CHAPTER 3

HIGHER EDUCATION AND RESEARCH IN INDIA:
AN OVERVIEW
India provides considerable opportunities for collaboration for universities and research institutions. However, India has a great variety of institutional systems in higher education and there are also major variations in the quality of the universities.

**Education in India** is provided by the public sector as well as the private sector, with control and funding coming from three levels: central, state, and local. Taxila was the earliest recorded centre of higher learning in India from at least 5th century BCE and it is debatable whether it could be regarded a university or not. The Nalanda University was the oldest university-system of education in the world in the modern sense of university. Western education became ingrained into Indian society with the establishment of the British Raj.

Education in India falls under the control of both the Union Government and the State Governments, with some responsibilities lying with the Union and the states having autonomy for others. The various articles of the Indian Constitution provide for education as a fundamental right. Most universities in India are controlled by the Union or the State Governments.

India has made progress in terms of increasing the primary education attendance rate and expanding literacy to approximately three quarters of the population. India's improved education system is often cited as one of the main contributors to the economic rise of India.

As per the latest (2013) report issued by the All India Council of Technical Education (AICTE), there are more than 3524 diploma and post-diploma offering institutions in the country with an annual intake capacity of over 1.2 million.

The AICTE also reported 3495 degree-granting engineering colleges in India with an annual student intake capacity of over 1.76 million with actual enrollment crossing 1.2 million.
Capacity for Management Education crossed 385,000, and post graduate degree slots in Computer Science crossed 100,000. Pharmacy slots reached over 121,000.

Total annual intake capacity for technical diplomas and degrees exceeded 3.4 million in 2012.

In the India education system, a significant number of seats are reserved under affirmative action policies for the historically disadvantaged Scheduled Castes and Scheduled Tribes and Other Backward Classes. In universities/colleges/institutions affiliated to the federal government there is a minimum 50% of reservations applicable to these disadvantaged groups, at the state level it can vary.

### 3.1 Introduction & Brief History

Before we discuss the current higher education system in India, a brief historical background will be helpful to understand its institutional context. India has a very rich history dating back several millenniums. Knowledge was preserved and propagated through an oral tradition. In this context, the teachers set up ‘residential schools’ in their own homes. Students were to live with the teacher and his family and were expected to share the daily chores of the family. Sanskrit was the language of the educated and the texts were composed in this language. Most of the major modern languages in India are derived from Sanskrit.

During the rules of Buddhist kings belonging to the Mauryan dynasty in the third and second century BC India flourished with the establishment of institutions of learning. Taxila, now in Pakistan, became the seat of learning where scholars journeyed to learn and to be educated. Nalanda in eastern India became famous for the Buddhist University where several religious conclaves were held.

In the 10th century, India was invaded from the northwest and many founded their dynastic rule in India. Persian became the court language and the educated elites became conversant in Farsi and Arabic. The dual traditions of Sanskrit and Farsi education were kept alive till the colonization of India by the British. The British established schools to teach English and the sciences.
In 1857 three universities were established in three metropolitan cities, Bombay (now Mumbai), Calcutta (now Kolkata) and Madras (now Chennai) following Oxford or Cambridge as models. Another university was established in 1887 in Allahabad.

These universities imparted education in the liberal arts and sciences.

The main objective was to prepare people for careers in the civil service, legal profession and in medicine. The need for technical education was also felt by the British, who established the first industrial school attached to the Gun Carriage Factory in Guindy, Chennai, in 1842.

India's education system is divided into different levels such as pre-primary level, primary level, elementary education, secondary education, undergraduate level and postgraduate level. The National Council of Educational Research and Training (NCERT) is the apex body for curriculum related matters for school education in India. The NCERT provides support and technical assistance to a number of schools in India and oversees many aspects of enforcement of education policies. In India, the various curriculum bodies governing school education system are:

- The state government boards, in which the majority of Indian children are enrolled.
- **The Central Board of Secondary Education (CBSE).** CBSE conducts two examinations, namely, the All India Secondary School Examination, AISSE (Class/Grade 10) and the All India Senior School Certificate Examination, AISSCE (Class/Grade 12).

