

Innovative Pedagogical Approaches and Policy Interventions to Enhance Teacher Capacity in Indian Vocational Education

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Abstract - This review study takes a look at new ways of teaching and new policies that have been put in place to help vocational schools in India train better teachers. Effective teacher training and capacity building are crucial in connecting conventional education with industrial needs, especially with the growing demand for skill-oriented education. In order to better equip vocational instructors, the research delves into innovative pedagogical practices such blended learning, project-based learning, and experiential education, as well as the use of digital resources. Additionally, it examines the function of policy frameworks, in particular NEP 2020, in fostering professional growth and filling current deficiencies. The article draws on worldwide norms and successful case studies from India to emphasize difficulties like inadequate infrastructure, social and cultural obstacles, and a lack of technological resources. The results highlight the importance of stakeholder engagement, new training approaches, and strong policy execution in improving India's vocational education.

Keywords: Vocational Education, Teacher Capacity, Pedagogical Approaches, Policy Interventions, Skill Development

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1. INTRODUCTION

In an economy like India's, which is going through a period of fast transformation, vocational education is more important than ever for helping people acquire marketable skills and find work. The nation's efforts to meet the growing need for qualified workers and its rapidly expanding young population place a premium on high-quality vocational education. Because their ability to successfully transmit information and skills determines the efficacy of vocational programs, teachers are pivotal to this change (Ashokkumar, 2024). Outdated pedagogical techniques, insufficient teacher training, and weak connection with industry objectives are some of the issues that Indian vocational education faces. Improving the quality of vocational education becomes critically dependent on building teacher ability in this environment (Kadam, Patel, 2024). In vocational education, teachers are responsible for more than just imparting technical skills; they are also influencing students' mindsets, encouraging them to think critically, and getting them ready for the difficulties they will face in the workforce. Therefore, strengthening teacher capacity requires novel educational strategies and focused policy measures (Ghai, 2024). These methods can assist educators in keeping up with technology

developments, adjusting to different ways of learning, and enhancing their knowledge in both general education and their particular field of study. A more inclusive, adaptable, and skill-oriented educational framework is emphasised by the National Education Policy (NEP) 2020, which calls for advancements in teacher preparation, new course designs, and the incorporation of technology into classroom instruction (Maseeh, 2023).

2. VOCATIONAL EDUCATION

College students that take part in Vocational Education, Career and Technical Education (CTE), or Professional Education and Training (VET) programs are better prepared for the workforce. occupation, career path, or enterprise that interests the learner. Methods by which a learner learns and uses a certain technology or set of technologies; frequently called "Technical Education." A person's desire to work in a certain field often drives them to seek out professional education opportunities (Sahasrabudhe & Bhagat, 2021). Smith (1942) argues that individuals who employ professional methods to train and retain staff may provide us with the service we desire. These obligatory services are not limited in nature or extent under the term.

Economics, politics, and majority rule are just a few of the many subjects covered in depth in professional education. "Part of the school educational curriculum designed to make The intern is employable in their area of study" is the definition of vocational education given by the American Educator's Encyclopedia (1982). Certification in fields such as modern education, agriculture, business, administration, distribution, wellness professions, labor, home economics, and international commerce. The goal of vocational education, as defined by the Encyclopedia American (1985), is to provide students of all ages with the knowledge and abilities necessary to enter the workforce or start their own successful businesses. Typically offered solely in the junior and senior years of high school, it does not typically provide the prerequisites for professions such as law and medicine (Aithal & Aithal, 2020).

3. LEVELS OF VOCATIONAL EDUCATION

Vocational Basic Education: Vocational Basic Education (VBE) is a kind of non-university secondary education that leads to a secondary-level occupational credential.

Vocational Secondary Education: This is the vocational education programme that prepares students for the third-level certification they need to enter the workforce.

Vocational Further Education: Adults with prior education and/or professional experience may enrol in this specialized Occupational Education programme to earn a specialized vocational certification.

Vocational In-Service Training : This is a subset of vocational education that allows students of varying ages and levels of formal training to gain the occupational expertise demanded by today's job market. A person may pursue any level of education that would make them qualified for a position in the business world.

Vocational Oriented Education: "his refers to a person's accumulated expertise in the areas of sports, arts, and culture that allow them to systematically create value. Primary and secondary schooling can provide a platform from which to lay the groundwork for furthering one's education via the pursuit of technical certification in a variety of subjects" (Aithal & Aithal, 2019).

4. IMPORTANT OF VOCATIONALISATION OF EDUCATION

The importance of Vocationalisation of Education may be assessed from the following points:-

(i) The feeling of fullness in life

When a person just receives a Vocational or General Education, it leads to unbalanced growth. His life may be more meaningful after completing a vocational programme. Someone with a general education will be

unable to find gainful employment and will have to rely on government and charitable organisations for financial support. Skills in a certain trade or profession may be the result of technical training on its own, but this in no way ensure a kid will become a well-rounded adult.

(ii) Hope for getting employment

Gaining marketable skills via a vocational education programme is essential for financial independence. To yet, no effective solution has been found to the young unemployment crisis since schools have not emphasized vocational training.

(iii) Possibility of societal and national economic growth

Lack of Vocational Education has resulted in only limited utilization of these resources, despite their richness. Because of this, American manufacturing is far behind that of many other countries. The main objective of vocational education is to teach people how to be more productive. Because of this defect in character, he may develop into a cunning resource miner. This is good for the economy of the nation in the long term.

