring employable skills within a short timeframe (training duration of 3 to 6 months). This is as envisaged by the Modular Employable Skills framework. Private players such as Everonn and Educomp have forayed into the Vocational Training space, and several industries/firms/industry associations have facilitated activity in this area, either directly or indirectly. The demand for Vocational Training is here to stay. This will also fuel the demand for ‘trained’ teachers/trainers.
- **Growing need for Vocational Education:** While Vocational Training would seek to build marketable skills in the workforce, there is also a need to ensure that there exists a strong system where Vocational Skill Building is imparted as a part of Education – i.e., as evidenced by a need for a strong and vibrant Vocational Education system. There is much room to strengthen this stream. This is expected to be an important focus area going forward to serve the needs of those who would miss out on education and or formal vocational training.

The *Planning Commission* has also envisioned action agenda for various levels of Education and Skill Development in its *11th Five Year Plan*, such as⁵:

- Achieving a literacy rate of 80%
- A special focus on Teacher Education
- Usage of Technology/ICT
- Setting up of the National Skill Development Mission, Coordination Board, and National Skill Development Corporation
- Strengthening Private Sector Participation in Education.

The National Skill Development Policy has set the ambitious target of training about 15 million persons annually.

Keeping these factors in mind, the following sections of this document will review the human resource requirements to meet these ambitions targets. This would pertain to assessing the need for skilled human resource to deliver teaching/training. In other words, we seek to understand the following:

- What are the broad skill requirements, in qualitative terms, in the Education and Skill Development Sector?
- What would be the demand for Education and Skill Development, in terms of enrolment?
- What is the human resource requirement to deliver Education and Skills to the enrolled student population? - i.e., *the demand for teachers and the demand for trainers.*

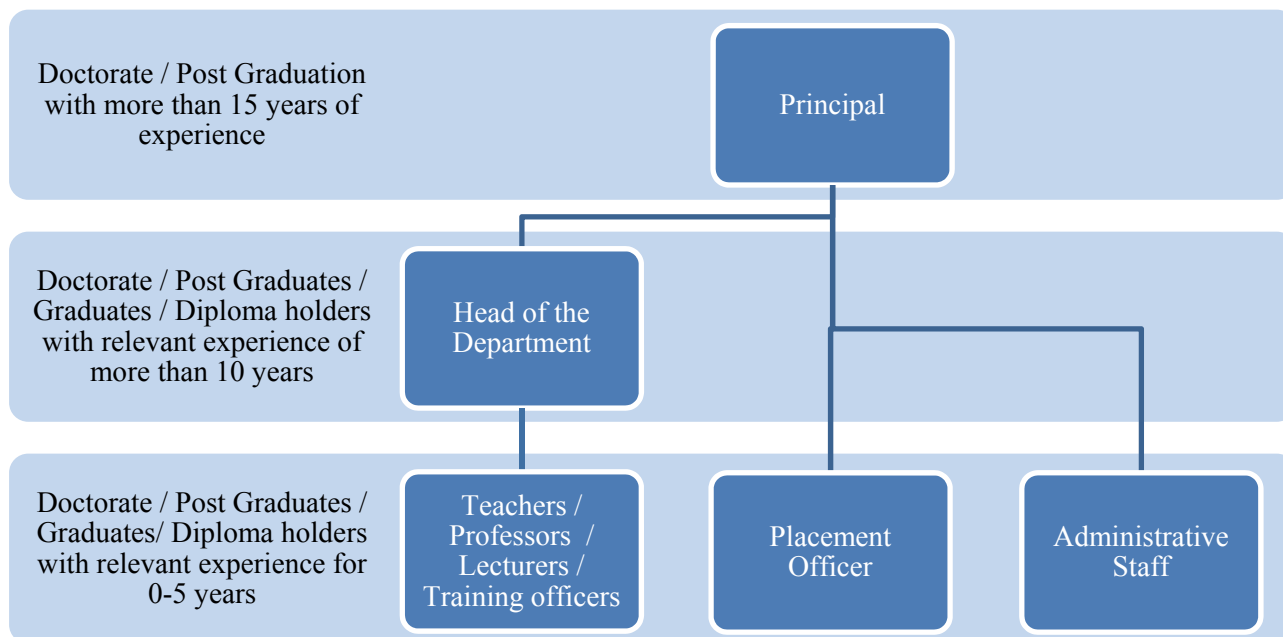
⁵ Source: 11th Five Year Plan; points mentioned are illustrative and not exhaustive

4. Skill Requirements for Teachers and Trainers

In this section, we shall review the skill requirements for teachers and trainers in the Education Sector. This is reviewed in terms of typical hierarchy of persons employed in the Education and Skill Development Services Sector at the level of an educational institute.