- **The Council for the Indian School Certificate Examinations (CISCE).** CISCE conducts three examinations, namely, the Indian Certificate of Secondary Education (ICSE - Class/ Grade 10); The Indian School Certificate (ISC - Class/ Grade 12) and the Certificate in Vocational Education (CVE - Class/Grade 12).

- **The National Institute of Open Schooling (NIOS) conducts two examinations, namely, Secondary Examination and Senior Secondary Examination (All India) and also some courses in Vocational Education.**
• International schools affiliated to the International Baccalaureate Programme and/or the Cambridge International Examinations.

• Islamic Madrasah schools, whose boards are controlled by local state governments, or autonomous, or affiliated with Darul Uloom Deoband.


In addition, NUEPA (National University of Educational Planning and Administration) and NCTE (National Council for Teacher Education) are responsible for the management of the education system and teacher accreditation.

10+2+3 pattern

The central and most state boards uniformly follow the "10+2+3" pattern of education. The 10 years is further divided into 5 years of primary education and 3 years of upper primary, followed by 2 years of high school. This pattern originated from the recommendation the Education Commission of 1964–66.

3.2 Primary education system in India

The Indian government lays emphasis on primary education up to the age of fourteen years, referred to as elementary education in India. The Indian government has also banned child labour in order to ensure that the children do not enter unsafe working conditions. However, both free education and the ban on child labour are difficult to enforce due to economic disparity and social conditions. 80% of all recognized schools at the elementary stage are government run or supported, making it the largest provider of education in the country.

Education has also been made free for children for 6 to 14 years of age or up to class VIII under the Right of Children to Free and Compulsory Education Act 2009.

This primary education scheme has also shown a high Gross Enrollment Ratio of 93–95% for the last three years in some states. Significant improvement in staffing and enrollment of girls has also been made as a part of this scheme. The current scheme
for universalization of Education for All is the Sarva Shiksha Abhiyan which is one of the largest education initiatives in the world. Enrollment has been enhanced, but the levels of quality remain low.

3.3 Private education

In India, due to the British influence, a public school implies a non-governmental, historically elite educational institution, often modeled on British public schools which are in certain cases governmental. There are privately owned and managed schools, many of whom have the appellation "Public" attached to them, e.g. the Delhi Public Schools, or Frank Anthony Public Schools. Most middle-class families send their children to such schools, which might be in their own city or distant boarding school. The medium of education is English, but Hindi and/or the state's official language is also taught as a compulsory subject.

According to current estimates, 80% of all schools are government schools making the government the major provider of education. However, because of poor quality of public education, 27% of Indian children are privately educated. With more than 50% children enrolling in private schools in urban areas, the balance has already tilted towards private schooling in cities; even in rural areas, nearly 20% of the children in 2004-5 were enrolled in private schools. According to some research, private schools often provide superior results at a multiple of the unit cost of government schools. However, others have suggested that private schools fail to provide education to the poorest families, a selective being only a fifth of the schools and have in the past ignored Court orders for their regulation.

In their favour, it has been pointed out that private schools cover the entire curriculum and offer extra-curricular activities such as science fairs, general knowledge, sports, music and drama. The pupil teacher ratios are much better in private schools (1:31 to 1:37 for government schools) and more teachers in private schools are female. There is some disagreement over which system has better educated teachers. According to the latest DISE survey, the percentage of untrained teachers (para-teachers) is 54.91% in private, compared to 44.88% in government schools and only 2.32% teachers in unaided schools receive in-service training compared to 43.44% for government schools. The competition in the school market is intense, yet most schools make
profit. Even the poorest often go to private schools despite the fact that government schools are free. A study found that 65% of schoolchildren in Hyderabad's slums attend private schools.

3.4 Homeschooling

Homeschooling is legal in India, though it is the less explored option. The Indian Government's stance on the issue is that parents are free to teach their children at home, if they wish to and have the means. HRD Minister Kapil Sibal has stated that despite the RTE Act of 2009, if someone decides not to send his/her children to school, the government would not interfere.

3.5 Secondary education

The National Policy on Education (NPE), 1986, has provided for environment awareness, science and technology education, and introduction of traditional elements such as Yoga into the Indian secondary school system. Secondary education covers children 14–18 which covers 88.5 million children according to the Census, 2001.

