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**Research and Education of Science – Current Scenario****Dr. Ravikiran. B**Principal  
Jai Hind B.Ed College  
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*The outreach of teaching and research programme has considerably increased at present. The economic growth and social transformation of a nation lies on the higher science education. Special institutions both in public and private sectors have been created where research is undertaken independently. These are possible with due support from the political leadership, policy support and substantial investment. The nation's competitiveness can be improved through productive science education, flourishing scientific research and technological development. Issues like centralization, autonomy, removal of gender and regional disparities, rate of dropouts has to be scrutinized. The present status, challenges faced in science education and research followed by the possible solutions have been discussed. Education is a continuous thread that runs through the fabric of all kinds of creative scientific activity and hence it is a right at the basic level and a privilege at the higher level. Science education and research offers immense opportunities, hence leaving it in a doomed state will be a loss to the next generation.*

**Keywords:** Higher education, Research, Funding**Introduction**

Challenges of educating qualified academics, funding and building a sustainable academic culture is the need of the hour. Higher education development and internationalization is the central key factor for the future economic growth of the nation. Awakening towards the significance of higher education for technological development and for the global knowledge economy has to be met with. India has for decades recognized the importance of expanding higher education access and improving the education quality. India's relatively open political system may permit it more flexibility in coping with adversity, but it could fail to produce practical solutions or imaginative plans to improve higher education. Basic stability and consistent policy orientations for higher education, while reasonably clear as seen from today's perspective, cannot be projected with great certainty into the coming decades. Demand relates to the continuing expansion of the middle class - the largest population group most motivated to educate its children for social mobility and participation in the modern economy. This largest force will demand access to higher education, creating huge strains on the system. Funding higher education, supporting research universities and the elite sector of the system is a key factor in shaping higher education prospects. Research is mainly in the hands of the institutes of the academies of science that were divided by discipline or field. While much has been added to the Indian higher education establishment, little has changed in the basic structure of the universities (Jayaram, 2004). India has not yet attempted to define a coherent, differentiated academic system. The variety of institutions, sponsorship and jurisdiction make the emergence of such a system very unlikely under current circumstances. Responsibility for higher education is divided among several agencies in the central and state government (which have different policies and perspectives), and the increasing powerful private sector (Li *et. al.*, 2008). Over the years, efforts to reform higher education have sidestepped the traditional universities and rather have added finest institutions alongside them like the Indian Institute of Technology (Jayaram, 2004).

### **Education in India**

Education is a very important aspect of the Indian culture and the government focuses a lot in the technology and scientific areas. Education is viewed as a fundamental right. Efforts to educate the entire population are made, despite the many challenges, and lack of faculty and schools in certain areas. Eradicating illiteracy is a main goal. Primary education is from 6-14 years and is free. The government has prohibited child labor so children can obtain their primary education. Secondary education is from 14-18 years of age (Tilak, 2007). It focuses on science and technology, environmental awareness, and traditional elements. A vocational emphasis is also encouraged to help the sector of the population that is in disadvantage. India has the third largest highest education system in the world after China and the US.

India has many universities and institutes of higher education. Distance learning is also a feature of Indian higher education. Technical education is highly encouraged and supported. Science education in India gained its importance. Students enroll in scientific fields such as photonics, molecular biology, plant pathology, physical sciences, geology, horticulture, forestry, earth sciences, biostatistics, biochemistry, agriculture, aqua science, oceanography, astronomy, bioinformatics, and many other interdisciplinary scientific fields.

India is one of the most recognized advanced countries in the field of nuclear technology. However, it focuses in atomic energy for generating power, in industrial, medical, agricultural, and research applications. Though science education has its importance there are controversies that there is a decrease in science encouragement and the focus is being diverted to technology, engineering, and medical areas. India has made many advances and development in the areas of space science, nuclear science, defense, and electronics. These two venues – science and technology are a part of the growth and change of the country, and the socio-economic development.

### **Higher education and scientific research in India**

The **scientific research** in India is very promising. India is the primary source for many outsourcing companies. In addition, a large pool of professionals who are highly skilled is a valuable asset to the country. The ethical dilemmas that scientific research community follows will be an education for many other countries, including developed countries. Industrial research and development competitiveness must be encouraged more. The lack of attractive salaries compared to the private sector has created a void in the education and research sectors (Agarwal, P. 2009). However, it is a matter of money and not quality of talent. Indian minds are among the brightest and skilled. Many students from the IIT's are highly sought by European and American universities. India is not producing enough PhD's in the science arena is one controversy going on recently. If India wants to continue to prosper in this area, some initiatives have to be taken. It is the opinion of Professor CNR Rao, a leading Indian scientist - that if India wants to keep and surpass its place in the scientific world, it must contribute more in that area, as right now it is not producing enough professionals to compete. This is viewed as one of the biggest obstacles for India. The required number to meet the demand of the students in universities and colleges has not been produced. The debate continues about the need to focus more in the basic sciences, open-ended research, and less in targeted research. Politics is said to be blamed, wrong allocating of efforts and funding, and lack of private funding as well (Gupta *et al.*, 2008).

### **Changes required in research funding to compete globally**

Research universities contribute a lot towards research along with the private and government research and development centers now-a-days. However, in our country only about 10% of the government research funding goes to the research institutions. There are many constraints for



receiving research grants and also its efficient utilization to bring out quality research output due to insufficient funding. However, most funding comes from public sources, and many times, it is limited. This area has to evolve, and more private funding is to be encouraged so India can compete with other countries like China, Japan. In addition to the factors like incentives to the students and professors who are project heads, postgraduate students in elite institutions get scholarships directly from government funds and are not funded through research grants, have robbed researchers of all incentives. Many faculty members even in IITs or NITs are keen on private agencies for research grants due to the flexibility they offer than from the government agencies. The drive to get grants from various agencies will bring about better proposals and the faculty will strive harder for more and higher quality research which in turn develops the quality of higher education. If the government is serious about encouraging researchers and institutions to pursue research vigorously, awareness has to be created about various funding available with the government and private agencies. The percentage of various grants the government provides for research and higher education has to be hugely increased for our students to compete globally (Manmohan, 2008). These small changes can totally transform the current scenario.

### **The advances of research**

Research and advancement has gained its strength in the field like medical both traditional and modern, biological science, biotechnology, bioinformatics, sustainable management of forests, agriculture, aerospace, communication network of satellites and the list continues. Education is another area where efforts are being made. India's science and technology students from top educational institutions are recognized by other world institutions as some of the brightest, as well as sought by many European and US research universities. India attracts large number of foreign students for higher education and research thereby sharing knowledge and the technological aspects.

### **Conclusions**

Science and Technology education in India is very close to cultural and historical tradition. This area has to evolve, and more private funding is to be encouraged so India can compete with other countries like China. The economy of the planet is going towards globalization and a knowledge driven economy in the field of science and technology. The need for a shift to encourage this position in India's education system is the key to how the country's future will emerge. The world is looking at India and hoping it continues to develop in the right direction so it can make the best use of some of the brightest talent in the world.

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