

## RECENT TRENDS IN RESEARCH AND INNOVATION IN HIGHER EDUCATION IN INDIA

**Dr. Kalpna Yadav,**  
Associate Professor,  
Department of B.Ed.,  
Khun-khunji Girls P.G. College,  
Chowk, Lucknow.

A university according to Pt. Jawaharlal Nehru, the first Prime Minister of the country, "stands for reason, humanism, and tolerance, the adventure of ideas and for the search for truth." In fact, the progress and development of a nation depends on the standard of excellence by its higher education institution.

Indian universities have great potential for being the best in the world and yet they are not best among the world universities. From the days of Nalanda and Takshasheela. We have not graduated to create and sustain the best of the universities of the world. Today faculty members of Indian universities are loaded with clerical work that eats into their time for reading and research. Faculty members must have the autonomy and flexibility to carry out the research and innovation, which again indicates the need for time. Research needs uninterrupted hours of work-reading, rereading, collecting data, analyzing interpreting, writing report, etc. Scientific research has enabled America to remain at the forefront of global competition for commercially viable technologies and other innovations (Celeste, Geiswold & Straf, 2014). Research provides a platform for ongoing investigation of learning while improving and assuring outcomes for those involved in the process (Gapp & Fisher, 2006)

The contemporary research system in India functions under a variety of institutional configurations, A broad categorization of the institutional setup for research in India is as follows:

1. University Based Research
2. Public Research Institutions
3. Private Research Institutions
4. Public Private Partnership Research Centres
5. Research Organizations in traditional science and technology.

The different categories of research institutions in India were evolved after independence, based on definite policy considerations to fulfil the anticipated research outputs for different development requirements. Modern academic research in India goes back to 1784 when Sir William Jones established the Asiatic Society of Bengal in Calcutta for promoting oriental studies. The English rulers primarily set up teaching institutions. They were mainly interested in applied areas and field sciences like archaeology, botany, geology, zoology. The greatest academic recognition for such endeavours came in 1902 when Sir Ronald Ross won the Nobel prize for his work done in India on the life-cycle of malarial parasites.

These efforts spawned the formation of many learned and scientific bodies in India and prepared the ground for doctoral education. A significant development was the establishment of the Indian Association for the Cultivation of Science (IACS) in Calcutta in 1876, whose founder Dr. Mahendra Lal Sircar envisioned an institution for 'pure science learning and science-teaching' with the hope of ultimate success in research. Founded with private funds and government support, IACS

organized science lectures, established a library, offered scholarships and set up a laboratory where Sir Chandrasekhara Venkata Raman discovered the "Raman Effect" which won him Asia's first Science Nobel prize. Elsewhere, beginning in the late nineteenth century, Sir Jagadis Chandra Bose and Sir Prafulla Chandra Ray conducted internationally recognized research work as professors at Calcutta's Presidency College.

Many other distinguished European and India Scientists working in India were elected as Fellows of Royal Society (FRS). This list includes Prof. Homi J. Bhabha who later founded Tata Institute of Fundamental Research in Bombay with J.R.D. Tata's help and became Chairman of Indian Atomic Energy Commission); Sir Shanti Swaroop Bhatnagar who later became Director of Council of Scientific and Industrial Research; Sir J.C. Bose who later founded Bose Institute in Calcutta; Mr. Srinivasa Ramanujan; Prof. Birbal Sahni and Sir John L. Simonser and Prof. P.S. Macmohan, who were instrumental in the establishment of the Indian Science Congress Association in 1914. This was a great start. There was a small but active group of outstanding academics in colonial India, who did world-class research and published articles in the world's leading academic journals. They founded and nurtured institutions, which became reputed centers of advanced research. With professors, students, institutions, and an evolving tradition of quality research work, India established a huge lead in doctoral education and academic research over other Asian nations except Japan. However, India got lost in a quagmire (Chatterjea, 2006)

The re-emergence of Asia is among the most important shifts that will occur in our lifetimes. Not only is Asia growing richer; as it becomes more integrated, it is also coalescing as a constructive force for global governance, says world Economic Forum. Several books have been published suggesting the rise of Asia during the 21<sup>st</sup> century. Some of these books are: Asia 2050, Realising the Asian century (Kohli, Sharma & Sood, 2011), Asian Affluence, The emergency 21<sup>st</sup> century middle class (Kerscher, 2017), China's Asian Dreams: Empire

building along the new silk road (Miller, 2018) etc., speak of Asia's growing significance.

## CRITERIA FOR QUALITY OF RESEARCH

---

The survey of literature shows that there are four main criteria used in the evaluation of the quality of research.

1. Subjective evaluation
2. Number of publications
3. Research productivity
4. Citations

## SUBJECTIVE EVALUATION

---

Peer assessment has a value and one must appreciate the opinions of people who actually understand the research thrust and the outcome in terms of productivity. Peer review is a fundamental aspect of the academic process and it is the internal professionals who must ultimately judge and be held responsible for the quality of the knowledge they create and manage.

## NUMBER OF PUBLICATIONS

---

Number of Articles published by the Institution as a whole and the number of articles per faculty member as well as by different disciplines and by individuals, the student publications etc. are also considered.

