



Scientific perspective of Ancient Indian Cultural Practices

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Abstract

Indian traditions were earlier considered as superstitions but with the advent and advancement of science, it is becoming evident that these traditions are based on some scientific knowledge and move from generations to generations as traditions. India's traditional cultures have already been validated and well-accepted by various science communities and research organizations worldwide. The systems and their protocols are gradually becoming more popular because of distinguished ancient and current knowledge, innovations, benefits, and traditional beliefs. Relation of science to ancient cultural practices is as an important component of scientific literacy. All learners in a society have rich sources of prior knowledge accumulated through various experiences that they get while interacting with their environment. Scientific principles should be related to local occupations and the traditional practices used by them.

Keywords – Scientific Perspective, Ancient Knowledge, Cultural Practices

“We owe a lot to the Indians, who taught us how to count, without which now nothing would be made.”

Albert Einstein

I. Introduction

Indian traditions were earlier considered as superstitions but with the advent and advancement of science, it is becoming evident that these traditions are based on some scientific knowledge and move from generations to generations as traditions. For centuries, Indians have observed countless rituals and traditions from dawn to dusk in their everyday household chores. Some are mentioned in Ved ic scriptures and some are added later during the ages of Brahman scriptures. While conservative Indians follow the rituals religiously, our intelligentsia has found scientific reasons behind Hindu rituals and traditions. It is now proved that these ancient

traditions are linked to some scientific explanations and our ancestors were aware of the benefits obtained from these cultural practices. Science education has been an important component of society welfare and development; and imparting science knowledge to the students has immense value to shape the future of mankind. Some researchers have suggested that inclusion of cultural values and practices can improve the inculcation of scientific understanding and value among students. Modern Science education is knowledge centered and hence remains disconnected from the people involved in their world. Hence a policy on strengthening science education focusing on socio cultural perspective is very much needed. Ancient Cultural practices refer to the traditions and customs practiced in a particular ethnic group. These practices could be associated with any aspect of the society, religion, administration, environment, agriculture, health, or education. Ancient knowledge has evolved as the assimilation of all the above aspects of the society. Education, being one of the primary factors affecting the society developments, has always been affected by culture; and science education is no exception. Strong link between ancient knowledge and science can also be traced to the changes in the cultural practices of the society along with scientific developments; for example, industrial revolution and renaissance. Hence, it will not be wrong to say that ancient culture and science are closely bonded. Some examples supporting scientific understanding in cultural practices have been discussed, hence arguing that science education can significantly benefit from inclusion of ancient cultural practices.

Linkage between Scientific knowledge and Ancient cultural practices

Since the inception of human race, it has endeavored to accumulate knowledge. Over the period of time the systematization of knowledge resulted in a more exquisite arena called Science, which is predominantly driven by practical observations and experiments. Few examples are disc



ussed below:

Religious practices

Religious and spiritual beliefs have largely been discarded by the modern society to be random and non-scientific. However, detail inspection and observation of these practices suggest a logical and scientific reasoning to adopt them. Concept of deities is not random but they were associated with either with some natural phenomenon or emotional state of human being. For example, Sun god has been accepted as the primary god in most religions and cultures, controlling life on the Earth, which is very logical from the fact that Sun is the source of biological productivity. *Gayatri* mantra of *Sanatan Dharma*, also praise the Sun for blessings. The forest god has always formed core of the religious beliefs because of the forest's role in livelihood and resource generation. *Shiva* – native tribal god in India is one of the most important god in Vedic beliefs, he symbolizes existence of mankind with nature. Even location of worshipping places also points out the understanding of the scientific understanding of the geography and society. For Example, setting up of four monasteries by *Adi Shankaracharya* is not random, these were carefully chosen possibly according to the understanding of surface and contours.

Rivers have been worshipped in most cultures and religion because of their role in soil fertility and irrigation. Examination of *hymns* in Vedas, reveal how society understood and integrated the knowledge of geography and natural resources in the culture. Rig Vedas praise for mighty river *Saraswati* and its association with wisdom is unavoidable. Vedas are believed to have originated from the banks of *Saraswati* – hence it became known as the Goddess of Wisdom. Nile and Ganges have been worshipped as “God of River” and Goddess *Ganga* respectively. Ganges has been believed to have medicinal properties and cured many diseases besides increasing the fertility of the land.

