

<https://doi.org/10.46344/JBINO.2024.v13i03.10>

SCIENTIFIC BREAKTHROUGHS AND SCIENCE COMMUNICATION

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ABSTRACT

We are living in an era of Science and Technology. It is often said that technology is what makes science useful for mankind. In fact, technology is an application of science for the manipulation of human environment and both of these are intertwined closely to each other affecting the development of other. The trio of information technology, biotechnology and nanotechnology represent important technological revolution. The human civilization is driven by developments in the fields of nanotechnology, biotechnology, microelectronics, telecommunication, comprehensive automation and mechanization of production. Science and Technology helped us to solve our problem of food production, health, transportation and telecommunication. The intensive and dedicated efforts by a large number of people have resulted in the accumulation of scientific knowledge. The development of modern science and technology is outcome of the sense of curiosity and innovative mind of man. The story of the growth of science reflects through the history and survival of mankind. Scientific breakthrough can be defined as discoveries that transformed the knowledge frontier and have a major impact on society. At the same time, scientific temperament is defined as the logical and rational thinking attitude of individual members of the society. Science communication can help to bridge the gap between scientific laboratories and people living in rural areas of our country. Disseminating scientific knowledge to masses in India is a challenging task. Multifold efforts of science communication can speed up the process of inculcation of scientific temper.

Keywords: Scientific breakthroughs, Science communication, Science popularization, Scientific temper.

INTRODUCTION

Science is a search for the best for the sake of human welfare. It is a quest for the truth and finds that how the things actually take place. It seeks reliable knowledge of nature by studying the phenomena of nature. Scientific knowledge allow us to predict specific events and control them. It is acquired by observing facts, developing meaningful relation and performing exhaustive experiments. Every finding or fact is conferred by performing a discovery because something which is logically true may be empirically false. Science accepts any idea as truth only after it has been verified by possible means. In brief we can say that science is an inspiration for the cultivation of super excellence in all fields of life.

Science is no longer domain of a single person or a few men. It is the collective wisdom and experience of mankind. The truths discovered by science are neither regional nor personal but universal and eternal.

A person with scientific backgrounds believes that nothing should be accepted as truth, unless it has been thoroughly verified. A scientific attitude is an aid to clear thinking in all spheres of life. It can set mankind on the road to peace and happiness. For thousands of years science made little progress because people did not realize the benefits of studying science. Today science is progressing faster than ever. The people are utilizing technology in every field of life, but scientific attitude and scientific thinking is lacking.

If science has to reach the common man then it is essential that scientific thinking is conveyed in the simplest possible way. We should welcome the valuable popular science writings.

Scientific Progress

Science has covered almost all aspects and we can find the importance of science in every field of our life. Science has helped us to solve our problems of food production, healthcare, transportation, and telecommunication. The intensive and dedicated efforts by a large number of people have resulted in the accumulation of scientific knowledge. The development of modern science is the outcome of the sense of curiosity and innovative mind of man.

The modern civilization is driven by vigorous development of science and technology. As a result of breakthrough in scientific knowledge, our century has many appellations- the age of biotechnology, the age of microelectronics, the age of informatics, the space age, the nuclear age etc. The trio of information technology, biotechnology and nanotechnology represents an important technological revolution.

One of the crowning achievements of modern age has been the extreme connectivity brought about by advances in computer, telecommunication and satellite technology. No place on this earth is today more than few keystrokes away. Thanks to the ever growing cellular technology. A magnitude of technologies and software have made it possible to stay

connected to one's home and run all the devices from any part of the globe. Biotechnology has rapidly emerged as an area of activity having a potential impact on virtually all the domains of human welfare. It has led to far reaching breakthrough in medicines, industrial process and plant genetics, thereby giving rise to better diagnostic techniques, better crops and more efficient and cheaper production of vital pharmaceuticals. The whole new field of biotechnology is based on linking of DNA molecules with the help of genetic engineering techniques. Cloning , gene therapy, genetically modified crops, DNA fingerprinting , stem cell technology, tissue culture, and unrevealing of the complete human genome are all amazing scientific discoveries.

The area of communication has grown by leaps and bounds. The discoveries like the laser, optical fibers, artificial heart, vaccination, birth control pills, genetic engineering and genome project are some of the developments in long list of useful achievements made by the scientific community of the globe. Today we have made rapid strides in the field of satellite and optical fiber communication. The developments of new varieties of crops which are tolerant to disease, soil salinity and drought have revolutionized the area of food production, so essential for human survival. In nutshell, we can say that the gap between discoveries of science and their practical utility has narrowed.

Emerging Ethical Issues

Technology is beneficial, provided it is in harmony with nature. On the tragedies of modern age is the ever widening gap between man and nature. The dangers of nuclear holocaust, fear of chemical and biological weapons have posed threats to the survival of mankind. Biotechnology has always regarded as a double edged weapon, like nuclear energy. It has given controversial techniques to manipulate life forms like never before. In spite of many perceived advantages, human cloning research represents the proverbial horns of dilemma. The discoveries of human genome project are not free from risks. The information can be used to predict the vulnerability of individuals to certain diseases and that may lead to discrimination in employment or services like healthcare and insurance. The misuse of technologies, population explosion and industrialization has played havoc with global environment and natural resources are depleting at an alarming rate. Although we have made an immense progress in the field of science and technology, the need of the hour is for cleaner, efficient and affordable technologies.

Science Communication

Science is suffering because of lack of scientific temperament and awareness. The utmost need of the hour is to popularize science. Spreading scientific temper in culturally diverse sections of India is a complex undertaking (Khan, 2021).

Scientific research in mathematics, astronomy, medicine and material science

has been carried out since ancient times in India (Malik and Dhiman, 2022). The need of the hour is to popularize scientific temper in Indian people. Popularization of science and scientific practices will improve public perception and attitude to science (Rajput, 2017). Science popularization activities in India began even before independence. Earlier efforts in the direction were made by science workers, teachers and educators. Now, non-governmental organizations are playing a significant role in taking science to the masses (Mahanti, 2012).

No state or country can progress without advancement of technology. There will be no real progress without scientific progress (Patairiya, 2016). Scientific ignorance can be a potential obstacle in becoming India a developed nation. Ignorance about scientific knowledge can become a major reason for the creation of various superstitions, myths and blind faiths. It can further create obstacles in the development of any nation. Science communication is a fastly growing area in all continents of the globe (Rajput, 2017).

Government agencies state governments, organizations and individual writers are doing repeated and multifold efforts of scientific communication. Among Indian people, in spite of all the efforts of science communication and its popularization among masses, is a challenging job. The science communication should be carried out effectively by keeping the following objectives in mind:

- To enhance the appreciation of science and scientific breakthroughs in common masses.
- To develop scientific temper among students and other members of all age groups.
- To develop sense of interest in science in young members of the society.
- To increase the level of scientific understanding in people living in rural areas.
- To educate people to take rational decisions.
- To create and distribute good resource material in local/regional/mother tongue languages.

Science communication and popularization of science and scientific temper will help to build a positive image of science in the minds of masses. The huge communication gap between science and society makes the public deprived of the knowledge about scientific breakthroughs.

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