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EDITORIAL

SCIENCE EDUCATION IN INDIA



The British took many steps on education and entertainment in order to rule the country effectively. Calcutta, being the capital of India from 1772 to 1912, was somewhat privileged in terms of education, development of infrastructure and many other aspects. These pioneering gestures include

the first newspaper (The Bengal Gazette) printed in Calcutta in 1780, the first Madrasa School in 1780, the first official newspaper (The Calcutta Gazette) established in 1784, "The Asiatic Society" (the first academic institution in India, 1784) for "Oriental research", the first Bengali magazine 'Digdarsan' published from Serampore (1818), the Hindu college (Presidency college) in 1817, the Calcutta University in 1857, the Indian Museum in 1875, and the leading English Newspaper 'The Statesman' in 1875. Finally, the first science research laboratory of the country (Indian Association for the Cultivation of Science) was established in 1876 in Calcutta. All these helped in the enlightenment of the people of the country.

The period 1813-35 is very important for India's growth academically. In 1813 the East India Company acquired an education policy whereby it was sanctioned an amount one Lakh rupees on education for the first time. It was a phase of the transition from the Moonshiee to the Baboo having the full and active support of the native leadership. The oriental colleges were slowly anglicised. Unani and Ayurvedic classes were added (1827) to the Madrasa and the Sanskrit College, which then made way (1835) for a full-fledged (western) medical

college in Calcutta (1835). Scientific equipments started arriving in 1823 and science teaching was initiated.

Raja Ram Mohan Roy was the torch bearer for Indian Renaissance followed by Iswar Chandra Vidyasagar, Michael Madhusudan Datta, Bankim Chandra Chattopadhyay, Rabindranath Tagore, Prafulla Chandra Ray, Swami Vivekananda, Asutosh Mookerjee, Rajendralal Mitra, Nazrul Islam, and many others from all stages of Indian life, culture, religion, literature and finally science. They are the jewel of late 19th to 20th centuries. The other celebrated personalities were also playing significant role for the greater development of the academic scenario of India i.e. Pramatha Nath Bose - pioneering Indian Geologist, Satyajit Ray - Author, Calligrapher and Film Director, Documentary Filmmaker, Magazine Editor, Satyendranath Tagore- the first Indian civil servant and social reformer.

Bengal has been on the forefront of evolving, shaping and enriching Indian culture in all its dimensions including science. Bengal has been the unique land with rich heritage of literature, philosophy, science and religion which shaped Indian civilization. Bengal is the territory of great scientists like Acharya J. C. Bose, Acharya P.C. Ray, C.V. Raman, S. N. Bose, Meghnad Saha, and P.C. Mahalanobis who made signal contribution to the field of science. Rabindranath Tagore earned a coveted place in the hearts and minds of all Indians through his original contribution in literature. "Bande Mataram" written by Bankim Chandra Chattopadhyay became our national song revealing the nationalistic spirit across the length and breadth of India. Besides, personalities of extraordinary dedication and accomplishment like Satyajit Ray, Mother Teresa, Amartya Sen and Abhijit Banerjee, who are revered throughout the world. Asima Chatterjee and Archana Sharma had been the role model as women scientists who have also made a mark in the global map in their field of research and teaching.

The present system of education in India was introduced in the early years of 19th century. A major benefit to Indian science during British rule was the spread of education in English, the language of modern science. The learning of science got a fillip in 1857 when three universities were created in India i.e. Calcutta, Madras and Bombay. The Universities of Punjab and Allahabad were also created later on. All of these universities had been modeled after the University of London and all of them were examining universities and not teaching universities. At this stage Sir Asutosh Mookerjee introduced his momentous reforms in the University of Calcutta. He started creating the post-graduate department in all subjects and also teaching was concentrated in the university which ultimately resulted in transforming an examining university into a teaching university of the highest type. In 1876 a rich physician, Dr. Mahendra Lal Sircar, set up the first scientific research institution in Calcutta, known as the Indian Association for the Cultivation of Science, which became the focus of scientific activities in pre-independence India. Then only the foundations for basic science were expanded and academic science in the universities received great attention.

Education, primary, secondary and higher, must gain top priority if our illiteracy in many dimensions is to be abolished. Education is a birth-right, a constitutional mandate. After 76 years of independence, as a nation, India still lag in literacy and even in the field of primary education. In 21st century India is witnessing changes in almost all areas of human endeavour. Education is also universally recognised as a form of investment in human beings which yields economic benefits and contributes to a country's future wealth by increasing the productive capacity of its people. The key resources for any society are its people. Education is a dialogue between the past, present and the future, so that the coming generations receive the accumulated lessons of the heritage and scientific attributes to carry forward. For All-round education, there must be a blending of Science with Humanities.

