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Vocational Training in Rural India: Transforming Rural Western Uttar Pradesh into Smart Villages

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Abstract
India's rural economy is undergoing rapid change. The majority of the Indian population resides in villages, where they are predominantly engaged in agriculture or informal work. Yet, rural livelihoods remain fragile and under-skilled, driving young people to migrate to cities in search of better job opportunities. In this context, vocational training, which is practical and job-oriented, is a key factor in rural development. As mentioned in the NEP 2020, the 12th Five-Year Plan (2012–2017) revealed a distinct gap in vocational training, with less than 5% of Indians aged 19–24 having received any formal skill-based education. At the same time, it is 52% in the USA, 75% in Germany, and an impressive 96% in South Korea. This contrast highlights the urgent need to accelerate the expansion of vocational education in India. Vocational programs can enhance employment opportunities, increase incomes, and narrow the rural-urban divide by equipping villagers with marketable skills. This report examines the importance of vocational training in India's villages. This paper focuses on the towns in Western U.P. It integrates statistical insights from the students in higher education in Western UP and reviews policy and research literature. This study also outlines how integrating vocational training into rural education can be improved to develop smart villages by effectively utilizing the available resources and controlling migration towards cities.

Keywords: Vocational training, smart villages, NEP-2020, Migration

1. INTRODUCTION

According to NEP 2020, vocational training is not an optional 'extra' education but a central pillar of the Indian education system. It aims to equip every student with the skills, employability, and entrepreneurial capabilities necessary to transform villages and towns into self-reliant, smart communities. The importance of vocational training, according to the National Education Policy (NEP) 2020, is like

1.1 Integration with mainstream education

NEP 2020 emphasizes that vocational education should not be viewed as separate or inferior to general education. It calls for integrating vocational education into all schools and higher education institutions by 2025. The goal is to break the stigma surrounding vocational training and make it a more aspirational option for students. (NEP,2020)

1.2 Early Exposure to Skills

The policy proposes that vocational exposure should begin at the school level (Grade 6 onwards) with "bagless days" where children engage in hands-on skill-based activities. Students should experience different trades (such as carpentry, gardening, coding, and handicrafts), which helps them identify their interests early.

1.3 Universal Access by 2025

NEP sets the target that at least 50% of learners will have exposure to vocational education by 2025. Through lifelong learning programs, this includes school children, higher education students, and adults. (NEP,2020)

1.4 Partnership with Local Industry & ITIs

Vocational training should be linked to local needs and opportunities. NEP emphasizes collaboration between schools, Industrial Training Institutes (ITIs), polytechnics, and local businesses to provide real-world experience, internships, and apprenticeships. (NEP,2020)

1.5 Focus on Employability & Entrepreneurship

The policy connects vocational education with employment generation and self-reliance (Atmanirbhar Bharat). By promoting entrepreneurial skills, vocational education aims to prepare students for employment and create new job opportunities in their communities. (NEP,2020)

1.6 Inclusivity & Equity

The NEP emphasizes vocational training as a means to empower rural youth, women, and disadvantaged groups by equipping them with practical skills. The Ministry of Education noted that vocational education is critical for bridging socio-economic gaps.

2. Vocational Training and Rural Development- A Literature Review

Economic analysts and policymakers highlight several roles for vocational training in rural growth:

2.1 Bridging the Skills Gap: India's skill development remains uneven. Official surveys indicate that only a small percentage of rural youth receive formal training. For example, one report found "less than 16%" of Indians (age 12–59) received vocational/technical training, with rural areas and women particularly underserved. A Financial Express survey notes that approximately 80% of rural youth have never pursued any vocational course, resulting in a significant skills gap. By contrast, urban youth are several times more likely to get trained. This disparity suggests that millions of rural workers lack access to basic skills training, rendering them vulnerable to low-paying employment opportunities.

2.2 Increasing Employment and Income: Vocational training has been shown to improve job prospects and wages. Globally, and in India, hands-on training yields secure jobs and regular income for rural workers. Field studies (e.g., in Tamil Nadu) argue that skills programs raise rural labour employability and empower disadvantaged groups. In Western UP, where many families rely on farming or daily wage labor, new agricultural technologies, processing, or trades skills can create local non-farming job opportunities. In our survey, for example, 43% of families were in agriculture and 23% in wage labor, indicating a need for agri and skill-oriented training. Programs like DDU-GKY (Deen Dayal Upadhyaya Grameen Kaushalya Yojana) specifically target such rural youth by providing industry-aligned vocational courses, and evaluations show improved employability for participants.

