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Trend of Students towards Higher Education in Science & Technology: Study on Central Universities in India

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Abstract: ***Education is one of the major sectors for national development, being given serious attention on increasing educational organizations geographically, increasing literacy rate i.e. to cover more and more human resource of the country and elevating the level and improving quality of education as well as spreading more education to the society. The speed of change brought by new Science & Technologies had an important outcome on the way people live, work, and plays worldwide. New and emerging Science & Technologies challenge the traditional process of teaching and learning, and the way education is managed. Science & Technology, while an essential area of study in its own right, is having a key impression across national curriculum areas. There has been an exceptional growth in the use of science and technology in teaching, research and extension activities. This paper is an endeavor to assess the extent trend of students for Science and Technology (S&T) education and Arts & Commerce (A&C) education in various years of study from 2011 to 2014. Current attention is being paid on the practical application of education in field's science, engineering, architecture, medical, information & communication technology, agriculture, Social science, commerce, geography commerce and others which comes under these major disciplines.***

Keywords: Development, Education, Higher education, Human Resources, Science & Technology.

1. Introduction

The main key to human progress has been considered as the combination of science and technology. Education feeds technology, which in turn forms the basis of education. It is therefore evident that information technology has affected changes to the methods, purpose and perceived potential of education. A country achieves it fame, security and self-sufficiency only through its economic stability, technical advancement, strong defense and strength due to social unity of its patriotic citizens. All this is possible through the well-educated highly enlightened residents as well as the use of advance technology of the country due to well and deeply attained scientific, technical, agricultural, religious, moral and cultural achievements. Hence only higher education of the human resource of a country enables a country's fast development in all the said directions.

Education is the basic and essential need of a nation for development. Higher education occupies the peak of educational structure in the formal process of education. Generally it covers of three basic categories- bachelors, masters and research programme i.e. M.Phil and Ph.D. Higher education also comprises of science, arts, commerce, medical, engineering, law and other professional degrees. Therefore the possibility of process of higher education is wide and demanding. It is demanding in the way that, it provides an extensive prospective of openings to the students about almost all the phase of our life. In the recent year efforts have been made by the commission to normalize the growth of higher education as well as the establishment of new universities and colleges with a view to confirming that, higher education grows to meet the sincere needs of the society for skilled manpower with suitable level of professional training (DST and AISHE Reports, 2011-2015) .

2. Earlier Study

In the past half century, the utmost noticeable of these trends is certainly the dramatic development of higher education worldwide, as shown in Figure 1 given below. In 1970, the UNESCO Institute for Statistics (UIS) projected that there were around 32.5 million students enrolled in higher education all over the world. In the year 2000, this projection increased to near about 100 million and 178 million in year 2010. This interprets into 4.3% average annual development in tertiary enrolment, a very quick growth when associated to the 1.6% average annual development in the world population over the same period (UNDP, 2012). Figure 1 also discloses a hastening growth starting in the mid-1990s, with a 5.9% average annual development of higher education enrolments in the first decade of the 21st century. The number of higher education students is forecast to further expand to reach 263 million by 2025 (British Council and IDP Australia, cited in Davis, 2003 and Daniel, 2009).

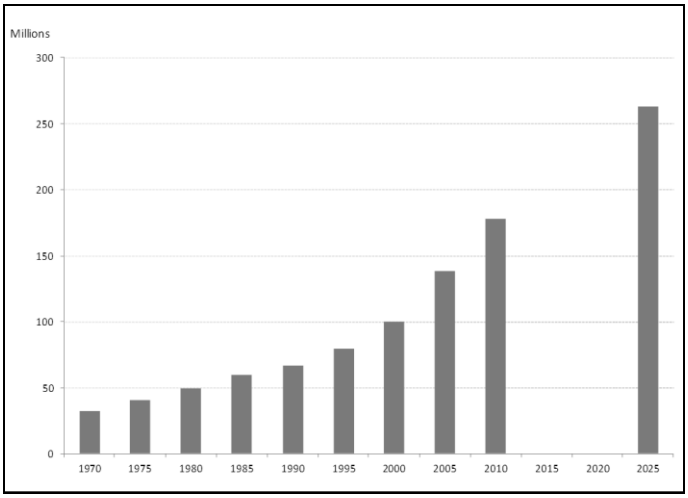


Figure 1

Source: *Daniel (2009) for 2025 prediction and UNESCO Institute of Statistics Data Center for 1970 to 2010.*