Rabindranath welcomed the West because it had brought the gift of Science: *"Let admit that modern science is Europe's great gift to humanity for all time to come. We, Indian, must claim it from her hands, and gratefully accept it in order to be saved from the curse of futility by lagging behind. We shall fail to reap the harvest of the present age if we delay"*. One thing is certain that the all-embracing poverty which has overwhelmed our country

cannot be removed by to the neglect of science. Physics, Chemistry, Botany, Agriculture and Meteorology should be properly studied here. Along with these Physiology and Hygiene should be studied under the guidance of a physician and acquaintance made with machinery with the help of a trained mechanic.

The nation is always grateful to Asutosh Mookerjee for initiating modern science education in India. Rabindranath had a very good bonding with Asutosh regarding the academic development of our country. He had a wide and diverse interest in science. Asutosh Mookerjee, the then Vice- Chancellor of the University of Calcutta find out a galaxy of Indian scientists, who showed their talents and made immense contributions towards the development of a global profile of Indian science. The development of post graduate teaching and research in science and technology at the University of Calcutta opened a door for the Indians to learn science. Dr. Mahendra Lal Sarkar was the first person to initiate the science movements in India. This was simply possible due to the contribution of educationists, scientists and scientific workers in India. The Indian research institutes like Indian Association for the Cultivation of Science in Calcutta (in 1876), Tata Institute (1908) now known as Indian Institute of Science in Bangalore and the Bose Institute (1917) in Calcutta are landmarks in science development but none can reach that level before independence as compared to the developments initiated by Asutosh Mookerjee at the University of Calcutta.

Finally, let us recall Gurudev Rabindranath Tagore's message about the real destination of our education: *"The highest education is that which merely give us information but makes our life in harmony with all existence"*. Education sharpens the intellect of the pupil and enables him to acquire mastery over the fundamentals of nature and science and thereby enables him to understand his relationship with the world at large. generating new knowledge and new entities. Science education is the teaching and learning of science to school children, college students, or adults within the general public. Science education cultivates students' curiosity about the world and enhances scientific attitude and thinking. It provides knowledge of the facts, principles, concepts and laws of science, besides developing skills in experimentation, observation and also critical thinking, problem solving and information literacy. Science education includes science centers, science museums and digital learning environments.

A new era was opened in the history of science in India when the country became independent on August

15, 1947. There was a remarkable expansion of facilities for scientists and the research began and prospered in many fields. India is now a member of (i) the Nuclear club, (ii) the Space club, and (iii) the Antarctica exploration club. It has the world's third largest pool of trained technologists, next only to the USA and the Soviet Union, though it is still a developing nation. Now it is the role of Indian scientists including the women members to do much more to catch up with the advanced countries.

Modern India has had a strong focus on science and technology, realizing that it is the key element of economic growth. Science is at the core of our efforts towards socio-economic transformations, said Prime Minister Narendra Modi while inaugurating Vaishvik Bharatiya Vaigyanik (VAIBHAV) Summit. *"The need of the hour is to ensure more youngsters develop an interest in science. For that, we must get well-versed with the science of history and the history of science,"* said the Prime Minister. While addressing the researchers and academicians via an online conference, PM said, *"India's call of an Atmanirbhar Bharat (self-reliant India), includes a vision of global welfare. In order to realize this dream, I invite you all and seek your support."* Talking about the National Education Policy (NEP) the Prime Minister said, NEP aims to *"boost curiosity governed science and gives a much-needed boost to research and Science"*. He said that it will give special focus to interdisciplinary science.

The President of India, Her Excellency Smt Droupadi Murmu, inaugurating the Visitor's Conference 2023 at Rashtrapati Bhavan on 10 July 2023 categorically mentioned that *education is vital for the progress of the individual, society and country. She stated that providing equitable and inclusive higher education to youth from socially and economically disadvantaged groups is one of the National Education Policy- 2020 priorities.* She stated that the NEP aims to make India a Global Knowledge superpower. She expressed confidence that higher educational institutions will play an essential role in achieving the goal of establishing India as a developed nation by the year 2047.



The President also pointed out that our daughters perform better when given the opportunity. She also noted that the participation of girls in technology institutions is also increasing. She said that efforts must be made to promote the presence and excellence of female students in Science, Technology, Engineering and Mathematics (STEM).