2.3 Empowering Women and Youth: Women in rural India are particularly disadvantaged regarding vocational access. National data shows only ~10% of rural women have formal training (versus 18–21% of men). Empowering women with trade skills (e.g., tailoring, agricultural extension, or

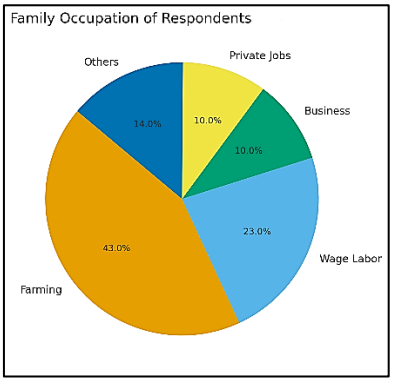
construction) can significantly increase household incomes. For instance, Uttar Pradesh's Rural Mason Training program trained over 7,000 rural women as certified "Rani Mistris," enabling them to earn skilled wages in housing construction. Such initiatives enhance family finances and boost women's confidence and social status within the community. Experts note that when designed with local input, vocational programs can help even school-dropout girls gain "confidence in their profession" and break poverty cycles.

2.4 Innovation and Entrepreneurship: Modern vocational training often goes beyond narrow job skills to include an entrepreneurial mindset. Programs are increasingly teaching digital literacy, business planning, and social entrepreneurship. For example, the United for Hope NGO's "smart village" model in UP includes vocational courses and guidance on entrepreneurship and leadership for youth. This combination stimulates the growth of new local businesses (e.g., agro-processing, handicrafts, tourism) that add value within the village. According to Cities Forum, smart villages "build on existing strengths" and use digital tools and knowledge to create local economic opportunities. Thus, vocational training can seed rural entrepreneurship, turning farmers into agripreneurs or artisans into SMEs rather than only preparing them for factory jobs elsewhere.

2.5 Reducing Rural-Urban Migration: As India's economy shifts from Farming to industry, many rural youths migrate to cities for work. Scholars note this trend: between 2011 and 2019, employment growth was urban-centered mainly, leaving many village youths jobless. Vocational training can help retain rural talent. Ramasamy and Pilz (2020) observe that skill development is "an important means … for providing livelihood opportunities for young people, rural populations and disadvantaged people", mitigating distress migration. In practice, a well-trained village youth can start a local enterprise or find employment in nearby towns, rather than relocating far. (One survey respondent commented that starting vocational training in the village would mean "people won't have to go to cities" for jobs.)

Vocational training in rural villages can enhance employability, increase incomes, and promote self-sufficiency. Yet systemic gaps remain: many rural areas lack formal training centers, and social barriers (like low value placed on vocational paths) persist. The data analysis presented in this report (below) builds on the context for Western UP.

3. Vocational Training Preferences in Western UP



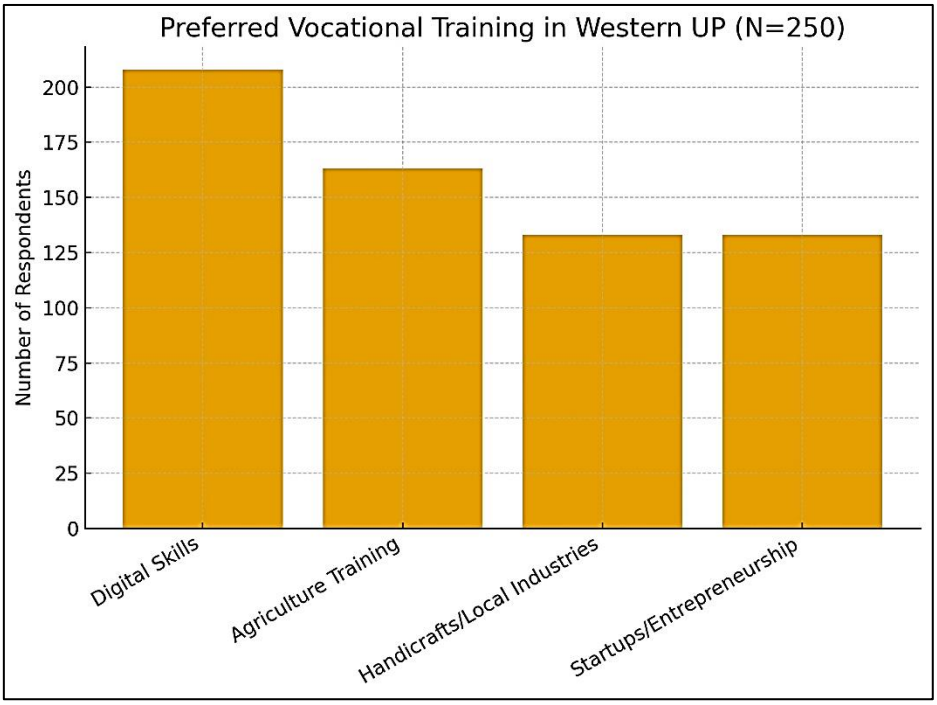
Pie chart showing the family occupation of the respondents

