Technological & Educational Advancement in Indian Society

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1. Introduction

As Educational development is a continuous feature of a society functioning smoothly yet some hindrance arrive at time intervals due to intruders, natural calamities, invaders, manmade circumstances and also time effect. The educational development can be ascribed in stages but broadly into historical specification of ancient, medieval and present modern area.

It will be ungrateful to the contribution of past intellectuals if I will not mention about them and their work in various fields.

The Rishi's or Researchers made us aware of various phenomenon of nature, surroundings and various incidents happening in it and reason or cause behind these occurrences. In our Vedas the light is called "Saptarangi" or of seven colors which was later proved by European Scientists. The power of gravitation and every element is made up of fundamental invisible, indivisible particles called as atom or adnu mentioned by sage Kannada two thousand years back. Ancient scientist or Rishi's like Viswamitra, Agastaya, Parasuram, Sukracharya along with Ravan were highly advanced in creating advance destructive weapons of mass destructions. The first three have endowed Rama with their weapons to him in equip against terrorists of ancient worlds or demons. The Advancement of aircraft building, satellite technology can be read in Ramayana, Mahabharata and Shivrurana, Puspak Vimana of Kuber or Ravana, Vimana of king Salva who attacked Dwarka of Sri Krishna and Vimana trio of Tripurasura that used to revolve around the earth in its orbit various other form of weaponry and technology of constructing Vimanas, their use in various ways has mentioned in ancient texts like “Vrihad Vimana sastram” written by Maharishi Bharadvaj (Presently preserved in Pune Museum of archive). Another text of equal importance is "Samrangan Sutraadhar" by king
The ancient Indian Mathematicians were interested in very practical aspects of mathematics such as determining the position of stars developing a Panchanga (calendar/almanac) and ordinary mathematics of everyday use like measurement of land and weights etc.

2- The Mathematician and the astrologers of the ancient period are Aryabhata (5th Century A.D.). He wrote Surya Sidhantika, Aryabhattiyaam. Aryabhatta stated that the sun is stationary and earth rotates around the sun. He also stated moon receives light from the sun and has no light of its own. He also gave the value of π. Aryabhatta also predicted that the earth is spherical and also the true causes of solar and lunar Eclipse.

3- Varahamihir writer of Panch Siddhantika (6th century A.D.), Brihatamsiha. Varahamihira in his book Brihatamsiha (6th century A.D.) stated the revolution of moon around the earth, and that of earth around the sun.

4- Brahmagupta born in 598 A.D. in modern Pakistan area, he was among one who accredited the zero and infinity their position in mathematics. Brahmagupta in the 7th century developed an "Astronomical model" using which Bhaskara was able to define "Astronomical quantities. He was first to conceive the differential co-efficient and differential calculus much before Leibniz or Newton. He accurately calculated that earth revolve around the sun in 365.2588 days, (3.5 minutes difference of 365.2563 days from modern days acceptance). Brahmagupta was the foremost Indian mathematician of his time. He was born in 598 A.D. in Ujjain (India). Brahmagupta's magnum opus was Brahmasphuta Siddhanta. Which he wrote in 628 A.D. This book has 25 chapters and he wrote it in Bhillamala which today is the city of Bhinmal. His another work on mathematics & astronomy was the "Khanda Khadyaka”.

5- Bhaskarcharya wrote Siddhanta Siromani, Surya Siddhant born in village of Mysore district between (1114-1183 A.D.) and was greatest mathematician of medieval India. He was a born genius and an authority in Alzebra and Geometry. Bhaskaracharya declared that any number divided by zero is infinity and that any the addition of any number and infinity is also infinity and written a lot about zero, Surds, permutation and combination, quadratic, indeterminate equations etc. In mathematics the contribution of India is unforgettable. Indian notation system was adopted by Arabs and from Arabs to English who named it Arabic numerical (mentioned as early as on Ashoka Inscription in India (227-232 B.C.). Indians were also among the first to use the decimal system (earliest epigraphic evidence in 5th century AD in Aryabhattiya. The use of zero by Indians was dated back to 2nd century B.C. Joytisha Vedanga (500 B.C. is the earliest source recorded dealing with astronomy. (It contains rules for calculating the position of moons new and full shape amongst the twenty seven Nakshatras. Though Yajurveda is the veda which deal with the Geometrical shape and sizes of different kinds for performing sacrifice in which geometry of high accuracy is used knowledge of geometry is reflected in the Sulvasutras of 5th century B.C. The main Sulvasutras were composed by Baudhayana (about 800 B.C.) Manava.
(about 750 B.C.) and Katayana (about 200 B.C.) The aim were mostly religious but the content of the manuals were about geometric shapes such as squares, circles, rectangles.