A significant feature of India's secondary school system is the emphasis on inclusion of the disadvantaged sections of the society. Professionals from established institutes are often called to support in vocational training. Another feature of India's secondary school system is its emphasis on profession based vocational training to help students attain skills for finding a vocation of his/her choosing. A significant new feature has been the extension of SSA to secondary education in the form of the Madhyamik Shiksha Abhiyan.

Another notable special programme, the Kendriya Vidyalaya project, was started for the employees of the central government of India, who are distributed throughout the country. The government started the Kendriya Vidyalaya project in 1965 to provide uniform education in institutions following the same syllabus at the same pace regardless of the location to which the employee's family has been transferred.
3.6 **Higher education**

After passing the Higher Secondary Examination (the grade 12 examination), students may enroll in general degree programmes such as bachelor's degree in arts, commerce or science, or professional degree programmes such as engineering, law or medicine. India’s higher education system is the third largest in the world, after China and the United States. The main governing body at the tertiary level is the University Grants Commission (India), which enforces its standards, advises the government, and helps coordinate between the centre and the state. Accreditation for higher learning is overseen by 12 autonomous institutions established by the University Grants Commission. In India, education system is reformed. In the future, India will be one of the largest education hubs.

As of 22 June 2012, the total number of universities in India is 567. There are universities of some kind in each and every of the 29 states of India as well as three of the union territories, Chandigarh, Delhi and Puducherry. The state with the most universities is Tamil Nadu with 55 universities. It is also the state with the most deemed universities, numbering 29. Andhra Pradesh has the most state universities (32), Rajasthan the most private universities (25), while Delhi and Uttar Pradesh have four central universities each, the largest number of all the states and territories.

3.7 **Open and distance learning**

At school level, National Institute of Open Schooling (NIOS) provides opportunities for continuing education to those who missed completing school education. 14 lakh students are enrolled at the secondary and higher secondary level through open and distance learning. In 2012 various state government also introduce "STATE OPEN SCHOOL" to provide distance education.

At higher education level, Indira Gandhi National Open University (IGNOU) coordinates distance learning. Arjun Singh Centre for Distance and Open Learning, Jamia Millia Islamia University was established with the assistance of Distance Education Council in September 2002. Major objectives of the Centre is to provide opportunities for higher education to those who are not able to draw benefits from formal system of education.
3.8 Women’s Education

Women have a much lower literacy rate than men. Far fewer girls are enrolled in the schools, and many of them drop out. In the patriarchal setting of the Indian family, girls have lower status and fewer privileges than boy children. Conservative cultural attitudes prevents some girls from attending school.

The number of literate women among the female population of India was between 2–6% from the British Raj onwards to the formation of the Republic of India in 1947. Concerted efforts led to improvement from 15.3% in 1961 to 28.5% in 1981. By 2001 literacy for women had exceeded 50% of the overall female population, though these statistics were still very low compared to world standards and even male literacy within India. Recently the Indian government has launched Saakshar Bharat Mission for Female Literacy. This mission aims to bring down female illiteracy by half of its present level.

3.9 Vocational education

The government of India is taking many positive steps to turn the education vocational and job oriented. Recently the duration of Graduation in Delhi University has been turned to 4 years from 3 years. Moreover government is taking lots of steps to promote small vocational institutes which provides job oriented courses like aviation related or travel & tourism related courses to name few examples.

3.10 Institutional Framework for the Higher Education System

With this varied history of the higher education system, the current system is primarily modeled after the British system. However, some of the technical institutions in engineering and management are modeled on the US system. The higher education system remains primarily the responsibility of the state governments, although the central government has taken the initiative in establishing and funding a few central universities and other institutions of national repute.

India has 14 major languages. Institutions of higher education use English as the medium of instruction for most courses, particularly in the technical fields, though the regional language remains a major cultural artifact that provides the cultural context.
The institutional framework of higher education in India is complex.

There are several types of institutions: universities, colleges, institutions of national importance, post-graduate institutions and polytechnics. Only the universities are generally authorized to grant degrees. By special acts of Parliament, the institutions of national importance have been authorized to grant degrees. Post-graduate institutions and polytechnics can grant diplomas and are to be recognized by the All India Council of Technical Education.