We analyzed a survey dataset of 250 respondents (206 women, 44 men) from villages/towns in Western Uttar Pradesh (areas like Shekhupura, Maharaypur, etc.). The questionnaire asked whether vocational

training should be introduced locally (yes/no) and which types of training were preferred (agriculture, handicrafts, digital skills, startups, or others).

3.1 High Demand for Training: A vast majority (89%) agreed to introducing vocational training programs. Only 3.6% said No, and the rest were blank/unsure. This indicates strong local demand for skills development.

3.2 Preferred Training Types: Digital Skills were the top choice, and 208 respondents selected it. Next came Agriculture-based Training (163 respondents). Handicrafts/local industries, as well as start-up and entrepreneurship skills, were each chosen by 133 respondents. ("Other" suggestions were rare and miscellaneous.) In short, while traditional agricultural training is essential, villagers showed even greater interest in ICT and digital courses.



3.3 Gender Breakdown: Although our sample had far more women, preferences by gender were comparable. Among men, approximately 95% favored digital skills, compared to approximately 81% of women. Eighty-six % of men and sixty-one % of women opted for agricultural training. Handicrafts appealed to 61% of men compared to 52% of women, and startups appealed to 64% of men compared to 51% of women. Thus, men were slightly more likely to select each category. This aligns with larger surveys showing men marginally outpacing women in training access. Nevertheless, most genders saw value in all categories, especially digital skills. (These gender differences may reflect that women face more obstacles to training and employment, which policy must address.)

3.4 Occupational Context: By family occupation, 43% of respondents came from farming backgrounds and 23% from wage labor (daily/contract work). Other occupations (business, private jobs, etc.) comprised under 10% each. This reinforces that Western UP's villages are still agriculturally oriented. The intense interest in agri-based training (163 people) suggests that villagers want to enhance farming productivity or diversify agricultural skills (e.g., modern equipment, processing). The interest in digital and startup training indicates many aspire beyond traditional farming, perhaps into IT services, small

businesses, or novel agri-entrepreneurships.

Overall, the survey data show overwhelming local support for vocational training (mainly digital and agriculture skills). Rural populations want practical skills for income generation. Given that only 14% of all Indians have formal vocational training, these villagers rightly see training as a path to economic stability.

4. Case Examples from Western Uttar Pradesh

4.1 Women as Skilled 'Rani Mistris': A recent Times of India story highlights UP's Rural Mason Training program, which trains women explicitly as masons ("rani mistri"). Over 7,000 rural women have been trained and certified under this initiative, joining 45,000 male masons. It has been noted that these women now work on construction projects and earn "better wages and… financial independence". This case shows how targeted vocational training can empower rural women and improve local economies. By learning a previously male-dominated trade, these women directly contribute to housing projects (e.g., under PM Awas Gramin) and gain self-reliance, precisely the kind of social impact vocational programs aim for.

4.2 Canoeing Training in Bijnor: According to a report published in Hindustan Times, July 2024, in the Haldaur block of Bijnor district (Western UP), local authorities set up a canoeing training center – the first of its kind in the region. Started by the district administration and sports officials, the center trains dozens of village boys and girls (ages 8–18) in competitive canoeing. While unconventional, this initiative is a form of vocational skill-building: it teaches youth discipline, teamwork, and the potential for sports-related careers (e.g., coaching or competing on sports quotas). The children train 6–7 hours daily after school. This example underscores the broad concept of vocational training in rural development – it need not be limited to traditional trades. By diversifying skills (even through sports or the arts), villages tap into new opportunities and keep youth engaged in productive activities, rather than drifting to cities.

4.3 Smart Village Projects (Nearby Models): Though not in Western UP, nearby examples (e.g., Taroli/Tirmasahn in Kushinagar) demonstrate the innovative village model in action. NGOs like United for Hope have built solar-powered community centers that offer Internet access, robotics kits, and vocational workshops. They combine education with entrepreneurship training, for instance, teaching English, IT, and social enterprise to rural youth.

