

Demystifying science through toys

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Arvind Gupta, based in western India, is a qualified engineer who quit a lucrative MNC job to make toys out of scrap to help students understand the basic concepts of science. He also translates books and uploads them for free downloads on his website.

Pune, Maharashtra: At his home in Pune, Arvind Gupta has a laboratory. But it has none of the paraphernalia that you would normally associate with a science lab. There are no tall beakers, mysterious chambers, gas burners and rows upon rows of bottles filled with colorful chemicals.



Arvind Gupta

Photo credit: Huned Contractor

Instead, there are discarded cycle tubes, wooden slats, heaps of matchboxes, old newspapers, Frooti tetrapacks and so on. That's because this is the raw material that Gupta, an Indian Institute of Technology product, commonly referred to as IIT-ian, uses to make toys that help him demonstrate the various concepts of science to school students.

So whether he has to explain Newton's Law or the meaning of centrifugal force, Gupta uses such customized toys to not only help make science easier but also practical and interesting.

Science is not about complicated equations or huge laboratories where people work in white coats and masks. It's about using certain basic principles to develop processes and equipment to make human life easier.

Demystifying science

“Therefore, my focus has been on demystifying science for school students who, more often than not, find it too perplexing and also heavily boring. If you can show them actual models of how things work because of certain scientific principles, the understanding becomes smoother and children actually warm up to the subject,” Gupta states.

Gupta uses waste and inexpensive material to make his demonstration toys and kits because he is quite cheesed off with the way schools buy expensive products in their labs but don't use them for fear of damaging them or because there are no trained demonstrators.

“Using simple things is the most effective way of getting students interested because they can make these models themselves. It becomes a perfect combination of theory and practicals” he says.

Gupta, who is currently attached to the Children's Science Centre, Inter-University Centre of Astronomy and Astrophysics, University of Pune, has dedicated almost 30 years to come up with these innovative toys.

When an idea took shape

The idea took shape in 1979 when he went for the Hoshangabad Science Teaching Programme (HSTP).

After graduating from IIT, Kanpur, he got employed with TELCO. It was a well paying job and would have brought him materialistic success and acclaim but he wasn't happy.

“I was looking for something that required more involvement, something that gave me an opportunity to grow. I therefore took one year's study leave from TELCO and worked with an NGO called Kishore Bharati. It was while working there that I went for the HSTP. It was a small town in MP and there I realized it was very important to apply scientific concepts in everyday life to help people understand them better,” he recounts.

Gupta then began to design several low-cost and scientific teaching aids. “My aim has been to get teachers involved. Unless and until they too can make things out of such basic materials, they will never be

able to explain scientific principles in a lucid manner to their students," he observes.

During his stint with the HSTP, Gupta would often buy things from the weekly market and use these to make models of triangles, squares and hexagons.

Bringing out latent creativity

"I realized then that people can understand what a hexagon means much faster if you can actually show them a model instead of just drawing its sides on a blackboard. All this got me so interested that I chucked up my job and devoted myself full time to this activity," he adds.

As to why he prefers calling them toys and not models is that children have an inbuilt inquisitiveness to see how toys work, especially those that are motorized.



Teaching rudimentary Science through toys

"They get fascinated when they see that you can make a motor with a cell, two safety pins, some copper coil and two magnets. This leads them to further experimentation and also helps bring out their latent creativity," he states.

Over the years, Gupta has attained quite a status and his website (www.arvindguptatoys.com) is visited by people from across the world. "We add 2-3 new toys each day," he informs.

Apart from making these toys, he also translates books and puts them up for free downloads on his website.

Floating in the cyberspace

“In a country of 1.2 billion people, there are no public libraries and books are expensive. How does an average teacher keep himself updated? So I translate books and put them up on my website. My only soul is these books floating in the cyberspace,” he states.

And finally, does he have any regrets at not having continued with his job?

“Not at all. I would have become the CEO of a company by now but it wouldn't have been half as satisfying as making toys,” he says with a chuckle.