

Education System for Make in India

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Abstract

This paper focuses on some of the plans being implemented in higher education by Government and other organisations. Implementation of Outcome Based Education and Skill Development Programme are discussed. Status of existing schemes like Industry Institute Interaction, Internships and Industry Oriented Mini Projects are discussed and some modifications are proposed. Pros and cons of “Flexi-semester” system in which one or two semesters of the program will be open and the courses in those semesters be decided depending on the latest developments are discussed. Suggestions are made to improve the existing education system, to make the citizens as technocrats and entrepreneurs.

Keywords: Education and Skill Development, Flexi-semester, Mini Projects

1. Introduction

Development of any civilization or any community depends on knowledge of the citizens. Knowledge can be gained through education. Ultimate use of Knowledge is to apply it to solve problems of society and betterment of society. India has huge population of youth. If their skills are improved and put into real manufacturing jobs, India will emerge as the leading manufacturing hub and exporter. Technology based small scale industries should be encouraged. Interested entrepreneurs should be given training in required technology.

2. Education System in India

In olden days students used to stay with teachers in “Gurukulas” where they also learn the life skills. Later on the system has changed. The focus is mainly on the marks and ranks but not about gaining

knowledge and improving the skills of applying the knowledge. Even the percent of population going to school is much less compared to many countries. Way of teaching from school level has to be changed. Attracting students to schools, by offering free books, dress, meals etc is not a good practice. People should send their children to school by realizing the importance of education. People should be educated and motivated in that direction. Talented, motivated and dedicated candidates with good ethics and morals should be encouraged to join teaching profession.

The duty of engineer is to design and supervise the execution of a work, or production in an industry. An engineer is capable of supervising a group of sub engineers (Diploma holders or other skilled workers). The ratio of engineers to diploma holders to ITI technician should be maintained. With rapid increase in number of engineering colleges in the country, this ratio is totally disturbed and there is

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shortage of low level skilled persons, who really work in the field. Growth in technical education in the past ten years was tremendous. Number of engineering seats available in India in 2006-07 (AICTE 2014) was 5,50,986, whereas in 2014-15 it increased to 19,03,722 (this includes both UG and PG). There is an increase of nearly 350% in engineering seats in a period of seven years. Details of yearly increase in different categories of higher education are presented in Table 1. The number of Engineering Colleges and Polytechnics (including Pharmacy and Architecture Institutions) in 1947 was 44 and 43 respectively with an intake capacity of 3200 and 3400 respectively. The number of UG and diploma seats in all categories of education in Engineering, Pharmacy, etc in 2012-13 was 22,36,743 to 12,12,612. The details are presented in Table 2. Total no of seats available in Industrial Training Institutes (ITI) is 14,68,736 (parliament

2013). This shows the requirement for more low level skilled persons to actually work and take up production.

3. Recent Developments

3.1 Outcome based Education

National Board of Accreditation (NBA) is the organization responsible for granting accreditation to higher educational institutions in India. As NBA has been accredited permanent signatory status of Washington Accord, qualifications of all our students will be internationally recognized. The National Board of Accreditation is directing all the technical institutions towards outcome based education. In outcome based education system, outcome of each and every course and class are to be assessed and improvement in curriculum and

Table 1. Growth of intake in AICTE approved Institutions in last nine years (UG/PG)

Year	Engineering	Management	MCA	Pharm	Arch	HMCT	Total	Added in year
2006-07	550986	94704	56805	39517	4543	4242	750797	73566
2007-08	653290	121867	70513	52334	4543	5275	907822	157025
2008-09	841018	149555	73995	64211	4543	5794	1139116	231294
2009-10	1071896	179561	78293	68537	4133	6387	1408807	269691
2010-11	1314594	277811	87216	98746	4991	7393	1790751	381944
2011-12	1485894	352571	92216	102746	5491	7693	2046611	255860
2012-13	1761976	385008	100700	121652	5996	8401	2236733	190122
2013-14	1804353	364816	119713	137257	9550	6622	2442311	205578
2014-15	1903722	366439	110585	143740	11070	6442	2541998	99687

Table 2. Student Intake for UG/PG/Diploma/Post Diploma

Year	Total UG/PG	Polytechnics	Total Intake Seats
2007-08	907822	417923	1325745
2008-09	1139116	610903	1750019
2009-10	1408807	850481	2259288
2010-11	1790751	1083365	2874116
2011-12	2046611	1117545	3164156
2012-13	2236743	1212612	3449355

method of teaching should be brought. This ensures continuous improvement in the course curriculum and way of teaching. In outcome based education system involvement of stake holders like industry and professional bodies is encouraged in curriculum design to make sure that requirements of the industry are taken into consideration.