Universities are of four types: state universities, central universities, deemed universities (aided and unaided), and private universities.

**CENTRAL UNIVERSITIES**

Usually, a university is established under the act of a State legislature. The State Government maintains control of the universities in many respects, although a central agency, the University Grants Commission provides bulk of the funding. Central Government has established 20 universities that are funded and controlled by it.

**List of Central Universities**

- Aligarh Muslim University, Uttar Pradesh
- Assam University, Assam
- Babasaheb Bhimrao Ambedkar University, Uttar Pradesh
- Banaras Hindu University, Uttar Pradesh
- Central Agricultural University, Manipur
- Indira Gandhi National Open University, Delhi
- Jamia Millia Islamia, Delhi
- Jawaharlal Nehru University, Delhi
- Mahatma Gandhi Antarrasstriya Hindi Vishwavidyalaya, Maharashtra
- Manipur University
- Maulana Azad National Urdu University
- Mizoram University
- Nagaland University
- North eastern Hill University, Meghalaya
Deemed universities are unique in India. Prior to independence, several private autonomous institutions of higher education and learning were developed in India. The Education Commission headed by Dr Radhakrishnan (a noted philosopher and the second President of India) recommended in 1948 that these institutions should be recognized appropriately. Accordingly, the Government of India made a provision under the UGC Act of 1956, Section 3, to recognize some deemed institutions to be universities. The objective was as follows:

"If institutions which for historical or other reasons were not universities, yet were doing the work of high standard in specialized academic fields comparable to that done at a university then the granting to these institutions the status of universities would enable them to further contribute to the cause of higher education thereby mutually enriching the institution and the university system."

To qualify for being a deemed university it was required that, “the institution should generally be engaged in teaching programs and conducting research in chosen fields of specialization which were innovative and of very high academic standards at the Master’s and research levels. It should also have a greater interface with society through extramural extension and field action related programs.”

In recent years there has been a significant growth of deemed universities.

Only 29 deemed universities were recognized from 1956 to 1990. But after 1990, there have been 63 new deemed universities, excluding the regional engineering colleges that were given the degree granting powers.
STATE UNIVERSITIES

Universities charted under the state legislatures have been founded at various times. The number of universities in a state depends on the population as well as resources available to the states.

<table>
<thead>
<tr>
<th>State</th>
<th>No. of State Universities</th>
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<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>12</td>
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<tr>
<td>Maharashtra</td>
<td>16</td>
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<tr>
<td>Arunachal Pradesh</td>
<td>1</td>
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<tr>
<td>Manipur</td>
<td>1</td>
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<tr>
<td>Assam</td>
<td>3</td>
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<td>Meghalaya</td>
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<td>Bihar</td>
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<td>Mizoram</td>
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<td>Chandigarh</td>
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<td>Nagaland</td>
<td>1</td>
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<tr>
<td>Chhattisgarh</td>
<td>2</td>
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<td>Delhi</td>
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<td>Goa</td>
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<td>Orissa</td>
<td>3</td>
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<td>Gujarat</td>
<td>4</td>
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<td>Pondicherry</td>
<td>1</td>
</tr>
<tr>
<td>Haryana</td>
<td>3</td>
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<tr>
<td>Punjab</td>
<td>3</td>
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<tr>
<td>Himachal Pradesh</td>
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<tr>
<td>Rajasthan</td>
<td>8</td>
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<tr>
<td>Jammu and Kashmir</td>
<td>2</td>
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<tr>
<td>Tamil Nadu</td>
<td>16</td>
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<tr>
<td>Jharkhand</td>
<td>1</td>
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<tr>
<td>Tripura</td>
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<tr>
<td>Karnataka</td>
<td>8</td>
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<tr>
<td>Uttarakhand</td>
<td>14</td>
</tr>
</tbody>
</table>
• Kerala 4
• Uttarakhand 4
• Madhya Pradesh 7
• West Bengal 7

Most of the state universities have colleges affiliated with them. Colleges provide undergraduate education. Universities manage and conduct the undergraduate qualifying examinations and the granting of degrees. Universities conduct courses at post-graduate level awarding Masters Degrees. The doctoral program in a typical university is very much like that in the United Kingdom where little emphasis is put on course work and is based solely on the dissertation written under the guidance of an approved “guide” or professor.