6- Mahaviracharya - Born around 800 A.D. in Mysore (South India). He wrote the book Ganita Sara Samgraha, in 850 A.D. This book contain 9th chapter.

7- Sridhara - He was born around 870 AD possibly in Bengal (India). Shridhara two mathematical treatises namely the Trisatika (sometimes called Patiganitasara) and the Patiganita. He was the first to give a rule to solve a quadratic equation. His work is now survived only in works of Bhaskara II.

8- Srinivasa Ramanujan born in 22nd Dec 1887 is also one of the most renowned celebrated Indian mathematicians. His few contribution are Hardy-Ramanujan littlewood circle method in number theory, Roger-Ramanujan's Identities in partition of numbers, elliptic functions, alzebra of inequalities continued fractions, hyper geometric series etc.

9- Satyendra Nath Bose is among the modern mathematician & scientist who worked on quantum mechanics in the early 1920 providing the foundation for Bose Einstien statistics and the theory of Bose - Einstien Condensate, C.R. Rao is a well known modern statistician famous for his "theory of estimation".

Other modernites in the field are Narendra Karmarkar, Harish Chandra, D.R. Kaprekar, P.C. Mahalanobis, Sakuntala Devi (born in 1939).

The ancient law givers are Manu who wrote Manu Smriti (rewritten between 200 B.C.), Kautliya the writer of the Arthashastra. Nitisara by Kamanadak, Mitakshara written by Vignaneswara (commentary on law book of Yajnavalya), Dayabhaga by Jimutvahana.

Narad Smriti, Vidhur Neeti, Sukraneeti, Chanakyaeneeti all paved way to the society from the ancient times to the modern times on the law framing for the society and proved to be a light house for smooth running of the society.

Craftsmanship and the architectural perfection up to the highest level was achieved by Indians before the starting of Christian era. The most famous among all the architectures (who is remembered till today) was Viswakarma the master architecture of Devine World. He is said to have constructed the famous city of Dwarika (In Gujarat) of Sri Krishna and Indraprastha (in Present Delhi) of Pandavas. Nar and Neel helped Rama to construct the bridge from Rameswaram in South India to Sri Lanka in five days. [At present there is 30 kilometers of sea stretch between pamban Island (also known as Rameswaram) and Mannar Island of Sri Lanka]. Though Architectural ruins of ancient India are few due to effect of time, natural calamities, demolitions by Invaders etc. Detailed account of various kings, scholars, genius of India are known by us through the accounts of foreign travelers, scholars and invader kings. As no traces of deed and work are found in India. They are forgotten in India but found in the memories of foreigners as they had mad deep impact on them. Yet some of the remains from the time of Ashoka (272-232 B.C.) like, Sanchi Stupa, Lion pillar of Sarnath and many temples of South India are the examples to prove the mastery of Indian Architecture and Vaastu-Shastra.

If we talk of literary advancement there are names of thousands of poets, Dramatician, Historical writers, Prose writers who dedicated their whole life for the glory of literature.

Panini (5th century B.C.) wrote Astadhyayi (Sanskrit grammar book) Patanjali (2nd century B.C.) wrote Mahabhashya Chandasutra by Pingala, Buddhacharita, Saundrananda, Sariputraprakaran, Vajrasuchi and Sutralkara by Asvaghosa, Kalidas also known as Indian Shakespeare wrote Kumar Sambhava, Raghubamsa, Malvikagnimitra, Vikramurvasi, Abhigyan Shakuntalam some of the prose literature are as follows -

Das Kumara Charita - Dandin
Vasavadutta - Subhandu
Hitopdesha - Narayan Pandit
Panchtatra - Vishnu Sharma
Brihat Kathamanjari - Kshemendra
Kathasarit Sagar - Somadeva
Brihat Katha Kosh - Harisena
Mrichkatikam - Sudraka
Kayya Mimansa and Prabandhakosha - Raj Shekhar

Poetic works
Megha Dutam - Kalidas
Shringarshataka & Nitisataka- Brihathari
Gita Govinda - Jaya Deva
Chaura Panchasikla - Bilhana.

