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Format for submitting projects under Project Varanasi. (Do not change the serial no and headings of the items. If the headings are not relevant to your project then say so. The proposal document must not exceed 5 pages.)

1	Project type (Strike off those not applicable, refer to the policy document for project types)	(i) Technology Development or Prototype Development. (ii) Faculty Projects (Innovation and application Projects) (iii) Project (Student Nurturing)
2	Title of the Project	Science and Math Education
3	Duration of the project	1 year
	Name address and phone numbers of PIs and Co-PI's and Student PI's	Dr. Prof Mohd Zaheer Khan Yusufzai Mr. Manish Jaiswal Co-PI, IUCAA

6. General Description of the project: Science And Math Education Films and Associated content

7. General Description of experience/ expertise of team on such/ similar projects. Science Center at IUCAA has been involved in making hands-on toys for last 10 years.

8. Deliverables (The deliverables are to be described in each section. If there is no deliverable in a particular section then say the same clearly.): 40 videos, explanation activity sheets, worksheets

9. Method/ Technology to reach the deliverable. All the material will be in creative commons

10. Time line / mile stones for achieving the deliverables. 1 years

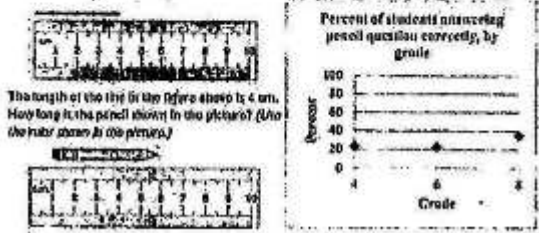
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Hands-on, Popular Science and Math Films

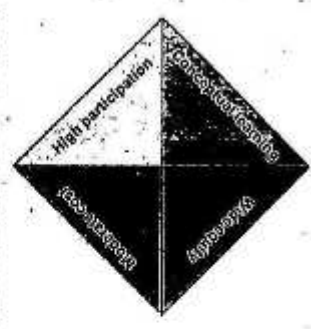
Our goal is to make science and math learning interesting and experiential so that children can rediscover the joy of learning. Over the last 3 years we have conducted workshops in schools, colleges and companies with teachers, children and adults. These workshops focus on making toys, activities and exploring science and maths along the way. Activities are made from very inexpensive material that every child has access to.

There were valuable lessons for us during the journey. Some of these were later formalized by surveys and tests done by ASER and PISA. There was no doubt in our mind that we have been failing our children by just increasing the number of schooling years for our children. Our children can read and write but are not literate (PISA 2009, India ranked 73 out of 74 countries). 90% of 15 yr old Indian children are below level 2 with reading, maths and science skills that render them unable to participate effectively and productively in life.

Right from the beginning our emphasis was on the concept vs the rote. Our firm belief in making learning hands, in opening up of minds. Once we do that we make sure the learning is done with all the human capacity and not one of the child brain shut off. Of course all the current research validates all these findings. So when children really make the motor and see why one needs to scrape of the insulation on a circular wire at three places they learn of course about electricity, magnetism, commutator but also about circles, tangents areas. So the children would be able to measure the pencil even when oriented not at 0.



Our Belief



We believe that usage of these toys inside our classrooms can enhance scientific temper and really change the way science and math are taught and understood. In the activities that we do we focus on 4 parameters of conceptual understanding, equity, cost, participation. And while these toys appear simple the science behind them can be interesting and challenging. Folding an equilateral triangle from A4, counting till 1000 on just 10 fingers, making a tennis ball super bouncy, so that it can bounce to 18 ft. All these activities unravel the science around us. If we can take all these toys inside our classes we could revolutionize learning. Some of our latest work is here.

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