

LEVERAGING COMMUNITY ENGAGEMENT OF EDUCATION INSTITUTIONS FOR TECHNOLOGY PROMOTION

S. Ramesh Sakthivel* and Partha Pratim Sahu*

Abstract

This article highlights the potential of educational institutions in promoting Science & Technology-based entrepreneurial solutions to communities as part of their community engagement. Students and faculty of education institutions spread across the country are better equipped to disseminate and promote technology as part of their community engagement than any other institutions on the ground. Unfortunately, the enormous potential of the vast network of educational institutions present in the country at the moment remains largely untapped. This note provides some examples which can be considered and the way forward to establish an appropriate model of technology promotion through educational institutions.

Keywords: Educational Institutions, Community Engagement, Technology Promotion, Social Work, Entrepreneurship .

*Associate Professor, National Institute of Rural Development and Panchayati Raj, Hyderabad;
Email: rameshsakthivel.nird@gov.in, ppsahu.nird@gov.in

The usual disclaimer applies.

Context

In recent years, community engagement in educational institutions has been recognised as one of the important ways in which the knowledge and capacities of these institutions will benefit rural people. Among the various initiatives aimed at engaging students from education institutions for community service, the National Service Scheme (NSS) instituted in the year 1969 by the Ministry of Youth Affairs and Sports, Government of India is quite popular and it has led to the delivery of innumerable community services across the country. The programme currently engages over 38 lakh students across the country as volunteers predominantly to work on projects being implemented by the government such as Swachh Bharat Abhiyan, Health, Social Forestry, and so on. In 2014, the Unnat Bharath Abhiyan (UBA), which is currently being anchored by IIT Delhi with the support of the Ministry of Education (MoE), Government of India, was launched to mobilise the higher educational institutions to undertake technology-based interventions for mitigating the problems being faced in surrounding villages. The UBA programme currently engages over 3,000 educational institutes spread across the country.

However, the current initiatives focused on community engagement are mostly limited to short-term engagement of their students on specific projects and they do not leverage the enormous skills and knowledge possessed by the faculty and students as well as the infrastructure facilities available in these institutions. The students are mostly engaged in undertaking specific tasks such as cleaning garbage in streets and habitations, clearing bushes near habitations, removal of waste from the surroundings of water bodies, etc. The UBA programme, to a certain extent, utilises the technical skills available in the educational institutions as they are engaged in providing technical solutions to a few villages in their operational areas; however, the programme does not allow the creation of technical training facilities in the educational institutions which can be utilised for providing capacity building to people in the area on a long-term basis. However, the students and

faculty of education institutions spread across the country are better equipped to disseminate and promote technology as part of their community engagement than any other institutions on the ground, and unfortunately, this enormous potential at the moment remains largely untapped. In this regard, it is also worth mentioning that the National Education Policy 2020 aims to bring about many transformational changes in educational institutions by giving special attention to the attainment of holistic and multidisciplinary education in higher education institutions in the areas of community engagement and service, environmental education and value-based education.

Need for Technology Promotion

The call of the government to set up local manufacturing and production hubs under various initiatives such as the Atmanirbhar Bharat, Make in India, Vocal for Local and others further reinforces the need for sound technology dissemination and promotion initiatives in order to bring about a strong and vibrant innovation and entrepreneurial ecosystem in the country. The Science, Technology and Innovation Policy, 2013 also envisages the need for strengthening the innovation ecosystem by creating various decentralised platforms and networks for information sharing and disseminating improved access to knowledge and support in the form of resources, linkages, mentoring and outreach. In India, unlike the agriculture sector where there is a deep extension system in place to demonstrate and train stakeholders in a more decentralised mode, the other sectors do not have a strong base for providing knowledge and skills to people looking for ideas and knowledge to start their enterprises. In order to achieve it, what is needed is a strong practice-oriented demonstration initiative to instil confidence among the people to appreciate and adopt technology-based solutions for creating successful entrepreneurial ventures.

The existing institutions, including the State Science and Technology Councils, Khadi and Village Industries Commission (KVIC), Incubation

Centres and the District Industrial Centres (DIC) have limited outreach for promoting and handholding technology-based entrepreneurs and start-ups with ideas and skills to ignite technology-based entrepreneurship at the ground level. Also, it is important to note that to ensure successful technology dissemination and promotion process, a wide decentralised network is required to create an ecosystem wherein sound demonstration and capacity building initiatives can be rolled out. In India, there are about 55,165 higher educational institutions, including universities, colleges and standalone institutions. Most of these institutions, which together engage over 3.85 crore students and 14.89 lakh teachers, have immense potential to undertake decentralised technology dissemination and training activities. In addition, the country has 3,805 Polytechnics, 14,768 ITIs and 2,91,466 Secondary and Higher Secondary Schools in the country, and many of them are quite competent to undertake such initiatives. If they are considered, the impact that can be created through such a widespread network of education institutions can be phenomenal and we can take advantage of this vibrant platform which already exists.