The President *also* said that *"knowledge centres should become hubs of the knowledge economy. They should move forward with the ambition of developing cutting-edge technologies. She added that our Technology Institutes have to take the initiative in areas like artificial intelligence"*. The President said that the younger generation see their role models in their teachers and successful personalities. The ideals and examples set by them through their conduct are very important. *She finally stressed that the character-building of youth should be given priority in higher-learning institutions. Morally strong youth, educated in modern knowledge-science and technology would build a better society and nation.*

This special issue of the *Journal Science and Culture* reflects the type of research work carried out by our faculty members and I am delighted to announce that this issue is a symbol of celebration of the 15th Foundation Day of the Central University of Odisha, Koraput (29th August, 2023). □

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Prof. (Dr.) Chakradhar Tripathi



A distinguished educationist, Prof. Chakradhar Tripathi assumed office as the Vice-Chancellor of Central University of Odisha on 26 September 2022 at the University campus, Sunabeda. Her Excellency, Smt. Droupadi Murmu, the President of India, in the capacity as the Visitor has appointed Prof. Chakradhar Tripathi as the Vice-Chancellor of the Central University of Odisha, Koraput (CUO) as per Statute 2(1) of the Central Universities Act, 2009 for a term of (5) five years from the date of his joining or till he attains the age of seventy years, whichever is earlier, as per the communiqué received from the Ministry of Education, Govt. of India on 13 September 2022. Prof. Tripathi is the fourth regular Vice-Chancellor of the University.

Prior to joining the CUO, Prof. Tripathi was the Senior Professor, Department of Hindi, Visva-Bharati, Santiniketan, West Bengal. His area of Specialization is Medieval and Modern Hindi Poetry. Prof. Tripathi has thirty three years of impressive academic as well as administrative experiences in various capacities including Director, Physical Education, Sports, National Services and Student Welfare; Coordinator, International Collaboration (following NEP-2020); Head, Department of Hindi; Chairman, Board of Studies in Hindi; Director (Honorary), Centre for Hindi Teaching, Tagore Institute of Art & Education; President, Visva-Bharati, Shaikshik Sangh.

He served as a nominee of the President of India in various Statutory Committees, Advisory Committees and Selection Committees including Vice-Chancellor of national Higher Educational Institutions and Universities. He is the recipient of many awards including Silver Medal Awards from Hindi Vidyapeeth, Deoghar, Bihar in Sahitya Bhushaw Exam; Hindi Sevi Samman award from Visva-Mukti, KIIT, Bhubaneswar ; Bhasha-Setu Samman award from Mahavidya, B. Deoghar; Shikshak Samman award from Gahmar Welfare Society, Gahmar, U.P.; Surya Antarbharati Bhasha Samman award from Surya Sansthan, Noida, Delhi; Hindi Sevi Samman award from Bihar Rashtra Bhasha Parisad, Patna; Sri Ganesh Ballabhjee Rathi Memorial Award from Sahitya Mandal, Shrinathdwara, Rajasthan and Pandit Vidyashankar Pandey Sahitya Vibhushan Samman, 2020 award from Munishwandutta P.G. College, Pratapgarh, U.P. He is a prestigious member of Raja Rammohan Roy Library Foundation, Kolkata, Ministry of Culture, Govt. of India.

Born in 1960 in the village Jagannathpur, Basantia, Mareigaon under Hatadihi block of Kendujhar district, Odisha, renowned scholar, Prof. Tripathi did his M.A. & Ph.D. in Hindi from VisvaBharati and Graduation from Utkal University. He has published over six books including Kabir Ki Bhakti, Siyaram Tiwari: Vyaktitwa EvamKrititva, Nayee Kavita PratiPadya, Chintamani Sanchayan, Krishan Chander Ki Pratinidhi Kahaniyan, Atmanirbhar Bharat (Bengali Version). He has also four edited books and Five translated books. His research papers are published in reputed national and international Journals. He has supervised more than 17 scholars for award of Ph.D. and have completed few research projects.

Prof. Tripathi is known to have taken the initiative to advocate the ideologies of Utkalmani Gopabandhu Das. The translation of 'Gopabandhu Rachnabali' (Total-08 volumes) is being published under the guidance and Chief editorship of Prof. Tripathi by NBT.

Recently, Prof. Chakradhar Tripathi was felicitated and awarded the prestigious Acharya Shivpujan Sahay Smriti Samman for his valuable contribution towards the promotion of the Hindi Language and Literature by His Excellency the Governor of Bihar, Shri Rajendra Vishwanath Arlekar on the occasion of the 42nd Convention of Bihar Hindi Sahitya Sammelan held at Patna on 6th May 2023 in the presence of the Chairman of the Conference, Dr. Anil Sulabh and other dignitaries.

Note by the Editor-in-Chief, Science and Culture: This issue has been sponsored by the Central University of Odisha, Koraput.