3.2 Technical Education Quality Improvement Program (TEQIP)

This is one of the programmes which are aimed at improving the quality of technical education in India. Broad objectives of the program (NPIU)

- To create an environment in which Engineering Institutions selected under the programme can achieve their own set of targets for excellence and sustain the same with autonomy and accountability.
- To support development plans including synergistic Networking and Services to Community and economy of competitively selected institutions for achieving higher standards.
- To improve efficiency and effectiveness of the technical education management system in the States and institutions selected under the Programme.

TEQIP phase I implemented in 127 institutions including centrally funded institutions and polytechnics during 2003-2009. Phase II of TEQIP has been implemented in 200 institutions including some private unaided institutions to improve the competencies of UG students. This has been implemented during 2010-15 (extended upto Oct 2016). Third phase is planned from 2016 to 2020.

3.3 Skill Development Program

Government of India through National Skill Development Corporation is partnering with existing institutions to train enthusiasts. These are

short term training programs focusing in specific skills. They made prediction of requirement of manpower in different skill sets and based on that providing support to the training institutions. The requirement of manpower gap in electronics and IT hardware sector is presented in Table 3.

3.4 Rastriya Uchatara Siksha Abhiyan

This is another scheme launched by central government for betterment of state funded higher education institutions. Gross Enrolment Ratio in India was 15% in 2011-12, where as China's GER of 25% and USA 83%. However India is making efforts to bring it to 30% by 2020. During eleventh five year plane period (i.e.2007-12) central government has allocated to spend 34785 crores for improvement of higher education compared to 4000 crores in the previous five year plan. In the 12th plan the central allocation was 16227 crores and state allocation 6628 crores making a total of 22855 crores (RUSA 2014).

3.5 Industry Institute Interaction

Institutions should interact with near by industry people and the industrialists should also come forward to train the students in their industry by allowing them to do their projects. This will help the students to gain field experience and boost their confidence levels. Industry will also get the chance to recruit people with exposure to industrial procedures and this saves them considerably in training of the fresh recruitees. Similarly by allowing the students and faculty to solve the industry problems they can save a lot on R&D expenditures. As a part of corporate responsibility also industries should encourage the students and citizens of surrounding areas to know about their industry and allow the students to get trained in their organization.

Table 3. Skill gap in Electronics and IT hardware sector

Segment	Employment (in Million)			Employment Growth		
	2013	2017	2022	2013-17	2017 - 22	2013 - 22
Design and Manufacturing	1.45	1.75	2.06	0.3	0.31	0.61
Sales and Marketing	1.58	2.33	3.34	0.75	1.01	1.76
Repair, installation and Maintenance	1.3	2.16	3.54	0.86	1.38	2.24
Total	4.33	6.24	8.94	1.91	2.7	4.61

3.6 Entrepreneurship Development Cell

To inculcate the culture of entrepreneurship, many educational institutional institutions are running entrepreneurship development cells in their institutions and the government is also encouraging these by providing financial support for these. The main motto of these cells is organize workshops and make the students to get exposed to industrialists, know their experiences and the procedures in setting up a new enterprise. By interacting with successful industrialists, students get motivated towards starting their own enterprise.

3.7 Incubation Centers

For the promotion of entrepreneurship, and to help the entrepreneurs, incubation centers have been established by Government and nongovernment organisations. These provide the basic infrastructure required for the beginning of any business or industry. The entrepreneur need not face the starting hurdles in getting permissions and other facilities like, space, electric power, communication etc. The entrepreneur can run his business in this premises, till his business break evens.

3.8 Finishing Schools

To fill the gap between university education and industry requirement or to make the student industry ready, some educational institutions and industries are running these finishing schools. The main motto of these finishing schools is to train the candidates in

the skills required by the industry. This training may be in the latest technology that has come recently and was not covered in his university curriculum or industry procedures. The duration of the training may be for a short period. Some industries offering this type of training programmes are recruiting the trained people into their organization.

4. Suggestions for Improvement

Universities and autonomous institutions may keep the curriculum of the last semester open, so that curriculum may be decided just before beginning of the semester. In consultation with industry recent development can be included in the curriculum and students will be industry ready by having upto date knowledge. This also eliminates the need of finishing schools.

Innovation should be encouraged from school level. For this application oriented teaching should be encouraged. More emphasis should be given for providing clear understanding of basic fundamentals of science.

More emphasis should be given towards establishment of small and medium industries with mass production as main goal. Industrialists should concentrate on getting smaller components manufactured by small scale industries or domestic production in the houses and collecting them and fabricating finished goods. This helps in reduction of

initial establishment cost and labour charges for the main industry and rural youth get benefitted. When all the people are employed, spending their time and energy on useful productive work, naturally crime rate will also come down.

Many schemes are planned for the improvement of education system. But like in other schemes, here also sincerity is lacking in implementation of the schemes.

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