

From scrap to science

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Arvind Gupta, India's Science crusader, began a journey in creative science education in 1978, as part of a team designing science experiments and writing workbooks for the Hoshangabad Science Teaching Programme (HSTP).

The programme attempted to revitalise the learning of Science in village schools. It started with 16 village schools and later spread to over 1,200 village schools in Madhya Pradesh. And one day, he asked himself — what could be done with local things? This question led to weekly visits to the local bazaar to buy samples of all the things sold on the roadside. “While inflating my bike, I found I could use cycle valve tube to teach physics. With valve tube joints and matchsticks, I made 2- and 3-dimensional shapes — a virtual village Mecanno,” he says.

For Gupta, the experience opened up amazing possibilities of showcasing creative science using locally available, low-cost, simple materials.

Toys and scrap are integral tools of his teaching process. Having visited more than 2,000 schools in India, Gupta observed that the lab apparatus mostly stayed locked in cupboards gathering dust. “The burettes, pipettes and test tubes were meant only for the school inspector and not the children,” he remarks. On the other hand, children, in their spare time, were creating models with whatever material was available. “When children make things themselves, they gain a deep insight. They learn so much without being taught. For instance, the newspaper has a grain in one specific direction. Long strips can only be torn along the grain, not across it,” Gupta explains. Scientific truths, such as properties of different kinds of material, can be learnt while making things.

Recycle, reuse

In today's consumerist 'buy and throw' culture, there is never a dearth of junk — plastic bottles, tetrapacks, ice-cream sticks etc. They are recycled and reused. Gupta uses only such equipment in his workshops.

His workshops are usually hands-on and involve children and teachers. They make caps, prisms, geometric structures and even sometimes food! They laugh and learn and everyone goes back with a new perspective — that every bit of so-called junk is actually a resource. Gupta has been on a mission to popularise science toys for over 32 years. But he is saddened by the fact that he is often perceived as a “magician” rather than a teacher.

“Once the workshop is over, everyone forgets about it. It is a one-shot affair. Soon they are back to the old chalk-and-talk method, or plain mugging.”

While he believes that the worst punishment for children is to make them sit still in a classroom, he has interacted with many parents to validate the fact that “India has a large educated middle class. Some of them care deeply about good education for their children. They discard factory-schools, opt for off-beat small schools, and when they get fed up, they switch to home schooling”.

His website <http://arvindguptatoys.com> has over 6,000 photos of over 600 teaching aids. His books can be downloaded from the website free of charge.

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