3.11 INSTITUTES OF NATIONAL IMPORTANCE

Institutes of national importance are the crown jewels of higher education and research in India. These are autonomous bodies outside the control of the University Grants Commission that controls the governance of universities. These institutions have different funding structures, and their own curricula, academic calendar and compensation system for the faculty. Admission to these institutions is highly competitive. All the IITs (Indian Institute of Technology) are categorized in this group.

List of Institutions of National Importance

• All India Institute of Medical Sciences, New Delhi
• Daksina Bharti Hindi Prachar Sabha, Chennai
• Indian Institute of Technology, Delhi
• Indian Institute of Technology, Chennai
• Indian Institute of Technology, Kharagpur
• Indian Institute of Technology, Mumbai
• Indian Institute of Technology, Kanpur
• Indian Institute of Technology, Guwahati
• Indian Institute of Technology, Roorkee
• Indian Statistical Institute, Kolkata
• National Institute of Pharmaceutical Education and Research, Mohali
• Post Graduate Institute of Medical Education and Research, Chandigarh
• Sri Chitra Tirunal Institute of Medical Sciences and Technology, Tiruvanthapuram

3.12 POST-GRADUATE INSTITUTES FOR MANAGEMENT

In the early 1960s, the Central Government started introducing management education in India. Two Indian Institutes of Management (IIM) were established with the collaboration of Harvard University and Massachusetts Institute of Technology in 1962, one in Ahmedabad and the other in Calcutta.

At present there are six IIMs, one each in Ahmedabad, Bangalore, Calcutta, Indore, Kozikode and Lucknow. Admission to these institutes is highly competitive. The successful candidate is 1 among 100 applicants.

IIMs do not have the authorization to award degrees. They award postgraduate diplomas. The doctoral programs at IIMs also do not award PhDs, but the graduates are called “Fellows”.

Since management education has become very popular, most universities offer MBA degrees. There are a large number of post-graduate Institutes that offer a post-graduate diploma in management. Such institutes are recognized by the All India Council of Technical Education. The only exception is the Indian School of Business (ISB) located in Hyderabad. It was recently founded in collaboration with the Kellogg School of Management at the Northwestern University, the Wharton School at the University of Pennsylvania, and the London Business School. The cost of education at ISB is quite high and is equivalent to the cost of an MBA degree in most universities in the US.

3.13 THE ASSOCIATION OF INDIAN UNIVERSITIES

The Association of Indian Universities is a voluntary organization of all Indian universities. The purposes of AIU are:

• To serve as an Inter-University Organization
To act as a bureau of information and to facilitate communication, coordination and mutual consultation among universities

To act as a liaison between the universities and the Government (Central as well as the State Governments) and to cooperate with other universities or bodies (national or international) in matters of common interest

To act as the representative of universities of India

To promote or to undertake such programs as would help to improve standards of instruction, examination, research, textbooks, scholarly publications, library organization and such other programs as may contribute to the growth and propagation of knowledge

To help universities to maintain their autonomous character

To facilitate the exchange of members of the teaching and research staff

To appoint or recommend where necessary a common representative of the Association at any Conference, national or international, on higher education

To assist universities in obtaining recognition for their degrees, diplomas and examinations from other universities, Indian as well as foreign

To undertake, organize and facilitate conferences, seminars, workshops, lectures and research in higher learning

To establish and maintain a sports organization for promoting sports among Member-Universities

To establish and maintain an organization dealing with youth welfare, student services, cultural programs, adult education and such other activities as are conducive to the betterment and welfare of students or teachers and others connected with universities

To act as a service agency to universities in whatever manner it may be required or prescribed
To undertake, facilitate and provide for the publication of newsletters, research papers, books and journals.

Recognition by AIU is important for many post-graduate autonomous institutions.