Medicine and Health

India's rich cultural diversity gets reflected in various practices, which have direct or indirect; short or long-term impacts on the individuals, society and the populations' health. Many of such practices have already received the modern scientific experimental basis and many others have kept the scientific communities glued in the process. This however also must be received with many other traditional practices being scientifically proven to be retrogressive and

harmful as well. Some of the rational practices are discussed here. Ayurveda, which means ‘the knowledge for long life’, is a form of alternative medicine which originated in India thousands of years ago and is a time-tested health-care science. The *Sushruta Samhita* and *Charaka Samhita* are considered as the encyclopedias of medicine and are regarded as the foundation works of Ayurveda. In rural India, a large percentage of the population still prefers to use traditional health practices or Ayurveda. In ancient India the umbilical cord of newborn baby was buried in a copper capsule under the tree using certain preserving chemicals. Now it has been well established the umbilical cord is the best source of stem cells. These stem cells can be employed to treat the various genetic diseases as well as malignant abnormalities.

Many medicinal herbs and spices have been in use in Indian kitchen for cooking, like onion, garlic, ginger, turmeric, clove, cardamom, cinnamon, cumin, coriander, fenugreek, fennel, ajwain, anise, bay leaf, asafoetida, black pepper etc. these medicinal plants and spices are used as an ingredient in ayurvedic medicine.

Meditation as a practice of attention focus finds mention in ancient Vedas running possibly as old as 5000 years. Long-standing studies have proven the positive impact of meditation in alleviating stress. Mindful meditation has been proven to have a large-scale positive impact on overall mental and physical health even bettering the cognitive performance. The findings have been suitably supported by the neuroimaging techniques highlighting the areas in brain that get activated during the process. Similarly the health benefit of another age-old practice of drinking water in copper vessels can now be scientifically validated. Copper is known to possess antimicrobial property and hence increases the potability of water, apart from acting as a part of various proteins and metalloenzymes. Copper is also associated with an active immune system. The cultural pious status of river *Ganga* emanating from its self-purificatory property due to certain microbicidal bacteriophages that is present in the water.

Engineering and Architecture

Hindu temples are the place where a person can concentrate, meditate and can obtain spiritual energies. The architecture or layout plan of ancient Hindu temples is so intricate that it can fulfill above-mentioned needs. These temples are placed at a place where earth magnetic and electrical energies are at the maximum. The deity is placed in the center, where



it has the maximum amount of magnetic power. Mostly the Hindu temples are closed from three sides

to increase the power of energies in the centre. The person revolving around the deity (pradikshina) therefore, gains the beamed magnetic waves, which help him in meditation. Walking barefoot in the temples has also great significance. The magnetic and electrical waves are absorbed bare foot in the temple. The ringing bells are also an important part of Hindu temples. They are made of combination of different metals to create a unique sound to touch these seven healing centers (chakras) of body.

Environmental and Agricultural practices

Traditional Ecological knowledge can be considered complementary to scientific ecology in its understanding and application. Traditional Ecological Knowledge can contribute to the biodiversity conservation, protection of natural habitats, maintenance of ecological functionality, and to sustainability of natural resources. Temporal control on hunting is a well-known practice across the globe for fish and wildlife management. In India many species of wetland birds are only hunted outside their breeding habitat ensuring sustainable population. Our ancestors worshipped Peepal tree. The scientific reason behind that is normally, trees produce oxygen during the day and emit carbon dioxide during the night; but very few of us know that Peepal tree produces oxygen during day and night. Tulsi is considered as a mother by Hindus; Tulsi, which is Basil in botany, has many medicinal properties. Basil is antibiotic, which increases immunity if taken every day. It is believed that if a person consumes basil every day, he or she can live a long and healthy life as the plant prevents diseases and stabilizes health. Moreover, the fragrance of Tulsi averts mosquitoes and other insects; it is also believed that snakes do not tread near Tulsi plant, and therefore, ancient people used to plant Tulsi near their houses.

