

Knowledge revolution will STEM from changing face of classroom



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Now there are lots of one-way routes in several countries all over the world. But surprisingly it was children's scientific curiosity that led to the birth of the first one-way route in the world. Back in the 1850s when the London Royal Society had just been formed, scientist Michael Faraday used to conduct several experiments for children in the open auditorium on Sundays. Consequently, there happened traffic jams on Albemarle Street nearby. Hence the street was declared as a one-way route, earning the distinction of being the first one-way route in the world.

It was from this episode that an unwritten law germinated – that made it mandatory for every school to have a science laboratory.

The seeds for a child to become a scientist in its life must be sown in its school days. At this juncture, it is worthwhile to recall the words of former President Abdul Kalam who said it was his science teacher who had instilled in him the ideal of pursuing science, taking the students to the ponds so they could see for themselves how the birds fly. The teacher had not stopped with drawing diagrams on the blackboard and explaining how the birds fly.

Need for scientific dialogue

We must move from the system of learning by rote the lessons printed in books and converting them into exam marks to the healthy system of teacher-student interactive dialogue.

Today STEM has been accepted as part of the world science education. It is a broad term used to denote a combination of science, technology, engineering and mathematics. It is a grouping together of several disciplines, which is unfortunately implemented just ritualistically in colleges. It should be introduced in schools too. Meant to break educational stereotypes, STEM must be pursued in schools so the students are afire by desire for scientific pursuits.

Schools have labs after class 9. But the labs witness just as exam-oriented experiments which hardly arouse original scientific thinking and temper among the students. The fact is that the time spent in classes 6, 7 and 8 is ideally the period when the students' creativity, new thinking and structural rationalism will start sprouting. The STEM education is ideally suited for the classes 6, 7 and 8. But the syllabus for these classes is confined to books. What we need immediately is a system wherein teachers and students have an interactive STEM-oriented dialogue. If the system is implemented in schools, it will help solve education-related complex problems.

Schooling is a highly receptive period when the students' creative and constructive mentality and hand-brain synergy must be cultivated. STEM system is a good solution on this count.

Scientific temperament

An expert committee led by nuclear physicist Dr. Raja Ramanna in its 1981 report on 'Indian scientific temperament' stressed the need for ushering in a scientific and social renaissance in India to launch an offensive against all kinds of superstitions revolving around fake sages, pseudo astrology, 'vaasthu' and human sacrifices. The committee made 16-point recommendations to the union and state governments. The primary recommendation was that weekly programmes must be held in schools which would feature scientists and experts having an open and interactive dialogue with students. The experts must address the students' questions over day-to-day life, natural phenomena and human anatomy and thereby create a scientific temperament among the students. Thus, a society based on rational thinking and scientific mindset will be created, the committee said.

Creative science

The 21st century education's main objective is to create new inventors. Cultivation and development of the Fourth Industrial Revolution skills will spark technological urge in students. Moreover, the biographies of the contemporary achievers and

inventors such as Ajay Bhatt, the inventor of USB, Sabeer Bhatia, co-founder of hotmail.com and so on have brought to light the truth that their scientific and technological search began well during their Indian school days.

Hence it is imperative that STEM is introduced in schools to drive the emergence of new inventors and scientists.

Teacher-student relationship

The textbooks full of diagrams and words must be changed into live learning tools. For the job, we need dedicated and passionate teachers who can transmit knowledge to the students in such a way that the latter will imbue the spirit of search and innovative thinking. The next dimension of the teacher-student relationship is that the STEM system will build a bridge between them, stirring curious questions in the students and triggering teachers' initiatives to have a free and frank dialogue with their pupils intellectually and scientifically.

Learning must be redeemed from the suffocating classrooms. It must set the students searching for knowledge in the spirit of a butterfly flying across the boundless skies. The STEM system of learning will gift the skies for the students to fly across like butterflies.

It is time that the teachers and science and technology experts join hands to implement the STEM system of learning so our children will emerge highly energetic and enthusiastic warriors of knowledge, science and technology down the line.

Translated by V. Mariappan.