The typical profile of persons employed in an education institution is illustrated below.

Figure 4: Profile of Persons in the Education Sector



Source: Primary Research and IMaCS analysis

4.1.1. Skill Requirements and Skill Gaps in Education Sector

The following table presents the skill requirements and gaps across various functions and hierarchical/reporting 'levels' in a typical educational institute.

Table 8: Skill Requirements Common to Education sector

Level	Skills required
Principal	<ul style="list-style-type: none"> ▪ Responsible for the overall functioning of the institution ▪ Ability to hire qualified teachers ▪ Ability to handle the required legal aspects related to the institution - complaints, audits, reviews ▪ Ability to formulate strategic plans for building infrastructure for the institution

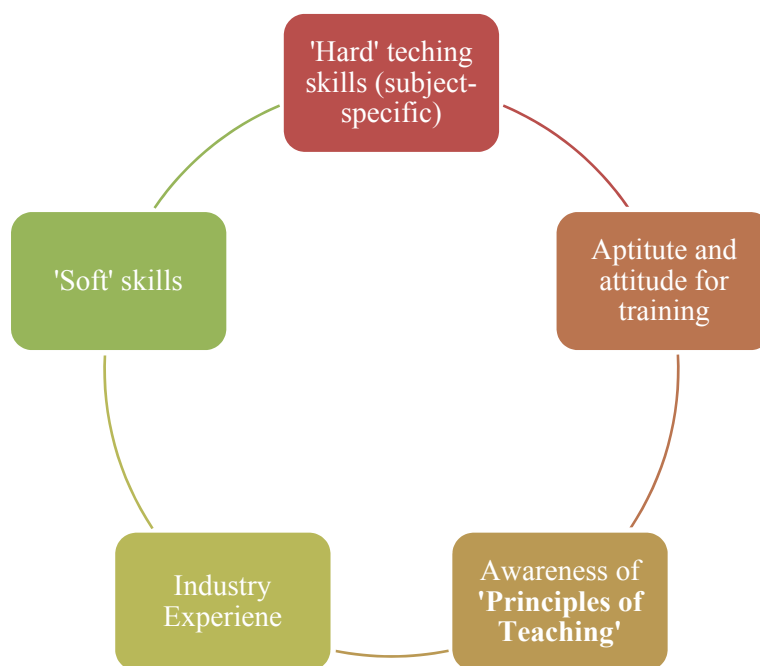
Level	Skills required
	<ul style="list-style-type: none"> ▪ Ability to build the ‘brand’ of the institution. ▪ Ensuring availability of Information and Communication Technology (ICT) to smoothen the teaching and learning process. ▪ Ability to increase the enrolment and out-turn ▪ Ability to appraise the performance of faculty on a regular basis. ▪ Ability to coordinate with the external authorities / government officials and liaison with them. ▪ Ensuring the safety of students ▪ Ensuring discipline inside the campus.
Head of the Department	<ul style="list-style-type: none"> ▪ Responsible for the overall functioning of the department ▪ Allocating of work to faculty / teachers/ trainers ▪ Preparation of timetable for various theoretical and practical sessions. ▪ Ensuring adequate quality of teaching and pass percentage ▪ Facilitating industrial visits ▪ Handling classes ▪ Reporting to the Principal periodically, on the performance of the students ▪ Assisting the principal in identifying qualified faculties / teachers.
Teachers / Professors / Lecturers	<ul style="list-style-type: none"> ▪ Adequate knowledge of principles of teaching ▪ Strong theoretical knowledge of subject ▪ Ability to communicate the knowledge of the subjects to students in a manner that can be understood ▪ Ability to deliver the content in a simple way to facilitate understanding ▪ Good communication skills ▪ Ability to empathise with students ▪ Observation skills to understand the ability of the students to grasp a particular topic and to plan the teaching methods accordingly. ▪ Ability to address doubts patiently ▪ Ability to use computers in teaching (Microsoft PowerPoint presentation, Microsoft Excel, other ICT tools) ▪ Industry exposure, especially in case of faculty handling technical courses. For example, a faculty handling modelling course in a

Level	Skills required
	fashion technology institute should have experience in ramp walk, conducting events, etc.
Placement Officers	<ul style="list-style-type: none"> ▪ Ability to run the Placement Cell ▪ Maintaining the list companies that needs to be invited for campus placements ▪ Understand requirement of students and demand from industry ▪ Coordinate with industry players, to track their requirements ▪ Scheduling the Placement Week and interview slots based on industry demand and skill sets available in the institution.

