

Importance of STEM education for rural women

In his Independence Day address, the Prime Minister talked about the need for science, technology, engineering and mathematics (STEM) education among rural women. Due to rapid urbanization and industrialization, men are leaving their villages for livelihood in urban areas. Thus, most of our rural areas, which have fertile soil for agriculture, depend on women who must care for their homes, cattle and agricultural produce¹. Even today, most of our agricultural practices are ancient. There is a strong need for our rural masses, mostly women, to adopt new technologies for improved agricultural practices, including smart irrigation, better crop yield, vertical farming, sensor-/drone-based monitoring, distribution of pesticides and insecticides and their quantity controls, strong supply chain, cold-chain technologies, increased shelf-life of produce, food irradiation², and also of associated industries like biofuels, nutritious animal feed, etc. Other technological interventions could be avoiding animal-to-human diseases, water conservation, maintenance of soil fertility and carbon sequestration. We need to develop logic-based thinking versus tradition-based thinking. Malnutrition in pregnant women and young children in rural India must be dealt with appropriately.

While the country is celebrating Azadi Ka Amrit Mahotsava, there are villages still struggling for connection to the national grid and also do not get 24 h electricity. Rural schools lack basic laboratory facilities. Therefore, the students are not exposed to doing real science (as they miss practical classes). While rural schools teach in their respective vernacular languages, most of India's scientific and technical education is

in English. This is a hurdle for rural students seeking higher education.

When we consider India in 2047, we see a strong contribution from the rural sector. What the Prime Minister has dreamt is possible with changes in our rural education². While electricity may be a challenge, thanks to mobile telephony, the internet is now in every nook and corner of the country. We must guide our rural masses to go beyond internet-based entertainment to explore educational tools. We must also devise these tools in various Indian languages to attract rural people. In parallel, self-help groups (SHGs) could play a critical role by providing appropriate training. The Prime Minister has emphasized that SHGs could help train rural women to effectively monitor their crops, adopt suitable irrigation practices, identify pests and diseases, take timely action to protect their yields, with particular reference to certain weather events, increase yield per hectare, etc. This enhances agricultural productivity and empowers women farmers with advanced tools and knowledge like molecular breeding and marker-assisted selection. By bridging the gender gap in technology adoption, women could play a central role in driving rural development and economic growth. This not only enhances their employability but also fosters entrepreneurship within the communities.

We also need to guide rural women about various programmes launched by the Central and State Governments³⁻⁶. While some are oriented towards women's welfare, most apply the rural masses. We feel confident that if our rural women apply new knowledge in STEM while utilizing the advantages of various schemes, includ-

ing those mentioned above, we could have two crore lakhpati (millionaire) didis in the country⁷, much before we celebrate our 100th year of our independence in 2047 and make a stronger India.

1. Why you need to know the female farmers that are revolutionizing agriculture in India, Gender Justice, 2018; oxfamindia.org/women-empowerment-india-farmers
2. Address by the Prime Minister Narendra Modi on the 77th Independence Day, *India Today News*, 2023.
3. Mandal, R., *Agri Startups in India Empowering Farmers and Transforming Agriculture*, 2023.
4. Kumar, A., *Women's empowerment under Modi Government. My Voice*, 2019.
5. GoI, DBT issues a special call under Biotech KISAN programme for improving agriculture productivity in the North East Region. Ministry of Science and Technology, Government of India, 2019.
6. Patel, N. and Sethi, T., *Rural women: key to new India's agrarian revolution*, NIIT Aayog, 2021.
7. Govt planning skill training for 2 crore women under 'Lakhpati Didi' scheme, *Says Official*, 2023.

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