Examples of Some Potential Engagements

There are a few good examples which can be considered while planning technology promotion initiatives in educational institutions. One among them is the Women Technology Park (WTP) initiative which was started under the Society Science for Equity Empowerment and Development (SEED) Division of the Department of Science and Technology (DST), Government of India. Under this programme, educational institutions and others were invited to start the WTPs on their campuses to establish technology-based training centres for providing capacity building to people from the neighbourhoods. Under this initiative, some of the institutions have created facilities that are being successfully utilised for providing capacity building training. However, a long-term vision to sustain the facilities created

seems to have been not embedded in the programme design and also plans for scaling up the initiative to many other educational institutions in the country seem to be missing at present.

Another potential model created under the technology promotion is the creation of Rural Technology Alliance Group (RuTAG) at the IITs by the Office of the Principal Scientific Advisor, Government of India. Under this initiative, students and faculty of the IITs were engaged in developing technological solutions for the problems encountered in rural areas. Grant for developing innovative technological solutions is provided under this initiative. The initiative has led to the development of very useful tools and devices which can be adopted in rural areas to improve the conditions and reduce the drudgery of people. However, this initiative has not been quite effectively scaled up due to the lack of interest among the students and faculty of IITs to undertake problems related to rural areas with the available smaller grants. This initiative can be compared to the DST research grants provided to faculty members of educational institutions to support specific research projects. However, the number of research proposals granted by DST is limited and these research projects are time-bound which are not helpful in creating infrastructure for the promotion of technology in educational institutions.

The Rural Technology Park (RTP) at the National Institute of Rural Development and Panchayati Raj (NIRDPR) in Hyderabad is one of the examples which can be considered for replication in educational institutions. The RTP was established in 2003 to promote appropriate technologies and innovations in rural areas through identified technology partners by creating demonstration and capacity building units under the public-private partnership model. The space for operating the technology units is provided at no cost in the RTP while the technology partners are required to deliver capacity building programmes free of cost to the poor people who are trying to start entrepreneurial activities. Every year, more than 3000 people are being trained on a diverse

variety of nearly 30 technology products. However, more such facilities have to be created in educational institutions across the country in order to provide technology promotion and capacity building initiatives in decentralised settings and deliver these benefits effectively to people.

Proposed Model

It has been observed that a systematic process of technology transfer would require significant amounts of ongoing support, training and assistance with maintenance which can be offered by educational institutions. A well-laid model for promoting technology through educational institutions can provide long-term engagement of the faculty and students for community development in an area. The infrastructure available in the education institutions can also be optimally utilised for promoting technologies and for imparting capacity building training programmes which are needed in the local areas after careful consideration. The knowledge and skills of the faculty, staff and students can be effectively leveraged towards this initiative by the educational institutions. The initiative can be undertaken by proper mapping of technologies relevant to the local areas and the corresponding departments in the educational institutions which can be equipped to undertake the specific tasks. For example, a chemistry lab in an educational institution can offer capacity building training programmes on the preparation of various home-based products such as handmade soap, phenyl, floor cleaner, liquid handwash, sanitiser, washing power, dishwash powder, candle making, agarbatti making, etc. The faculty and staff of the lab will be able to undertake such programmes with little orientation.

The technology dissemination and capacity building programmes which can be taken up by an educational institution can be identified by mapping and matching their capacities to handle it and also based on the local needs. Consultations with the State Rural Livelihoods Missions (SRLMs), State Science and Technology Councils and Panchayati Raj Institutions (PRIs), which can offer support for

undertaking capacity building programmes, will help identify the relevant areas of engagement (See Box 1).

However, careful planning on the specific areas of interventions identified and the modalities required for ensuring sustainable facilities on a long-term basis are essential. Educational institutions can also generate the required revenue by conducting targeted capacity building programmes by collecting affordable training fees from people looking to learn such skills. The advantage of setting up such technology demonstration and promotion units in educational institutions is that these can be established with minimal financial outlays due to the human resource capacities and infrastructure which are already available. These units also can be managed with lesser recurring costs by way of developing local linkages. By creating a number of such hubs in the educational institutions to cover relevant thematic areas which are to be addressed in each region, a vibrant technology dissemination and promotion network can be ushered in the country.