All the above mentioned work is a glimpse to Indians glorious past but this continuity got interrupted by the forced arrival of Muslims in India around and after 1st millennium of Christian era. Hunas destroyed the university of Taxila (Presently in Pakistan) in 4th - 5th century A.D. and Bhaktyiar Khalji of one of Mohammad Gori's Commander destroyed Nalanda & Vikramshila University in Bihar & Bengal. They destroyed all the old seats and pattern of learning along with rare precious treasure of manuscript books. Sultanate and Mughal rulers mostly spent their time in Subduing the new areas and Kingdoms and remaining rest of the time in providing shelter to Persian, Turkey, Arabian language based religious Education system. There art and architecture also remain affected from Iranian, Persian architecture. With the advent of Europeans (English, Dutch, French, Portuguese) the scene began to change. New Ideas and knowledge of the modern discoveries day by day also enlighten the Indian society and people.

Great works (Scientific discoveries) were done in Europe and as the Britishers become the new masters of India by Establishing their rule. English language and the knowledge available in it started reaching to Indians by schools, Christian missionaries etc. though slowly. Indians become more aware of the ideas of liberty, equality, fraternity and knowledge. Through various charters and commission. (like charter act of 1813, Macaulay's Education policy 1835 woods dispatch 1854, Hunter Commission 1882, Indian Universities Act 1904, Saddler Commission 1917-19, Wardha scheme 1937) etc. Britishers improved the standard of Education lot which helped in eradication of various evils and improvement of scientific
temperament. As a result of this, various scientists, doctor, Educationist, Philosophers, social reformers, politicians, literary and learned persons come out from various sections of the society. Nobel prize winners from various streams of science, literature, economics & social activist are the proof of India’s and Indians intellectual genius.

2. Nobel Prize winner of India and Indian origin
1- Rabindra Nath Tagore (May 07, 1861 - Aug. 1941) Youngest son of Devendra Nath Tagore. Received Nobel prize in 1913 for literature.
2- C.V. Raman (Chandra Sekhara Venkata) received Nobel prize for physics in 1930. (Born in Thiruvananthapuram in Kerala on 7 Nov 1888 - Nov 21, 1970).
3- Mother Teresa Received Nobel Prize for peace in 1979 (Born in Skopje City of ottoman empire- born on 26 Aug 1910 to 5 Sep 1997).
4- Amartya Sen Received Nobel prize for economics in 1998 (Born in Kolkata on 3 Nov 1933).

3. Nobel Prize winners of Indian Origin
6- Subrahmanyan Chandra Sekhar received Nobel prize in 1983 for physics. He acquired U.S. citizenship in 1953. He shared his Nobel prize with William Alfred Fowler of U.S.A.
7- Venkatraman Rama Krishnan received Nobel prize in 2009 for chemistry. He received dual citizenship of United Kingdom and United states of America.

4. Laureates with Indian Connections means that either resided in India or of Indian birth or descent from India.
8- Ronald Ross received Nobel prize in 1902 for Medicine and was a India born British citizen (Born in Almora in Uttar Pradesh in 1857).
9- Rudyard Kipling received Nobel prize for Literature in 1907 and was India born British citizen (Born in Bombay in 1865).
10- 4th Dalai Lama received Nobel peace prize in 1989 and is Tibetan religious leader exiled to India in 1959.
11- V.S. Naipaul received Nobel prize for literature in 2001. He was Trinidad born person of Indian origin and now is a British citizen.
12- Indias child rights activist Kailash Satyarthi was awarded the Nobel peace prize with Malala Yousuf Zai of Pakistan in 2014.

Though there is lot to unearthed yet it is true that India has made awesome progress from its glorious past, misty medieval and marvellous modern to present day in spite of many hindrances, differences, hurdles and is on continuous pace of development in every field of life.

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