Development has succeeded on all regions and constitutes a important feature of global trends of the late 20th and early 21st centuries. There are many underlying factors. The leading public demand for higher education has flown, by empowering growing upper-secondary completion rates. Other factors include social elasticity prospects, approaching to increase female contribution, as well as democratization and urbanization processes and individually movements in the emerging world. Finally, the faster pace of technological change has further inspired access to and contribution in higher education explained by Altbach et al., 2009, Schofer and Meyer, 2005 and Gibbons, 1998. Higher education contribution has extended in stages across countries and world. Altbach et al. 2009 had noted that the USA and Canada were first to achieve bulk higher education in the 1960s, followed by Western Europe and Japan in the 1980s (Altbach et al. 2009). This trend then feast towards developing countries. The development in tertiary enrolments over the past four decades was more noticeable in developing regions, particularly Sub-Saharan Africa with 8.4% average annual growth, the Arab states with 7.4% average annual growth, East Asia and the Pacific with 7% average annual growth, Latin America and the Caribbean with 6.4% average annual growth and South and West Asia with 6% average annual growth. More recent trends suggest that the greatest development is now taking place in South and East Asia. China and India alone will account for over half of the global increase in student numbers in the years to come (Kapur and Crowley, 2008). Moreover, by 2020, they will account for 40% of young adults (aged 25-34) with a tertiary degree (OECD, 2012a).

3. Higher Education in India

Higher education is an educational level that follows the completion of a racing track for athletes. Higher education includes education level at graduation, post-graduation, research level and challenging applied work and social services activities of education institutions. The key role of higher education is progressively to transform students by improving their knowledge, skills, approaches and capabilities while separately empowering them as life logical and deep learners. The higher education system in India rose quickly after 1950. By 1980, there were 132 universities and 4738 colleges in the country enrolling around 5% of the qualified age group in higher education. In terms of enrolment, today, India is the 3rd largest higher education system in the world, behind China and the USA, with 37,000 institutions and 759 universities. Higher education in China having the maximum enrolment in the world (around 23 million), is controlled in only nearby 2,500 institutions. Whereas, In India, it is around 500-600 students per higher education institutions in comparison of United States and Europe would have 3000-4000 students and in China this would be about 8000-9000 students per higher educational institution. This makes it a very different system of higher education in India that is more difficult to manage than any other system of higher education in world. However, other than a minority few institutions of national importance providing high quality higher education, the system is failing to produce wealth creators and creative, intellectual leaders who are much needed in all sectors of the society. India's higher education sector has unsuccessful to map the future demand for various abilities, Global Cooperation and Competitiveness.

4. All India Survey on Higher Education Study

Various projects have been taken up to assess status of education in school level, UG level and in PG and higher levels. In all such projects study of student enrolment, starting of new school, college and of higher education organization (HEO's), percentage of drop outs and pass outs has been done.

Specifically the following such projects and studies briefly describe some of these activities.

(a) During March 12, 2003 to March 31, 2009 Ministry of Human Resource Development (MHRD) worked on Implementation, Completion and Result Report on Technical Education Quality Improvement Program (TEQIP) and published it in August 2009.

(b) Some faculty members of IGNOU have conducted a survey of drop outs from B.Sc. courses in various disciplines of IGNOU during 1998-99 to 2002-03. Sample of 70% males and 30% female's drop outs were contacted with only 45% response Percentages of respondents who dropped out due to considered 9 reasons are given (which are 47% to 64%) and suggestion to prevent dropouts are also given.

(c) In January 2015 British Council reported that since Indian higher education system is second largest in the world , in student Enrolment and largest in total number of higher education organization (HEO's) but only a few of these HEO's have potential for international collaborations. Such collaborations are being still searched.

(d) Centre for Civil Society submitted to International Growth Centre, the current regulatory framework of higher education in India. This report high lights areas requiring important policy reforms in, "Higher Education in India : Vision 2030" and the 2006 report by Pawan Agrawal, Higher Education in India : the Need for Change . It gives a regulatory mapping of current higher education of India and analyses different routes of private institutions of higher education , the different regulatory and statuary bodies governing and monitoring these and their accreditation , as an example in engineering sector.

(e) Govt. of India MHRD Department of Higher Education published a report of the Working Group Higher Education in September 2011. This working group was divided in three sub- groups which have specific proposal on

i. Starting now educational institutions of various types.

ii. Constructing Girls' hostels.
iii. Providing help to education of females SC/ST , OBC and physically handicapped through UGC schemes of reservation and waiving of tuition fee and subsidized educational loan etc.

Suggestions for

I. Academic reforms
II. Development of faculty
III. Open and distance education
IV. Rashtriya Sanskrit Sansthan
V. Reforms of legislation of accreditation and copyright
VI. Changing types of Higher Education Organizations

have also been provided.