Together, these cases demonstrate that Western UP villages already possess the seeds of innovation. The government and NGOs are training rural women, youth, and artisans in marketable skills, leading to new income opportunities and social empowerment. Such success stories reinforce the notion that scaling up vocational education can yield significant benefits.

5. Policy Recommendations

To realize this potential across Western UP and beyond, we recommend the following policy actions to integrate vocational training into the rural education and development fabric:

5.1 Embed Skills in School Curricula: Following the National Education Policy (NEP) 2020, vocational education must become a core part of schooling. The Government of India has already mandated "integration of vocational education with general education and mainstreaming vocational education". Funds under Samagra Shiksha and vocational teacher training should prioritize rural schools. For example, training workshops in agriculture techniques, handicrafts, digital literacy, or masonry could

be added as project-based learning modules. This ensures that all students (not just dropouts) gain hands-on skills. The recent Ministry of Education press release explicitly supports financing school infrastructure (labs, equipment) for vocational training. Western UP's district education offices should capitalize on this by equipping rural schools with simple workshops or computer labs, hiring instructors from local industries or ITIs, and scheduling "bagless" vocational training days (as NEP suggests). Early exposure to skills in schools can ignite entrepreneurial aspirations among students while they are still in their home communities.

5.2 Leverage Existing Skill Missions: The Skill India initiatives (e.g., PMKVY, Deen Dayal Upadhyaya Yojana for rural youth) should focus outreach on Western UP villages. Local panchayats and Block Education Officers can partner with District Skill Missions to host village training camps, minimizing travel barriers. Mobile skill vans and industrial training institutes (ITIs) can periodically visit clusters of villages. Special attention should be directed towards women and marginalized youth. Schemes such as Jan Shikshan Sansthan (for adult women) and entrepreneurship courses under DDU-GKY can be promoted in the local dialect. The government could also introduce village-level skill melas or startup contests (similar to Kisan melas), where trainees showcase their crafts or tech projects, linking them to potential markets. This connects vocational training to real economic opportunities.

5.3 Promote Digital Literacy and Technology Use: Given the intense interest in digital skills, the infrastructure must be improved. Every village should have at least one functional computer lab or Internet center (possibly leveraging common service centers or school ICT labs). Training in basic computing, online marketing (e-commerce), and coding should be available. The broader Smart Village framework emphasizes "digital technologies" and high-quality ICT services. Western UP's Gram Panchayats could utilize their UDAY (Digital Village) projects to equip community halls with broadband. NGOs and colleges (through Unnat Bharat Abhiyan) can conduct short courses on smartphone use, digital payments, and agri-tech apps. Improving connectivity ensures that vocational graduates can access online learning resources and connect to rural job platforms (e.g., for handicraft exports or Farming advisory services).

5.4 Encourage Local Entrepreneurship: Training must be tied to market linkages. Agriculture graduates could be taught farming techniques and how to process and package produce (e.g., milk into cheese, fruits into preserves) – adding value locally. Handicraft or textile trainees should receive modules on design trends and e-commerce selling (think "Taobao village" model in China). Start-up training should include microfinance linkages, business plan writing, and mentorship. Public-private partnerships can be beneficial; for instance, local banks can provide small loans for village enterprises, and district industries offices can offer guidance to new entrepreneurs. The government can incentivize this via schemes (like the newly launched Startup Village Entrepreneurship Program) that provide seed grants to rural startups in non-farming sectors. By blending vocational training with entrepreneurship incubation, villages can become incubators of micro and small businesses, rather than merely being sources of cheap labor.

5.5 Integrate with Smart Village Initiatives: Western UP's development plans (e.g., under Sansad Adarsh Gram Yojana or Model Village projects) should explicitly include vocational elements. A model might be to designate a vocational hub in each panchayat – a community center where multiple training programs run. Lessons from smart villages suggest a holistic approach: synchronize training with solar power (to run equipment), clean water (for hygiene in production), and tourism (e.g, homestays where trainees serve as guides). By embedding vocational training within the broader

development plan, communities view it as a key component of achieving self-sufficiency. For example, a village that produces crafts could run solar-powered looms in the evening training center, combining smart infrastructure with skill-building.

5.6 Address Social and Cultural Barriers: Training uptake can be low if communities don't value it. Awareness campaigns are needed to shift mindsets: village meetings led by the Sarpanch or local champions (like a trained youth) can highlight success stories (e.g., Rani Mistris, tech-savvy entrepreneurs). Schools and parents should be sensitized so that vocational paths are respected as much as academic ones. The Times of India article underscores that changing norms (e.g, accepting women masons) requires persistent government and social efforts.

