



Teachers' Resource Laboratory

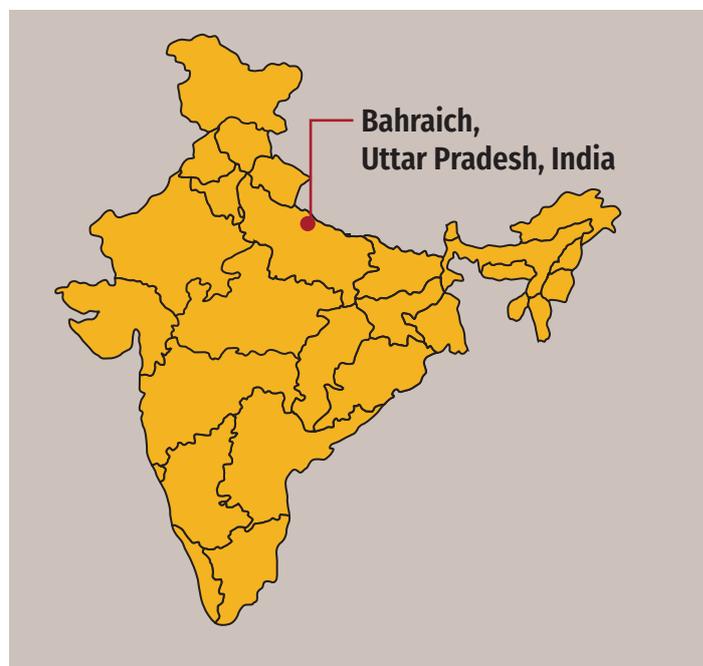
Creating Avenues for Development of Scientific Temperament in Marginalised Children

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21,370 children reached over 4 years.
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20 TRLs established
245 Upper Primary Teachers trained on STEM
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70% girls mentored through TRL can successfully undertake Science and Maths projects.



Overview

Many in India believe that girls are less suitable for learning science and mathematics. As a result, for generations, girls from marginalised and rural communities have been deprived of developing a logical and analytical bent of mind. They have been discouraged from following their dreams of becoming an engineer, doctor, pilot, etc. Even the teachers mentoring these girls remain largely incapable and often reluctant to correct this perception, leading to poor academic performances by their students, especially girls, in science and maths.

CARE India is working with teachers to build their capacities by providing adequate support in the form of laboratories and allied infrastructure. This way, the teachers can act as enablers who pass on their learnings to their students. This way all students, especially girls, can gain practical experience in science and maths concepts.

The Teachers' Resource Laboratory (TRL) is an innovative model addressing the barriers that prevent marginalised children, especially girls, from choosing to study science, technology, engineering and mathematics (STEM).

Approach

- Change the community's perception that girls cannot learn science and maths
- Create access to resources, tools and methods for teachers and build their capacity to teach STEM, especially to girls, and address

the diverse learning needs of the students

- Create an interest and enthusiastic participation within children

Implementation

The TRL model has been designed to support the government's endeavours to strengthen STEM education in India. Giving students and teachers access to STEM laboratories at the local level is crucial. Addressing the resource gaps in the available education infrastructure is equally important.

Under the TRL project, CARE India set up and maintains STEM

“STEM learning implies efficiently utilising science and mathematical concepts, experiencing real life based applications of scientific concepts, and gaining age appropriate exposure to computer coding.”

laboratories, libraries, ICT facilities, and training and mentoring options by trained resource persons. The project design has led to lowered costs, thereby ensuring sustainability. By providing the necessary infrastructure and mentoring facilities, teachers and children, especially girls, are encouraged to pursue STEM disciplines as potential career options.

An integral part of the model is the establishment of a supportive network of teachers, parents and community to enable girls to continue learning STEM. This is done through events like Science Melas, which give the parents and communities of the children a sense of involvement in their children's education. This opens up a whole new world of opportunities for the children, especially girls, and breaks the myth that girls cannot succeed in learning science and maths or pursue STEM-based careers.

Achievements

The TRL model has been able to positively enhance the scientific aptitude in students. Girls mentored through the TRL model have scored in the range of 90 percentile, as compared to non-mentored children who scored in the range of 50 percentile.

Children mentored through TRL have been shortlisted to present their projects in the Raman Youth Science Innovation, representing rural government schools in the country. They received appreciation for their tenacity and creativity, which they displayed through their STEM projects.

Acknowledging the model, the Government of Uttar Pradesh has scaled it up to all 18 divisions of the state, thus reaching all districts. The model has also received a mention in the Ministry of Human Resource Development's (MHRD's) 'Shagun' portal for being an innovation in STEM-based learning, at the grassroots level.

Transformation of an Orphan Girl



Manju's initial response to the world of science iconized by TRL in her UPS Begampur campus, has been one of an emotional curiosity, conditioned and limited by her own childhood formations and the experience of growing up wanting parental care. But she never let the deprivations to prevail over the urge to carve out her the way to accomplishments. It was probably her instinctive trait of not subscribing to any faith that empowered her to rise above the set forms of norms and practices quite early in her life.

Born to Laxmi Devi and Radheyshyam as the fifth child among six siblings in Begampur. She now lives with elder brother's wife and an unmarried elder sister as homemakers. All of them have minimum primary schooling, except the elder sister who studied up to upper primary.

She struck a personal connect with the TRL-Coordinator, Anjali Tiwari. Almost routinely, she would visit her after the school hours with a bundle of questions, which appeal to rational enquiry founded in the ethos of her vision of the prospects of learning

and knowing so as to be able to serve the unserved in best possible ways.

Her mentor recalls her stint as the one who would jot down all her doubts and queries emanating from classroom interactions and raise them systematically at appropriate time and write down the response of mentor or teacher for further reflection.

Gradually, during the course of her mentoring, her persona as one of a lonely child was transformed into a collective-self with innate push for leadership role. And helped her in a decisive way to take up the group task of studying the persistent crop diseases, particularly in winter crops of mustard and potato, and their prevalent remedies. This was during the previous year. Presently, she has finished her group-research on carbon footprint – calling for the study total emissions of greenhouse gases, including carbon dioxide, as the result of diverse range of farming, construction, production and other activities. It got an entry for the INSPIRE, National Children Science Congress and Rashtriya Avishkaar Abhiyan awards. Her group also participated in the STEM Mela with its model of magnetic crane. Also, she is studying the phenomenon of the protection of human from different diseases by cells for Raman Young Scientist Award.

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