(a) UGC also published a 5 year report in Dec. 2013 in the frame of INNO, INDIGO and INDIGO Policy. It deals with Indo-European research and innovation program in collaboration with UGC and DST. This report considers DST's Science and Technology Structure, Institutes of National Importance and UGC's observations on Deemed Universities, UGC Affiliated colleges, AICTE, IIT's, IISC. National Institute of Technology (NIT), Indian Statistical Institutes (ISI), National Institute of Fashion Technology (NIFT), Medical institutes (AIIMS New Delhi, PGIMER Chandigarh, JIPMER Pondicherry, SGPGI Lucknow.)

In August 2014 and in February 2016 Govt. of India MHRD published report on Technical Universities and on Higher Education.

The above studies on educational status in India and those conducted in various projects or individual PhD's in various areas of knowledge indicate that much work has been taken up on status of Higher Education in various sectors of Indian population related to various levels and streams of education.

5. Role of Science & Technology in Higher Education

Science and Technology (S&T) has been essential to India's development efforts since the time of Freedom. The first Prime Minister, Pt. Jawaharlal Nehru was believed in the central importance of S&T for economic development and social revolution. Over the consequent six decades, India's growth development proceeded by channelling significant resources to S&T education, training skills and research. The country today has a massive S&T substructure including national level institutional laboratories and institutes, more than 759 universities and over 37,000 colleges. With its leading nuclear and space programmes, extraordinary profile in information technology services and pharmaceuticals, Indian S&T has come a long way from its unassertive initial stages. The issue of regional difference has been a key concern for India's policy makers. Some regions have achieved rapid growth in S&T in the last years, while others have failed. In this regard, the role of S&T is vital in achieving economic and social objectives. To act as a device of growth, S&T must take the lead to solid enhancements in human conditions by expanding the range of people's choices, a notion that the concept of Human Growth tries to capture. It is noticeable, even the trend of enrolments pretending the growth in the field of technology, agriculture, infrastructure development but the study shows a reflected picture. Instead, it is a composite notion, reflecting how S&T tells to the variety of choices available for the people living in the country. The range of choices, in turn, trusts much on the relationship among aspects that determine S&T growth results.

Computing the role of S&T in supportable growth and its effect among other factors is a complex exercise because of the rareness of data and non-existence of well-defined connections. Recently, there has been significant growth in the use of well intellectualised collections or multiple indicators at several levels for the dimension of regional variety. A Composite Index of Technological Achievement (TAI) proposed by Desai *et al* (2002), which replicated the level of technical development and volume of a country to contribute in the network age. TAI is proposed for use as a starting point towards overall calculation, like the Human Development Index (HDI). Some other Index, like the ICT Development Index of UNCTAD (2002), is used to estimate the average accomplishment in a country based on three measurements:

(a) ***'Connectivity'*** is measured by the per capita consumption of telephone lines, mobile telephone subscribers, internet connections and personal computers

(b) ***'Access'*** is measured by the number of estimated Internet users, the adult literacy rate, the cost per of local call and GDP per capita (PPP)

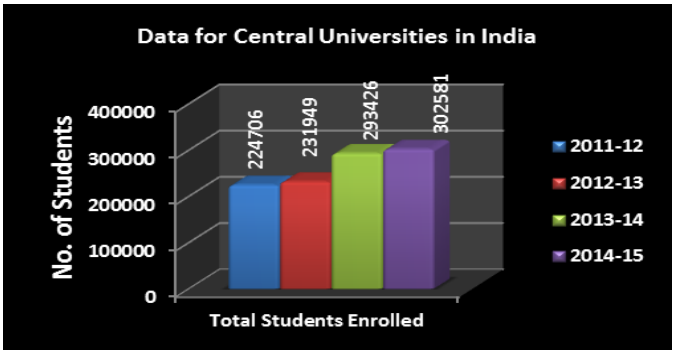
(c) ***'Policy'*** is measured by the presence of Internet exchanges, the levels of competition in local loop telecom and the domestic long distance, and, the level of competition in the Internet Service Provider (ISP) market

The purpose of this implementation is to examine whether scientific institutions and programmes of higher education and research have impacted different parts of the country regularly. It examines the impact of S&T for regional growth and its significance for fulfilling the much-desired objective.