Overall, policy must ensure that vocational training is accessible, relevant, and aligned with local needs. This means designing courses in regional languages, at times that fit agrarian schedules, and at low or no cost. Collaboration among the Education, Skill Development, and Rural Development ministries, as well as industry and community groups, will maximize impact.

6. Impact on Smart Village Development

Integrating vocational training into rural education has profound implications for the Smart Village vision. Smart villages utilize local assets and modern technology to enhance welfare and improve livelihoods. Our analysis shows that vocational training delivers on these principles in several ways.

6.1 Economic Empowerment: By imparting employable and entrepreneurial skills, vocational education makes villagers self-reliant. Trained individuals can start small businesses, join cooperatives, or take up skilled jobs without leaving home. This drives economic activity within the village, a hallmark of a Smart Village. For example, a youth trained in agro-processing can create a food products business, adding to local incomes. The Times of India's UP case shows that women masons now earn "better wages," directly lifting household prosperity.

6.2 Reducing Urban Migration: Smart villages aim to stem distress migration. Vocational training provides the local job paths that were previously unavailable. A lack of skills is a key factor driving rural youth to cities. By contrast, a trained youth might start a thriving workshop or Farming service business, finding satisfying work locally. In Western UP, where proximity to Delhi and NCR urban centers often attracts workers away, creating village-based opportunities is especially valuable.

6.3 Entrepreneurship and Innovation: Smart villages thrive on new ideas. Vocational training often includes modules on innovation and business. In Western UP, fostering digital literacy and business skills enables farmers to innovate (e.g., utilizing sensors for precision agriculture or selling goods online). Vocational centers with Internet and maker spaces could lead to locally invented solutions (e.g., a village app for dairy distribution). This kind of local entrepreneurship transforms a traditional village into a Smart Village.

6.4 Digital Literacy and Access: Smart villages require digital connectivity. Vocational programs that teach computer and Internet skills ensure villagers can leverage ICT for education, banking, e-commerce, and governance. Digital literacy enables villagers to access telemedicine, digital banking, and remote work opportunities. Government data show that in villages, mobile and Internet access are increasing; coupling this with formal ICT training can create a pool of digitally capable youth who maintain local services (e.g., e-governance assistants).

6.5 Resilience and Sustainability: Trained villagers are better equipped to adopt sustainable practices (e.g., solar energy, water conservation, organic farming). Vocational courses can cover climate-smart

agriculture and green tech, aligning with Smart Village goals. For instance, training in solar panel installation or maintenance (a common Smart Village element) creates skilled technicians from the community. This builds local capacity to maintain village infrastructure (roads, solar lights, water pumps), reducing dependency on distant cities.

In effect, vocational training acts as the human capital pillar of Smart Villages. It provides the 'education and entrepreneurship' component emphasized in models like United For Hope's, which run community centers focused on IT and business skills. Vocational programs ensure that villagers utilize and sustain Smart Village technologies and infrastructure by empowering rural youth with the skills and confidence needed. The synergy is clear, as one smart villages expert puts it, integrated development (infrastructure + education + enterprise) is essential to create balanced urban-rural progress. Vocational education is central to this integrated approach.

7. Conclusions

The evidence is clear, and the voices from Western Uttar Pradesh are loud: vocational training is not just needed, it is demanded. It has the power to lift incomes, empower women, and give young people alternatives to migration. Most importantly, it can transform rural villages into vibrant, intelligent communities where opportunities grow alongside tradition. By integrating vocational education into schools, leveraging national skills programs, and fostering local entrepreneurship, Western UP can lead the way in rural transformation.

To harness these benefits, concerted action is needed. Integrating vocational courses into schools (per NEP 2020) and leveraging skill schemes (PMKVY, DDU-GKY, etc.) will create education pathways that match villagers' aspirations. Training must be tailored to local contexts (e.g., agri-skills for farming families and handicrafts for local needs), while broadening horizons through the use of ICT and entrepreneurship. Government-led initiatives — such as Uttar Pradesh's recent focus on rural masons demonstrate the impact of targeted programs.

Ultimately, the goal is to transform Western UP's villages into hubs of talent and innovation, rather than sources of labor bound to urban areas. In a Smart Village, a young person does not need to migrate to cities to find opportunities; they can launch their career or startup right at home, supported by local training, digital tools, and a community of other skilled peers. This vision of rural transformation depends on providing villagers with the education and skills they need. As one respondent noted in the survey, "if vocational training starts in the village, people will not have to leave for jobs". Implementing the recommendations above will ensure that sentiment becomes a reality across Western Uttar Pradesh, fulfilling the promise of Smart Villages through empowered and skilled rural citizens.

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