

Scientific Temper is a Natural Process in Children: Let's allow it to groom

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Little kids are naturally blessed with a scientific temper, which can be proven by looking at their daily activities. Have you ever noticed how a baby of 7-8 months, who cannot even stand on its feet, gets out of the bed? The baby gauges the height of the bed and then moulds his or her body to get down in such a fashion not to get injured. And if you give small hollow pipes to a set of children, you will find that almost all of them will peep through the pipe-hole. Small kids are very curious when they see new things (animals, toys, birds, trees, fruits, etc.) and they want to analyse them in their own way. They are full of why's and how's, and have their own comments and answers. However, as they grow older, the curiosity driven learning among kids is marred by the biased and confused teachings from society, parents and teachers as they want to impose their knowledge upon them.

In our society, innocent kids are taught by parents to touch the feet of elders as a mark of respect, but they get confused on finding that some elders are abusive. Kids observe several such contradictions in day-to-day life. Parents often impose restrictions, of course for the benefits of the kids, in their opinion, which often blocks the explorative thought process.

To elaborate on this, let me provide an example from my own young days. I was born and brought up in a village of Uttarakhand State, where the houses are built on stair-case like farms. I was told by my mother that in the backyard of the neighbouring house was a ghost, and therefore, she never

allowed us to go out in the night due to the fear that the ghost would kill us. I used to ask my mother, how does the ghost look like? Has she ever seen it? Initially, she used to keep me quite by scolding. But as I was growing, my questions became more rebellious, to the point of telling her that one day I will catch the ghost. One day she said that she often sees the ghost, as the ghost quickly moves through the back-wall of the neighbouring house. She also believed that the ghost belonged to a bad old man who died long ago and wanted to trouble the villagers. After keen observations, I found that the ghost was nothing but a shadow of banana leaves forming on the back-wall of the house whenever the neighbours living in another adjacent house were bringing their petrolmax to their balcony. Using experiments, I then demonstrated to my mother and villagers that the formation of the ghost images on the wall was nothing but a shadow-formation phenomenon. And thereafter they started allowing me to do whatever I wanted to do.

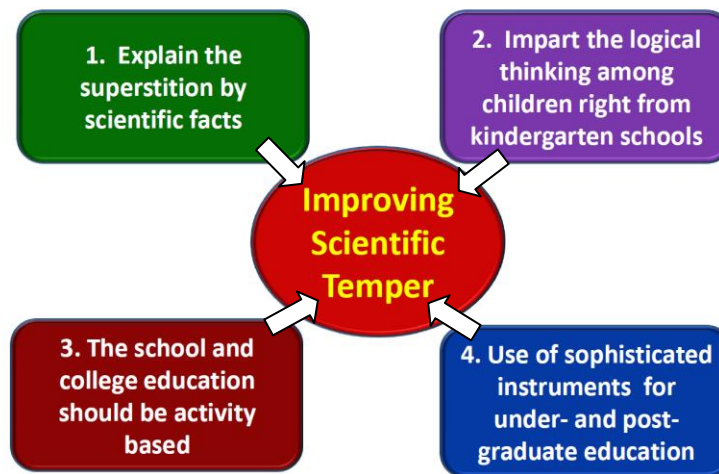
Today, it is observed that parents do not allow children to do most of their own activities, including eating food, getting ready for schools, home work, playing sports, etc. Parents impose their ambitions onto their kids, and dictate them by their thought processes with the perception that they are benefiting the kids, but in reality it leads to a contrary effect. Modern social sites and television are often being misused by the so-called godmen and miracle-makers to impress children and society that they can provide instant and magical solutions to various problems, which is detrimental to the cause of inculcating scientific temper in children. Therefore, parents and society need to be more rational so that children have ample space for evolving their own thought processes.

Schooling is a major area where we need to be very careful – bad schooling can block the growth of natural scientific temper in children. At the age of 2-3 years, children are admitted to schools when they hardly understand the meaning or purpose of a school. The bright, curious, explorative and truthful young minds are filled with routine and boring education, which puts restrictions on the expansion of their thought processes. The growth of scientific temper is also hampered when teachers force children to follow blindly the textbook matter without

understanding it and terming a role-model student as one who does not ask many questions that would disturb the teacher.

Education in higher classes is aimed at cracking problems so that students score high marks to get admissions in the desired professional colleges. The laboratory work in high-school and higher-secondary classes is completely ignored, which is not a good sign. Whatever small-scale practical classes are given to the students, the emphasis is mainly to obtain the expected readings or results, while significant efforts are needed to encourage students to find results in their experiments with an open mind. Far worse, in most schools, conducting practicals in schools is considered a waste of time. In my opinion, this is the area where school education needs to be strengthened to promote scientific temper in students.

The majority of graduate/post-graduate colleges do not have experimental/engineering facilities to test the scientific temper of the budding scientists/engineers, as majority of the sophisticated equipment are not built in the country and most of them are imported. Therefore, the focus of the students is somehow to obtain the degree, rather than understanding the subject.



Clearly, in order to create a citizen of high scientific temper in the country, all-round efforts are needed to groom the thought

processes of the children in a scientific manner. For this one can take examples from the “Technology Giant” Japanese society where scientific temper is inculcated at every step during the growth of the children. Some of the methods to improve the scientific temper in our children are summarised as follows:

1. Explain the superstitions by scientific facts. This is important to educate the society, and for this, print, TV and social media should take up the responsibilities. Most of the Indian superstitions can be explained through appropriate animations.
2. Impart logical thinking for daily activities among children right from kindergarten schooling. This is a very important aspect as it trains the young minds.
3. School and college education should be practical and activity based. Carrying out the actual scientific experiments at a young age not only allows an understanding of the fundamentals of basic sciences at an early stage but also energises them to take part in the activity.
4. At graduate and post-graduate levels the education must have hand-on experiments with sophisticated instruments. Unfortunately, today majority of such equipments are imported and are accessible only to the scientists of big laboratories and universities. For this, in my opinion, manufacturing of such scientific equipments must be carried out in the country under ‘Make in India’ program, which in a way could also pave the way for the ‘Skill India’ programme.