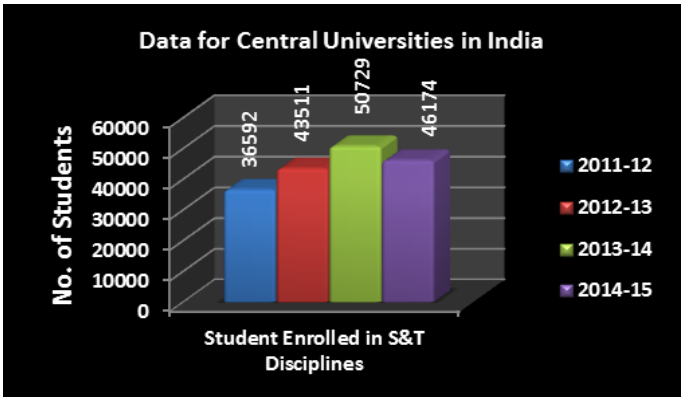
To provide a more objective understanding, a set of three keys, concentrating on Present Economic Status, S&T and Prosperity has been designed to determine the scientific, technological and socio-economic development of the states. This framework, by systematically accounting for the linkages of the determinants and their constituent features, purposes to assist as an observing mechanism of the state's financial, scientific and technical performance. It is also a analytic device to classify issues affecting such enactment and a policy tool to help stimulate and promote national policies and methods with a view to keeping S&T concentrating on growth.

6. Student Trend towards Science & Technology

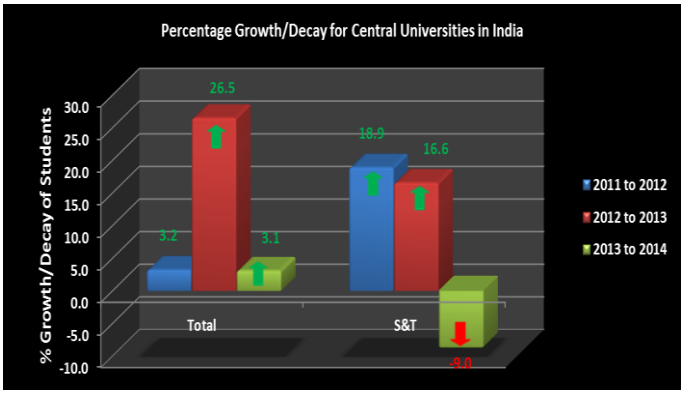
There are 40, 42, 42 and 44 Central Universities in the years 2011-12, 2011-13, 2013-14, 2014-15 respectively, most of them involved with Science & Technology disciplines in the Higher Education. Though Science & Technology is very



essential for the development of any nation and It always been pretended that the maximum human resource would get involved in various Sectors to support. During the above said four years we have analysed the database of All India Survey on Higher Education in India (AISHE), Ministry of Human Resource and Development (MHRD), New Delhi and found it very uncertain. The total no of students enrolled in various programmes in these said four years in increasing simultaneously as well as the Science & technology enrolment.



Central Universities had contributed more in the field of Science & Technology as well as others in India. The total enrolment in the session 2011-12, 2012-13, 2013-14 and 2014-15 are 224706, 231949, 293426 and 302581 respectively. The percentage enrolment in Science and Technology has been increased for the starting two years by 18.9%, 16.6% respectively but decreased for the third year by 9% subsequently. As per the shown trend of students in Science & Technology, We can easily understand the complexity of Indian Education Ssytem.



This makes it a very different system of higher education in India that is more difficult to manage than any other system of higher education in world. However, other than a Central Universities few other institutions of national importance providing high quality higher education, the system is failing to produce wealth creators and creative, intellectual leaders who are much needed in all sectors of the society. India's higher education sector has unsuccessful to map the future demand for various abilities, Global Cooperation and Competitiveness.

It shows the main loophole of Indian education system is that most of our education is theoretical based rather than practical .For example; there is too much emphasis on general education as compared to technical and vocational education. The capacity of India's institutions is very much limited to meet the growing demand for postgraduate education in emerging fields.

7. Conclusions

This study's Conceptual Framework provides some basic information on subjective disparities in terms of Science & Technology. This states that Science & Technology has no doubt brought about remarkable change in education, but we are yet to achieve the desired level of S&T adoption in higher education in the country as we have seen the downfall according to the market trend of educational field. The optimal utilization of opportunities arising due to diffusion of Science & Technology in higher education system presents enormous challenge. Nonetheless, it has become an essential support system for higher education as it could address some of the challenges facing higher education system in the country. Moreover, it can provide access to education regardless of time and geographical barriers. Similarly wider availability of course material in education which can be shared by means of Science & Technology, can substitute better Higher Education. While technology can impact the way how students are taught, it would also enable development of collaborative skills as well as knowledge creation skills. Sustainable S&T development requires efforts in all three aspects of development – scientific, economic as well as human resource. While some states have attained advances in adopting new techniques of growth and adapting them to benefit their people, these lessons have not been put to use in the rest of the country. Therefore, there is still a tremendous amount of work to be done in the bottom-most rung of the S&T ladder in terms of developing suitable atmosphere.

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Author Profile

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