Green manuring is an age-old practice prevalent since ancient times, where leguminous crops like Dhaincha (*Sesbania cannabina*), moong, sun hemp etc. can be sown just before the onset of monsoons. The crop is allowed to grow fully then is cut down and mixed into the soil at the same place. Cover cropping is another age-old practice in India, which is carried out with nitrogen fixing crop that grows fast. The cover crop suppresses the weeds, prevents soil erosion at the same time adding nitrogen to soil while giving returns in terms of fodder. Now traditional multi-cropping system is being promoted to overcome the challenges, which arose

because of monoculture agricultural practices in during the green revolution. In Indian agricultural ecosystems, use of parasites and predators always showed good results if they are not disturbed. Dilute cow urine and vermiwash are still used as pesticides. Our farmers have been preparing and using natural bio-pesticides, by taking extracts from several plants like neem, ginger, chilli, custard apple, karanj, asafoetida, turmeric, garlic, tobacco, sweet flag, tulsi etc.

Other practices

The Indian Gotra system is an excellent example to explain several concepts of classical genetics. The Gotra of a person talks about the origin of its lineage. Indian Gotra system also emphasizes that marriages should not take place between same Gotra. Now going into more details, the identity of the persons belonging to the same gotra/lineage at molecular level (more specifically DNA) is relatively similar. If marriages occur between persons of the same Gotra will lead to generation of same kind of characters or inheritance of recessive genes. In the same manner marriages between different Gotras will lead to the generation of new and/or improved characters. Improved characters are the basis of species evolution. This conditional marriage concept of Hindu Gotra system can beautifully explain the terms of homozygosity, heterozygosity, hybrid vigor and evolutionary lineages.

Indian system advocates that the meals should be taken at specific times, amount and manner. For instance, it is said that morning meal should be like king's meal including a variety of nutrients. As the level of glucose has been lowered due to the gap of last meal (dinner) therefore one should not skip breakfast and should include adequate food. Simultaneously, in the night meal one should consume lesser quantity of food in order to help the digestive system work optimally. Indian system also states that one should start the meal with spice and end with sweet. This is in accordance with the functioning of our digestive system. Intake of spicy things stimulates secretion of digestive enzymes, which are required for the metabolism of food in stomach. On the other hand, sweets function as suppressor of secretion of digestive juice thereby slowing down the digestive process.

Simultaneously, Indian traditional culture also advocates that one should observe fasting for spiritual gains.

Scientifically, fasting helps in boosting the digestive system by reducing the work pressure along with cleansing the system from various toxic materials. Research suggests there are major health benefits of



fasting like reduced risks of cancer, cardiovascular diseases, diabetes, immunedisorders etc.

There is a physiological reason behind Sindoor application by married women. Sindoor is made of turmeric-lime and metal mercury; mercury not only controls blood pressure but also ignites physical passion. This could be the reason why widows are not allowed to apply Sindoor. For better results, Sindoor is applied right up to the pituitary gland, which produces hormones that influence growth and sensual development. Mercury is also believed to remove stress and strain. Namaskar or Namaste is an Indian style of greeting people; it is a way Hindus give respect to others. While joining two palms together, people join the tips of all the fingers together, which further creates pressure on points of ears, eyes, and mind. Pressing them together is said to turn on the pressure points which helps us remember that person for a long time. This also ensures that people do not get germs as they do not shake hands.

II. Conclusion

For human development the need of making greater use of science and technology in one hand and the ancient Indian traditional knowledge on the other is stressed. Culturally based education includes curricula based on native culture that incorporates histories, fundamental beliefs and values of the communities. Ancient culture-based education should focus on making the teachers skilled in cultural practices that recognize and affirm the culturally based strengths in problem solving and learning. The cultural knowledge can be gathered from the elders, community leaders and educators, local cultural experts and grassroots people. The full and effective participation of traditional knowledge holders with the scientific community must be ensured. The cultural knowledge is stored in traditions, customs, folk songs, folk stories, folk dramas, legends etc.

Relation of science to ancient cultural practices is as an important component of scientific literacy. All learners in a society have rich sources of prior knowledge accumulated through various experiences that they get while interacting with their environment. Scientific principles should be related to local occupations and the traditional practices used by them. Visits should be organized by the teachers to agricultural fields to discuss about the traditional practices used by the people and how modern science is based on that. Communication with students in the form of questions or statements is the most important means to allow students to fully explore the role of

cultural perceptions in learning. Students must be encouraged to share their cultural traditions and the modern scientific reasons behind each tradition. Knowing the scientific reason behind age-old customs helps us understand their significance and this way we can explain it to the children properly. Students must be encouraged to share their cultural traditions and the modern scientific reasons behind each tradition. Knowing the scientific reason behind age-old customs helps us understand their significance and this way we can explain it to the children properly.

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