Source: Primary Research and IMaCS analysis

In summary, the skill requirements of trainers are shown by the following illustration.

Figure 5: Skills required for trainers



Source: Primary Research and IMaCS analysis

5. Projected Demand for Teachers and Trainers

In this section, we shall assess the demand for teachers and trainers in India till 2022 across the key segments of the Education and Skill Development Sector.

5.1. Underlying Assumptions

- **Eligible population:** The population in the age group of 5 to 24 years is the target age group for all segments of the Education and Skill Development Services Sector, right from Primary Education to Higher Education, as well as Vocational Training. We expect the following trends in population in these age groups.

Figure 6: Trends expected in Population and Relevant Age Groups (in '000s)

(in '000s)	2008	2022
Total Population	1,144,734	1,352,695
Population in age group of 5 to 14	247,593	228,196
Population in age group of 15 to 24	227,463	232,166

Source: Population Projections for India and States 2001 to 2026, Report of Technical Group on Population Projections Constituted by the National Commission on Population, and IMAcS analysis

- **Projections of Enrolment:**
 - **School Education:** By 2022, we expect that over 95% population eligible for school education (in the age group of 5 to 17/18 years) would be enrolled in schools. The enrolment in school education would thus increase from 243 million in 2008 to 298 million in 2022.
 - **Higher Education:** We expect that the drop-out (between Class I to X) rate would continue to decline from the current level of 62% to under 45%-50% by 2022. Accordingly, the enrolment into Higher Secondary Education is expected to increase. Along similar lines, we also expect the demand for Higher Education (graduation in colleges and professional course, polytechnics, as well as post-graduation) to increase at a CAGR of 11% to 12% till 2022.
 - **Technical/Industrial Training:** Given the need for more ITI/ITC qualified students, as well as the demand for Vocational Training, along with the proposed plans for setting- up many ITIs, we expect that the demand for Technical/Industrial (ITI/ITC) qualified persons would increase at a CAGR of over 10%.

- Vocational Training:** Apart from ITI/ITCs, there is much need for beefing up the Vocational Training infrastructure. There is demonstrated by the demand for need-based, job-oriented training, which would be implemented under the Modular Employable Skills framework. This would drive the need for Vocational Training Providers, trainers, accredited certifying bodies/agencies, etc. We have projected the demand from human resource requirement in a host of sectors in the industry. 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 depending on the nature of the industry. *We expect that the requirement for such Vocationally Trained human resource (with skills acquired over a short timeframe and are modular/job-oriented, over and above that of ITI/ITC) would be over 112 million persons between 2008 and 2022, i.e., over 8 million persons annually, in select sectors detailed below.* The relative proportion of this requirement (of 112 million persons between 2008 and 2022, and 8 million annually) across key industries is outlined in the following figure.

Table 9: Incremental human resource requirement in Vocational Stream (in '000s)

Sectors; requirement in '000s	2008	2022	Incremental	Proportion in Vocational Stream	Incremental human resource requirement in Vocational Stream	Annual requirement in Vocational Stream
Textiles (Spinning, Fabric Processing, Garmenting)	13,100	29,900	16,800	85%	14,280	1,020
Electronics and IT Hardware	906	4,129	3,223	35%	1,128	81
Leather	2,500	7,139	4,639	85%	3,943	282
Organised Retail	283	17,623	17,340	80%	13,872	991
Gems and Jewellery (including Jewellery Retail)	3,335	7,943	4,608	75%	3,456	247
Building, Construction, and Real Estate	35,968	83,270	47,302	70%	33,111	2,365
BFSI	4,250	8,500	4,250	65%	2,763	197
Furniture and Furnishings	1,455	4,873	3,418	80%	2,734	195
Auto and Auto Components	13,000	48,000	35,000	54%	18,900	1,350
Tourism and Hospitality	3,530	7,172	3,642	65%	2,367	169
Food Processing	8,531	17,808	9,277	80%	7,422	530
Construction Materials and	1,140	2,497	1,357	40%	543	39