3.14 RESEARCH INSTITUTIONS

The institutional framework for research and development in India can be divided into two broad categories: defense and civilian. In the latter category there are five major apex bodies that are responsible for research and development in these fields:

1. Indian Council of Medical Research
2. Indian Council of Agricultural Research
3. Indian Council of Social Science Research
4. Council of Scientific and Industrial Research
5. Tata Institute of Fundamental Research
6. The Indian Council of Medical Research (ICMR)

IMPLICATION FOR FINNISH UNIVERSITIES AND RESEARCH INSTITUTES

India provides considerable opportunities for collaboration with the universities and research institutes in Finland. Institutions in the UK and Australia are actively seeking stronger linkage with Indian institutions for participating in the education sector. Anglo-American institutes have a longer history of working with India and thus are the favourite destinations for many Indians. In this respect Finnish institutions may face some challenges in building relationships.

Based on discussions with the academic leaders in Finland, it seems that Finnish universities have two objectives in collaborating with Indian institutes. One is to access the pool of talented Indian students and to attract them to join Finnish universities. Institutes in the US and UK depend heavily on foreign students in their
doctoral programs. The second objective is to pursue joint or collaborative research with Indian scientists and technical personnel.

Universities can also be good sources for talented students. However, the problem is the major variations in the quality of the universities. The accreditation processes used by the various agencies are not based on the assessment of the output. Moreover, the standards of the admission processes vary. Finally, the quota system imposed by the government creates another level of ambiguity in judging the quality of a graduate from a university. It would be good idea to use some internationally recognized tests such as GRE or GMAT as well as TOEFL for admission purposes.

In the technical and engineering fields, for example, the following universities/institutions have an excellent reputation:

1. Delhi College of Engineering, New Delhi
2. VJ Technical Institute, Mumbai
3. University Department of Chemical Technology, Mumbai
4. Thapar University, Patiala
5. Jadavpur University, Kolkata
6. University of Pune, Pune
7. Birla Institute of Technology and Science, Pilani.

In the area of fundamental science, the following institutions are eminent:

1. Tata Institute of Fundamental Research, Mumbai
2. Saha Institute of Nuclear Physics, Kolkata
3. Indian Association for Cultivation of Science, Kolkata.

In the area of social and economic sciences at least the following institutions have excellent reputation:

1. Delhi School of Economics, New Delhi
2. Jawaharlal Nehru University, New Delhi

3. Tata Institute of Social Sciences, Mumbai

4. Indian Statistical Institute, Kolkata.

In the field of management, there exist several good institutes that offer postgraduate diplomas in business administration, equivalent to an MBA degree.

However, very few of them are engaged in any credible research activities. The following institutions have developed good track record of research and publication:

1. Indian Institute of Management, Calcutta

2. Indian Institute of Management, Ahmedabad

3. Indian Institute of Management, Lucknow

4. Management Development Institute, Gurgaon

5. Indian Institute of Foreign Trade, New Delhi.

**Issues**

- **Workforce quality, funding and infrastructure**

One study found out that 25% of public sector teachers and 40% of public sector medical workers were absent during the survey. Among teachers who were paid to teach, absence rates ranged from 15% in Maharashtra to 30% in Bihar. Only 1 in nearly 3000 public school head teachers had ever dismissed a teacher for repeated absence. A study of 188 government-run primary schools found that 59% of the schools had no drinking water and 89% had no toilets. 2003–04 data by National Institute of Educational Planning and Administration revealed that only 3.5% of primary schools in Bihar and Chhattisgarh had toilets for girls. In Madhya Pradesh, Maharashtra, Andhra Pradesh, Gujarat, Rajasthan and Himachal Pradesh, rates were 12–16%. In fact, the number of secondary schools is almost half the number of upper primary schools available in the country.
Curriculum issues

Modern education in India is often criticized for being based on rote learning rather than problem solving. *New Indian Express* says that Indian Education system seems to be producing zombies since in most of the schools students seemed to be spending majority of their time in preparing for competitive exams rather than learning or playing.

Controversy

In January 2010, the Government of India decided to withdraw Deemed university status from as many as 44 institutions. The Government claimed in its affidavit that academic considerations were not being kept in mind by the management of these institutions and that "they were being run as family fiefdoms".