## RESEARCH PRODUCTIVITY

---

Research contribution in terms of innovations and new discovery becomes as important criterion for assessing the quality of research. The number of graduate students and research students in the university is another measure of the research productivity since their cumulative contribution will amount to substantial research output.

## CITATION INDEX

Citation Index and Impact Factor are important considerations for assessing the quality of research. The number of highly cited research articles will be an important and objective parameter to consider.

## MEASUREMENT OF QUALITY AND EXCELLENCE IN RESEARCH

Measurement of quality and excellence in research should:

- Be fair, equitable and recognize diversity
- It must be established with reference to social and economic objectives
- Research output measures to be emphasized
- The research training performance reflect the quality of students, their experience, publications and skills.

It is an undeniable fact that the Indian universities are giving added impetus to research and innovation for developing and taking the nation in all its fields to the next level. The Ministry of Human Resource Development (MHRD) has allocated enormous funds for research projects and is helping the universities to enhance and improve the quality in the areas of teaching and research that should ultimately benefit the society at large.

In the recent years, towards achieving this goal, the University Grants Commission (UGC) has initiated a number of new schemes like SWAYAM, SMART and SWACHH Campus, SMART INDIA HACKATHON (Start-ups), National Apprenticeship Promotion Scheme (NAPS), UNNAT BHARAT ABHIYAN and Learning Outcome Based Curriculum Framework (LOCF), etc. The IMPRESS Scheme (Impactful Policy Research in Social Sciences) aims to identify and fund research proposal in social sciences with impact on the governance and society. The SERB-STAR Scheme (Science and Engineering Research Board's Science and Technology Award) has been supporting basic research in frontier areas of science and engineering. The STRIDE (Scheme For

Trans Disciplinary Research for India's Developing Economy) aim to build multi-sectoral linkages between university, Government, Community and Industry for national development. The SPARC (Scheme for promotion of Academic Research Collaboration) has the objective of promoting joint research projects between Indian institutions and the best of the global universities from 25 selected countries. The LEAP (Leadership for Academicians Excellence Programming) aims to equip Senior Faculty members to take up leadership roles in future at various level in higher educational institutions. Government funding for research projects in India is about 70% according to available information and the corporate sector spends only about 30% but in the developed countries most of the research and development projects are mainly funded by the corporate sector and the government spends only a meanre percentage for research. The MHRD has drafted a number of policies and initiated many programmes to make the Indian universities places of relevant research and innovativeness and the policies also aim at achieving excellence in extension activities benefitting the society.

Commercialising research and development projects in Indian universities will encourage more researches to develop their research interest in every field of discipline. The holistic approach of inter-disciplinary research and projects will create new inter-disciplinary courses for imparting new perspective in every subject. Sponsoring research projects has to be carried out intensively and the young researchers have to be encouraged to bring forth quality in their findings and inventions. Excellence can be realised in Indian universities only when the quality of education is improved. Improving the standard and quality of teaching, research and extension should be given utmost care and attention by all higher educational institutions and that will enhance and establish excellence in all domains of education. All possible ways and means should be explored and implemented to raise the standard and quality of teaching and research.

The practical knowledge must be imparted to make students compete at the global level.

Competency in using advanced technology is very much required to make the nation as well developed one in all fields. Morality and ethics must be given emphasis and followed scrupulously in research to present a true picture of the findings. The ethical codes of doing research must be taught to the researchers must be encouraged to focus on intuitive and objective ways of doing research to enhance the quality of their researchers.

A combination of specific conditions and resources are heeded to create outstanding universities (Altbach, 2006), which include; sustained financial support, with an appropriate mix of accountability and autonomy, Indian science needs to connect better with global efforts to address problems unique to India, but relevant in the global context, and to ensure that research capacity is built in a sustainable manner. India cannot build internationally recognised research-oriented universities overnight, but the country has the key elements in place to begin and sustain the process.

The great scientist Dr. S.S. Bhatnagar (1945) had very emotionally appealed in his presidential address for strengthening science, "I dream of the Tennessee Valley, but not without hope; for all this may happen to any river valley in India, to the Damodar, to the Ganges, to the Sutlej, to the Nurbudda, to the sone; if the people and the Government just give science a chance."

## REFERENCES

1. Altbach, P.(2006) Higher Education in India; The Hindu
2. Chatterjee, A.(2006). Doctoral Education and Academic Research (in India) Oxford companion to Economics in India, Oxford: Oxford University Pros.
3. Celeste, R.F. Griswold, A,E Straf, M.L.(Eds) (2014) Furthering America's Research Enterprise (P 200) washington, DC: National Academics Press.
4. Gapp, R., & Fisher, R.(2006). Achieving excellence through innovative approaches to student involvement in course evaluation within the tertiary education sector. Quality Assurance in Education, 14(2), 156-116.
5. Kerschmer, E.M., & Huq, N.(2017). Asian affluence, The emerging 21<sup>st</sup> century middle class. UNEP Document Repository.
6. Kohli, H.S. Sharma, A, & sood, A. (Eds.), (2011). Asia 2050. Realizing the Asian Century; SAGE publications India.
7. Miller T. (2019). China's Asian dream, Empire building along the new silk road. Zed Books Ltd.
8. Olaewe, O.O.(2006). Educational Research Methods: A Analytic-Nigeria: NIG. ITD