The proposed model of promotion of technology dissemination and capacity building through educational institutions can result in greater levels of community engagement on a sustainable basis in the country. It will also help in furthering the government's vision of promoting science and technology to ensure social good and economic wealth among people at the outcome level⁴. By undertaking such initiatives, educational institutions can create a systematic vocational education stream and practice-orientated learning which can benefit the students as well as the local communities while addressing the local problems and requirements effectively. The objective of engaging millions of youth in the country at a higher framework of nation-building of the government can also be realised by equipping them with higher-order knowledge and skills through such initiatives. The educational institutions will also gain the support of local people for undertaking, demonstrating and imparting the necessary skills to adopt useful technologies. The MoE's National Institute Ranking Framework (NIRF) and other

Box 1*Major Thematic Areas of Technologies*

Potential Themes		Some Important Focus Areas
	Sustainable Buildings	Sustainable Construction Techniques, Compressed Mud, Fly ash and Other Alternative Brick Manufacturing, Prefabricated Roof and Wall Elements Manufacturing, Mud and Lime Plasters and Other Finishes, Oxide Flooring and Handmade Tiles, Building Envelops and Rooftop Gardening
	Energy	Solar and Wind Systems for Power Generation, Kitchen Waste Biogas, Energy Efficient Devices, Solar Cookers and Water Heaters
	Water and Sanitation	Water Supply and Treatment, Sanitation and Waste Water Treatment, Water Harvesting and Conservation, Waste Recovery and Reuse Processes
	Agriculture	Climate Smart Agriculture, Organic and Natural Farming, IoT and Farming equipment, Agro-processing and Preservation, Beekeeping and Honey Processing, Mushroom Cultivation and Processing
	Livestock and Fisheries	Small Scale Dairy, Dairy Products, Backyard Poultry and Goatary, Aquaponics, Ornamental Fish Rearing, Backyard Intensive Fish Farming
	Home-based Products	Handmade Soaps, Home Cleaning Products, Herbal Products, Personal Care Products
	Crafts and Allied Activities	Handicrafts, Handmade Paper and Products, Clay Processing and Products, Natural Dying
	Health and Wellbeing	Health and Elderly Care, Menstrual Hygiene Management, Organic and Millet-based Food Products, Natural Healthcare Products
	Green Transport	e-vehicles, Rural Mobility and Transport Systems, Technologies for Sustainable Roads, Bio and Alternative Fuels

accreditations can recognise and rate such noble and unique contributions of educational institutions to encourage wider participation of all institutions in the country. Many leading educational institutions across the globe lay special emphasis on the application of knowledge for problem-solving and action research for realising higher academic

excellence and research. Therefore, it is important that the educational institutions in India expand their horizon beyond academic teaching and embrace practice and action-oriented research and community engagement initiatives with a greater emphasis on technology-led livelihood promotion.

Author's Contribution:

Both the authors have conceptualised and drafted the paper.

References

- Indian Institute of Technology Delhi (2019). A Compendium on Rural Technology Action Group (RuTAG), Retrieved on 2nd August 2022 from https://drive.google.com/file/d/1jMOYmJoKJrHYW6_i rDjanlicC71D0WNF/view ().
- Johnson, D.K.N. & Lybecker, K.M. (2009) Challenges to Technology Transfer: A Literature Review of the Constraints on Environmental Technology Dissemination, Colorado College Working Paper 2009-07, p.25; Retrieved on 5th August 2022 from [http://data.upiypk.ac.id/soe/Materi%20-%20%20Komputer%20\(Pra-Master%20MM\)/Jurnal%20ICT%20\(Pra%20Master\)/Jurnal-02.pdf](http://data.upiypk.ac.id/soe/Materi%20-%20%20Komputer%20(Pra-Master%20MM)/Jurnal%20ICT%20(Pra%20Master)/Jurnal-02.pdf).
- Ministry of Education, Government of India, (2020), National Education Policy 2020, p 37; Retrieved on 2nd August 2022 from https://www.education.gov.in/sites/upload_files/mhrd/files/nep/NEP_Final_English.pdf.
- Ministry of Education, Government of India. (2020). Higher Education Profile 2019-20, p-iii; Retrieved on 1st August 2022 from https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/he_profile_1920.pdf.
- Ministry of Science and Technology: Government of India (n.d.). Science, Technology and Innovation Policy 2013, pp.1-16, Retrieved on 5th August 2022 from <http://dst.gov.in/sites/default/files/STI%20Policy%202013-English.pdf>.
- National Service Scheme (n.d.). Retrieved on 3rd August 2022, from <https://nss.gov.in/nss-detail-page>
- NIRDPR. (2019). Promoting Appropriate Technologies and Entrepreneurship in Rural Areas: initiatives of the Rural Technology Park, Pragati Newsletter, NIRDPR, Hyderabad, pp-3-7, Retrieved on 2nd August 2022 from http://nirdpr.org.in/NIRD_Docs/newsletters/july19.pdf ().
- Unnat Bharat Abhiyan (n.d.) Inspired by the Vision of Transformational Change in Rural Development Processes by Leveraging Knowledge Institutions. Retrieved on 4th August 2022 from <https://unnatbharatabhiyan.gov.in/list-participating-institutes>
- Vigyan Prasar, Department of Science and Technology Gol (2022). Report on Study of Women Technology Parks, Retrieved on 2nd August 2022 from <https://dst.gov.in/sites/default/files/Study%20of%20Women%20Technology%20Parks%20Report.pdf>.