Sectors; requirement in '000s	2008	2022	Incremental	Proportion in Vocational Stream	Incremental human resource requirement in Vocational Stream	Annual requirement in Vocational Stream
Building Hardware						
Chemicals and Pharmaceuticals	1,668	3,546	1,878	25%	470	34
Transportation, Logistics, and Warehousing	7,374	25,101	17,727	40%	7,091	506
Total	97,040	267,501	170,461	66%	112,080	8,006

Source: IMACS analysis

The overall demand for skill development would also be driven by skill requirements in the sectors mentioned above as well as other sectors such as domestic help, beauticians, etc., which are informal in nature. *As per the National Policy on Skill Development, it is proposed to develop the capacity to train about 12 to 15 million persons annually.*

From the medium-term perspective, the creation of 5,000 Skill Development Centres would create a demand for about 40,000 trainers⁶.

Table 10: Demand for trainers for Skill Development Centres till 2013

	2010-11	2011-12		2012-13		Total
		H1	H2	H1	H2	
No. of Skill Development Centres	300	900	1,150	1,150	1,500	5,000
No. of trainers required	2,400	7,200	9,200	9,200	12,000	40,000

Source: Discussions with DGET

- **Need for Assessors:** The demand for trainers will also lead to demand for certifying agencies and assessors. Assessors would have to be certified by organisations which have mature quality processes in place for assessment of individuals (such as ISO 17024: 2003).

⁶ It is envisioned that each Skill Development Centre would train about 300 persons in each shift operating for two shifts requiring about 8 trainers per Skill Development Centre

5.2. Current Availability of Teachers and Trainers

The teacher to student ratio across various educational streams is presented in the following table.

Table 11: Student to Teacher Ratio across Educational Streams in India

Educational Stream	Pupil to student ratio
Higher Education	26:1
Higher Secondary Schools	34:1
High Schools	32:1
Middle Schools	34:1
Primary Schools	46:1
Schools	38:1

Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMAcS analysis

It should be noted that the ratio of students to teachers is much above the recommended norm of 15:1 for Higher Education (currently at 26:1), and acceptable levels of 30:1 / 35:1 in school education, especially Primary Schooling (currently at 46:1).

Keeping in mind the above ratios and the current enrolment, we estimate that the number of teachers (for school education and college education) and trainers (for vocational training) in India is about 7.1 million persons in 2008⁷.

Table 12: Current availability of teachers and trainers (in '000s) - 2008

Category	Currently available (2008) – in '000s
Teachers in School Education	6,417
Teachers in Higher Education	692
Trainers for technical training (ITI/ITCs)	37
Total	7,146

Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMAcS analysis

⁷ 'Teachers' is used in the context of school education and college education, 'Trainers' is used in the context of vocational training – ITI/ITCs and modular, as well as short-term, and job oriented courses.

5.3. Projected Demand for Education and Skill Development

Keeping in mind the current enrolment and the projected enrolment based on the earlier discussion, we project the following enrolment in various segments in Education and Skill Development Sector by 2022.

Table 13: Projected Enrolment in Education and Skill Development Sector (in '000s)

Category	Current Enrolment (in '000s) – 2008 ⁸	Projected Enrolment (in '000s) – 2022
School Education	243,352	297,845
Higher Education	18,244	77,262
Technical Training (ITI/ITCs) ⁹	954	4,040

Source: Selected Educational Statistics – 2005-06, Ministry of Human Resource Development, IMaCS analysis

⁸ Estimated from 2005-06 data as available in 'Selected Educational Statistics – 2005-06, Ministry of Human Resource Development', presented in tables outlined in the earlier sections.

⁹ Currently, there does not exist significant Vocational Training capacity other than those through the ITI and ITC system. Based on the National Skill Development Policy, initiatives taken by the DGET such as MES and increasing PPP in Vocational Training, we expect that significant Vocational Training capacity would need to be built up by 2022.

5.4. Projected Requirement for Teachers and Trainers

While projecting the requirement for teachers and trainers, we should keep in mind that the demand for teachers and trainers would stem from the following:

- Increasing enrolment in different streams of Education
- The need for improving the student to teacher ratio from current levels to about 20:1 / 15:1 for Higher Education and 35:1 / 30:1 for School Education
- The need to build training capacity to train about 12 to 15 million persons annually from a vocational skills perspective, keeping in mind that a portion of the existing workforce would also need to be (re)-trained¹⁰.

For the additional enrolment projected to occur in School and Higher Education, as well as the need for capacity in Vocational Training (over and above that of ITI/ITC-based training), we project the following *incremental* requirement for teachers and trainers. It is to be noted that this is the requirement over and above the current available stock of teachers and trainers.

