

## **SCIENCE FOR THE RURAL YOUTH**

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Everybody accepts that science holds the key to the development of our rural areas. We want the rural youth to acquire the scientific temper. But how can this be? Through lectures and exhibitions? We believe it can come only through the practice of science. Science in schools should not be segmented into various disciplines like physics, chemistry and biology. Science should be considered as a way of understanding nature. This involves certain skills, which collectively constitute the scientific approach. These skills include the ability to experiment and explore, observation, measurement and recording of data; classification of information and/or data and recognising patterns; forming general concepts from individual cases; forming hypothesis and testing them and the ability to visualise.

Learning and practicing these skills should constitute school science. The subject matter for such study and experimentation can be taken from the local environment for better relevance and understanding. This opens the possibility of integrating education with rural development.

What we need to give in the schools is not one skill, but a fair experience of a range of skills useful to everyone in the technology age. Learning skills and subsequent activity stimulates the mind by developing memory and visualisation. Just as a variety of exercises are required to tone up all the muscles in the body, so are a variety of skills needed to energise the mind.

Let us now see how science can be taught by taking up the problems of the community, and the local environment and attempt to solve them with the involvement of the rural youth. In this experiment, students participate by being involved in Water Resource Development, construction, repairs & fabrication service, energy and transport projects, agriculture and animal husbandry. As an illustration we will see how we can train rural youth to help in water resource development, and learn and practice science.

Water is the primary need everywhere and Pabal, our village is in a drought prone region and water is number one priority. But how much do we learn about how to get more water? In our program, we start with how water exists on our planet and how it circulates. The students learn in the class and the field, the geological history of the subcontinent and the Deccan Plateau in particular, learn to recognise the different basic rock formations. They learn to read and use the topographic maps of their area and also how to do a survey themselves and draw maps with contour lines. They survey possible bund sites and can calculate the water that can be impounded.

They study and observe the permeability of different kinds of rock formations and how to infer about them from the water table contours, for which they collect data. Knowing about the rock formations and the water table, from a survey of local wells and borewells, they also learn how to carry out Vertical Electrical Soundings with an earth resistivity meter, draw the field curves, match with standard curves and interpret them in terms of layers of rock, their thickness and likely resistivity; overall they can then conclude whether it is a good site for a well.

Our present school and college curricula hardly touch on any of these topics and so one tends to think of them as very sophisticated and unsuitable for the rural youth and least of all for the dropouts. Yet such is the power of learning by doing that the whole science is demystified and they are actually doing it.

There are other useful skills related to water that the rural youth can do and practice. They can do plumbing repair and install borewell hand pump and can even do the quality tests on water. So-b content with this, we are trying to record all the geologic and hydrologic data on the local maps and see the- patterns emerge. It is gratifying that while the youth is learning the skills, he is also giving the water prospecting and borewell repair service to the farmers and the community. They pay for that service and he is earning while learning. With such skills available at the village level, micro-level planning can make sense and headway.

Water resource development is only one aspect of our approach to teaching of science. Construction, workshop technology, energy and transport agriculture and animal husbandry are other topics which also provide opportunities to teach the most fundamental concepts and skills of science to the average rural youth and hopefully to convert him from a liability to a valuable human asset. For anyone who can recognise it we have a gold mine here to develop.

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