

CORRESPONDENCE

expected to recur more frequently in this century due to global warming and associated climate changes (https://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch10s10-2-3.html). We cannot prevent occurrence of such extreme climatic events, but their severity or extent of adverse impact can be minimized through better preparedness. With reference to the Chennai floods, some of the actions that can minimize the impact of future floods are suggested below.

(1) No new residential/office/industrial structures are to be permitted in the wetlands and flood plains of rivers.

(2) In the low-lying areas which are already occupied by residential colonies and buildings, proper drainage system should be constructed.

(3) The drainage system should consist of street-wise flood water draining

channels connected to a drainage canal. The drainage canal is to be connected to existing rivers that drain into the sea (Bay of Bengal).

(4) The course of the existing rivers, Kosasthalayar, Cooum and Adyar, that wade through the city is to be dredged to facilitate free flow of water into the Bay of Bengal.

(5) Dredging and restoration of Buckingham canal and linking it with the rivers and Bay of Bengal will help drain water quickly during heavy downpour and cyclone.

The Buckingham canal runs through Chennai, from Kakinada in AP to Marakanam in TN for a distance of about 420 km; its width ranges from 100 to 40 m, and runs parallel to the Coromandal coast. The Buckingham canal built during the British Raj in the 19th century

was used for goods transport till 1965. This canal with a capacity to hold over 100 million cubic metres of water has acted as a buffer against floods and tsunami, and saved thousands of people in the past¹.

Revamping of the three rivers and the Buckingham canal flowing through Chennai will bring enormous other benefits such as restoration of ecosystem, reduction in pollution, control of vector-borne diseases, use for navigation and tourism.

1. Rao, B. R., *Curr. Sci.*, 2004, **89**, 12–13.

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Higher education and Indian science – start with the school education

It is heartening to see a Guest Editorial by Ganesh¹ on the topic of Higher education and Indian science in *Current Science*. In the same issue, Sen² writes about the deficits and possible remedies regarding Indian higher education. Both the authors have identified problems that are hindering the growth of Indian science; but the focus on attracting students to a science career right from the school level is missing. Increased resources for R&D are important, but getting and developing the right scientific manpower is the crux of the problem in our system. Young students from our high schools and colleges are slowly being lured away from their genuine interest in science, because of the lack of innovative ways of teaching science. Their natural curiosity about science is not encouraged and supported in the existing school and college system. A personal experience of the present author may prove the point.

After retirement, I decided to offer my services to a well-endowed school nearby. I wanted to interact with students from the eighth and ninth standards to satisfy their curiosity and make them think about and understand the wonders of nature around them. The experiment was to set up an open-ended forum of an ‘Ask Club’, where the students would ask any question that excites them about

the world around them. The forum would try to answer individual questions through discussions amongst the students; and I was to act only as a catalyst to direct the discussions to arrive at an answer. The school authorities were keen for me to use the set science syllabus for each class and ‘coach’ the students to prepare them for the final examination. When I refused to run such ‘coaching’ classes, they made it optional for the students to attend the ‘Ask Club’. To my surprise, the students of both classes voluntarily agreed to come and attend the sessions and really open up their pent up curiosity by asking questions ranging from ‘How to save a fixed amount of electricity consumption in their homes?’ to ‘Is there life beyond the Earth?’ (the SETI problem). They even had questions like ‘Why do people believe in horoscopes?’ ‘How can we prove that Rama, the mythological hero of Ramayana really existed?’ ‘Was he born in the so-called Ram Janmabhumi?’ By letting the students meander from one topic to another, it was exciting to see how they were exploring the method of science. The class was full and students enjoyed every moment. These sessions led me to write a book for the National Book Trust, titled *Science and You*³. The students had asked me to ‘Write something that is not

in our text books’! The book does not have separate chapters on mechanics and optics, but chapters on areas of curiosity shown by the school students. After more than a decade of its publication, the book is still selling roughly 10,000 copies per year, presumably read by the students. This augers well for the curiosity amongst our school students. There is a need for our teachers to satisfy the curious minds with more innovative and interactive teaching to keep up their zest for science. Innovative science education should begin at the schools to ignite the minds of the young. They are then bound to pursue innovative science careers in our universities and national laboratories.

1. Ganesh, K. N., *Curr. Sci.*, 2015, **108**, 2135–2136.

2. Sen, S. K., *Curr. Sci.*, 2015, **108**, 2151–2155.

3. Lavakare, P. J. and Narlikar, J., *Science and You*, National Book Trust, New Delhi, 2000, ISBN: 978-81-237-3657-0.

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