

Plenary session 5: PCST challenges and tools directed to young people

SCIENCE POPULARISATION AMONGST CHILDREN IN EARTHQUAKE AFFECTED AREAS OF KUTCH THROUGH LOW- COST SCIENCE

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Introduction

January 26, 2000 is a date which will remain etched in the minds of the people of Gujarat for years to come. For, this was the day when a devastating earthquake ripped through parts of Gujarat and created havoc. The earthquake measuring 6.8 on the “Richter’s Scale” resulted in around 10,000 casualties and left thousands of others injured and disabled for life. Moreover, there was a terrific toll on wealth and property too. All major cities of Gujarat like Ahmedabad, Bhuj, Surat, Rajkot, Surendranagar, Jamnagar, Banaskantha, etc were affected.

The people were traumatized and stalked with fear due to their lack of knowledge about the scientific basis of an earthquake. For them, this was God’s way of punishing them for some unknown sacrilege that they might have committed. It was difficult to educate the illiterate folk of Gujarat in the midst of belief in superstition and black magic.

The effect of such disasters on children was the strongest since they were not able to understand and interpret the happenings around them easily and also developed a lot of irrational fears in the absence of proper guidance.

At this point, ‘Manthan’ our NGO stepped in and pledged to help these victims by providing them proper scientific knowledge of what earthquakes really are and how one can tackle the aftershocks. The widespread myths and queries about this natural calamity were handled in an easy play-way method in order to make it comfortable for the unlettered folk and especially the children to understand and accept the knowledge.

The experience that Manthan had gained by working in Latur, a village in Maharashtra which had been hit by an earthquake in September, 1993 resulting in 9783 deaths was useful in getting an insight into the fear psychosis that an earthquake creates in the minds of people.

Aim

The aim of the project undertaken by Manthan was ‘Popularization of Science’ amongst children in earthquake affected areas of Kutch through low cost science communication aids.

Secondly the project also aimed at removing the myths associated with earthquakes in the quake-hit areas of Kutch.

In nature, there are only consequences

Methodology

Manthan's methodology mainly focused on communicating science to the children by means of very simply but highly effective low-cost tools.

Thus to serve this purpose, the following steps were taken:

“Understanding Earthquakes” activity kits for children

First of its kind in the whole country, these innovative kits consisted of around 25 scientific toys and activity material to understand what are earthquakes, why they take place, and what to do to minimize the damage when an earthquake strikes.

The unique feature of the kits was that the toys made were very simple to use and did not involve complicated technology, and yet they managed to convey important facts about earthquakes and their aftermath.

Moreover, since the toys were attractively made and colorful, the children found it easier to study apply the knowledge they had so learnt.

For example, to teach children a subject like safe structures that can resist earthquakes, colorful cardboard pieces were provided in the kit and instructions given as to join them in different ways to come up with weak and strong structures, roofs, walls etc.

Another interesting toy was a horizontal spring called ‘slinky’ which could be vibrated in different directions to illustrate the types of seismic ways and educate the children about the extent of damage done by them.

Along with these, the kit also included an indigenous design to make a home-made model of a seismograph with the use of a funnel and, a bent iron rod and a card paper board and explain its working and the model of the globe on a ball to understand tectonic plates.

Secondly, activity books like flip books of fault lines on the earth's crust, maps to color and display the seismic zones of India and booklets elaborating on earthquake related terms and ‘frequently asked questions’ were prepared too.

Also, a mini book of Dos and Don'ts during and after an earthquake, multicolored sheets giving information on seismological observatories, magnitude and impact of earthquakes of different scales and on the lithosphere were included in the kit.

Around 500 such kits were distributed in Kutch and other nearby earthquake hit areas and more are now being prepared to provide information in the other earthquake sensitive regions of India where though the calamity has not taken place yet, but it is just waiting to strike.

Thus topics like building sciences and seismology were understood by children to some extent by a very child-friendly medium.

An important thing to be mentioned here is that in this endeavour, Manthan was supported by the Department of Science and Technology, Government of India and Vigyan Prasar.

Workshops

Manthan also conducted workshops in 32 villages to explain various facts, concepts and precautions related to earthquakes using lectures and paraphernalia like charts, graphical displays, models etc.

Children were made to draw and paint so that they had a decent outlet to express their trauma and the phobias that they associated with earthquakes.

These workshops also facilitated the distribution and usage of the “Understanding Earthquake” kits.

During the workshops, games on safety, camps and informal events were also conducted to communicate messages regarding earthquakes

We also developed low cost disaster mitigation material and distributed it to schools and village groups.

Exhibitions

A very exclusive project undertaken by Manthan was in the form of exhibitions put up on camel-carts. These low cost mobile exhibitions were making use of the animal found commonly in the desert and something which would easily attract and sustain the interest of both children and adults.

On such camel-carts, posters giving information on pre and post earthquake precautions, awareness charts on the distribution system of relief material etc were displayed and the counselors of Manthan were instructed to give vital information on earthquake related issues.

In this manner, we managed to effectively combine local knowledge with modern technology to come up with the unique idea of exhibiting things on a camel-cart.

A thing to be noted here is that apart from working in the education sector, Manthan also conducted useful trainings on the health care services provided during the earthquake

Results

The short term result of this venture was that children managed to overcome some of their fears about earthquakes and they gained a lot of information and insight which would help them in the long run.

The pictorial representation of their thoughts and fears resulted in a kind of catharsis of pent-up emotions.

The project helped people to shed their fears regarding earthquakes as with the technical know-how on the subject, their many myths were shattered.

Their ignorance had made them victims of superstition, but with this new found knowledge, they were better equipped to handle stress.

A network of NGOs doing work in earthquake prone areas emerged and is still developing.

It would be useful to point out those NGOs like 'Kutch Mahila Vikas Mandal', 'Prayas' and 'Ganthar' that they adopted this approach in popularizing earthquake related material amongst the quake-hit masses.

A long term further three years programme was designed to be conducted not just in Kutch but also in other seismic areas all over India. 10,000 kits are produced and distributed by Vigyan Prasar, DST, Govt. Of India.

Primarily under this programme, the earthquake prone North-East region of the country is being covered by Manthan, where the "Understanding Earthquake" kits are being distributed.

The earthquake related material prepared by Manthan is being translated in many languages so that it can be used more extensively.

An important aspect of the project is that due to its continuous nature and work with a large cross-section of people, mathematical estimates could not be prepared. It is a learning process that is still going on and being updated by us and so, statistics are not available about the extent of the reach of our project in different areas.

Conclusions

These kind of low-cost science popularization material and methods help in broadening the perspective of people with regard to science.

They are instrumental in disbanding a range of superstitious beliefs and myths which obstruct logical thinking and are prevalent in rural areas

These kinds of scientific tools should be used in developing countries as they are easy on budget and help in creating a scientific temper in the masses which is also the ultimate goal of Manthan.

Preparedness and understanding of earthquakes will help us in making our life more secure.

Nature can be both kind and unkind, the earthquakes are an unkind manifestation of nature which can't be predicted or controlled, but we must conquer them by the weapon of knowledge.