We present the following two scenarios for different student to teacher ratios.

Table 14: Scenario 1 - Incremental requirement for teachers and trainers with a student to teacher ratio of 1:30 for school education and 1:15 for college education and vocational training

Category	Incremental requirement for teachers and trainers (in '000s) between 2008 and 2022
Teachers in School Education	3,511
Teachers in Higher Education	4,458
Trainers for technical training (ITI/ITC)	233
Trainers in other Vocational Streams (modular/job oriented/others)	463
Total	8,664

Source: IMaCS analysis

Table 15: Scenario 2 - Incremental requirement for teachers and trainers with a student to teacher ratio of 1:35 for school education and 1:20 for college education and vocational training

¹⁰ We have assumed a two shift operations for this

Category ¹¹	Incremental requirement for teachers and trainers (in '000s) between 2008 and 2022
Teachers in School Education	2,093
Teachers in Higher Education	3,171
Trainers for technical training (ITI/ITC)	165
Trainers in other Vocational Streams (modular/job oriented/others)	375
Total	5,804

Source: IMaCS analysis

Keeping in mind changes expected in technology, content delivery, e-enabled learning, etc., we opine that Scenario 2 (with a student to teacher ratio of 1:35 for school education and 1:20 for college education and vocational training) would be a better estimate.

Accordingly, we expect that the incremental human resource requirement for teachers and trainers would be about 5.8 million teachers between 2008 and 2022.

This would translate to an *average requirement to train about 415,000 teachers and trainers annually*, as shown in the following table.

Table 16: Average annual training requirement for teachers and trainers (in '000s)

Category	Average annual training requirement (in '000s)
Teachers in School Education	149
Teachers in Higher Education	226
Trainers for technical training (ITI/ITCs)	12
Trainers in other vocational/modular training	27
Total	415

Source: IMaCS analysis

The current capacity of teacher training institutes is about 160,000 only. This is against the requirement, going forward, for the capacity to train about 415,000 teachers and trainers annually. It should also be noted that a large portion of the demand arises from School Education, specifically need for Primary Teachers that can be met by 'Para-Teacher Training Programmes' (for the Primary

¹¹ Further detailing of the educational streams in which such requirement would arise, and the different industry segments which demand Vocational Training (in sectors such as Textiles, Organised Retail, Construction, etc.) have been detailed in the earlier sections. The training of Vocational Trainers would need to be aligned to this demand proportional to the requirement across different sectors.

School level). This can be aligned to **Basic Teaching Certificate (BTC)** Courses. Demand for teachers in higher education, technical education, and vocational training should be met by building capacity for trainers and ‘Train the Trainer’ initiatives. ***The demand for vocation skill trainers is alone expected to be about 40,000 annually (including technical trainers).***

6. Conclusion

As is evident in the earlier sections, there is an incremental requirement for about 5.8 million teachers and trainers till 2022. A portion of this requirement would be driven by industry demand – as in the case of Vocational Training. Also, there would be an increasing requirement for Higher Education as demonstrated by increase in enrolment rates into Higher Education.

However, despite these initiatives, India would continue to witness significant drop-out rates between Class I-X and Class I-XII, given that the current drop-out rate between Class I-X is as high as 60%. Though this might decline to 45%-50% by 2022, it would continue to remain a challenge. This implies the need to strengthen the ‘Vocational Education’ stream (which was also mentioned in the earlier sections). Thus it is required to equip those who drop-out of mainstream education with adequate vocational skills and life skills. This would further increase the demand for teachers and trainers from the levels mentioned in this report.

Given this context and the discussions in the earlier sections, it is required that technology and other innovative means of teaching content/training delivery be adopted. Even with these factors in mind, and considering the formal Education and Skill Development/Vocational Training Sector alone¹², we expect that the demand for teachers and trainers would continue to the extent of training ***415,000 teachers and trainers annually.***

¹² Excluding the demand for ‘Vocational Education’

This report has been prepared by **ICRA Management Consulting Services Limited (IMaCS)**.

IMaCS is a multi-line management and development consulting firm headquartered in India. It has an established track record of over 15 years in consulting across various sectors and countries. IMaCS has completed over 950 consulting assignments and has worked in over 30 countries across the globe. Through the process of carrying out several assignments over the last decade and half, IMaCS has accumulated considerable analytical and consulting expertise, backed by the following capabilities:

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