(iv) Aspiration for fostering an independent spirit

Because students in vocational programs have the opportunity to earn money even while they study, they gain confidence and a sense of agency. He grows up to become an asset to society as a result.

(v) Optimism about the fulfillment of several psychological inclinations

Through Vocationalized Education, people may fulfill their desires for self-improvement and public display. There's a chance he'll get the opportunity to pursue some latent interests. Over time, his abilities improve. Maybe we can help him hone his abilities if they actually exist. The student is obviously not an observer at a trade school. Quite the opposite, he begins to steer his own educational trajectory. He learns best via doing. In order to cater to students' needs, interests, and skills, a vocationalized curriculum should include a diverse array of careers.

(vi) Development of feeling of respect for manual works

Manual labor is an integral part of vocational education programs so that students may learn specific trade skills. He develops a deep appreciation for manual labor as a result of this feature. This cannot be achieved if education is confined to a single setting (Peterson, Dumont, 2018).

5. OUR NATION'S TVET SYSTEM FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING

All areas of India's educational system, including the Technical and Vocational Education and Training (TVET) system, are currently experiencing massive reforms, including changes to the system's structure, curriculum, and examination system. The industrial industry in India is facing a skills gap as a result of the country's fast economic development, which is over 8.5% per year. Nearly 31 crore individuals, or 53% of India's total population, were under the age of 25 according to the 2011 census. Unfortunately, just 5% of the population possesses a TVET credential, which is far lower than the 60% regional average for Asia. According to Mohanty and Dash (2018), the vast majority of trade workers in India are employed in the informal sector. As a result, the shortage of trained personnel is seriously limiting the rapid growth of India's public sector. Both the federal and state governments of Australia take care of their residents' educational requirements, much like the Indian federal and state governments do according to the Indian Constitution (Pillay, Muttaqi, 2017). Technical and vocational education and training are mostly the purview of the state government, however it is obvious that this cannot meet Delhi's educational needs alone. Building and improving the Technical and Vocational Education and Training framework throughout the eleventh Five Year Plan was, thus, a big challenge for the Central Government in terms of the country's economic progress. Increasing and bettering India's Technical and Vocational Education and Training was the primary goal of the expenditure subsidies (Ramasamy, 2016).

The Indian government is collaborating with state governments, businesses, and community groups to improve access to technical and vocational education and training all throughout the country. Important institutions for technical and vocational education and training in the nation include specialized universities, the Indian Institutes of Technology, polytechnics, and institutes of technology. The aforementioned groups are working together to increase the number of young people who get technical and vocational education and training (TVET), as well as to improve the quality and accessibility of instruction. People who were already employed at the time were the focus of an adaptive learning program that helped them acquire new skills or hone existing ones. To everyone's satisfaction, the Kothari Commission has said "We picture the future patterns of school training to be towards a productive blending of general and Vocational Education, general instruction containing a few components of pre-professional and specialized instruction and its turn having a component of general instruction. In the sort of society wherein we will be living progressively in the coming years, a total partition between the two will be bothersome as well as unthinkable" (Sonia, 2017).

6. VOCATIONAL TRAINING INSTITUTIONS

Vocational training programmes are available to young adults between the ages of 14 and 25 in 22 non-

engineering trades and 32 engineering trades that have been recognised by the National Council for Vocational Training (NCVT). In the nation, there are around 7,500 ITIs with a total capacity of 750,000 seats. One to two years is a common range for training durations across many programmes. In order to provide citizens with access to vocational and technical education, the government has set up a system of ITIs and basic training centres for apprenticeship training programmes.

Here are just a handful of the top places to get an advanced technical education or specialised vocational training in a wide range of fields (Marope, Chakroun, 2015):

- **Advanced Training Institute, Chennai-** Tool design, die manufacturing, heat treatment, metallurgy, advanced welding, machine tool maintenance, etc. are just few of the specialized areas that this school teaches its students about.
- **Foreman Training Institute, Bangalore-** This institute is generally for front line supervisors in order to provide managerial training skills.
- **Central Staff Training and Research Institutes, Calcutta-** Those who work in State and Federal Governments and Industry who are responsible for regulating, controlling, and directing Vocational and Apprenticeship Training Programs get instruction from this school. Development and Research in Vocational Education are also offered at this institution.
- **Advanced Training Institute in Electronics, Hyderabad-** The Electronics Craftsmen and Technical Institute was set up in 2007 to meet the need for trained professionals in the field (Hord, S. M., & Tobia, E. F., 2015).

7. OTHER BODIES PROVIDING VOCATIONAL TRAINING IN INDIA

There are various other government and private bodies which provide vocational training in our country are given below;

- **Khadi & Village Industries Commission (KVIC):** This group provides the informal economy with recognition, education, and certifications in the form of awards, courses, and credentials. In April of 1957, the legislature created KVIC as an official agency. The organization is in charge of monitoring the activities of the All India Khadi and Village Industries Board. KVIC's primary goals are to strengthen rural communities by providing jobs, making

marketable goods, and encouraging individual initiative.

- Banks must approve funding for at least 92% of a project's total cost for beneficiaries in the general category, and 95% for those in the reserve category. KVIC, KVIBs, and DICs are organizations involved in the implementation of the Scheme on behalf of various NGOs, SHGs, reputable autonomous institutions, the National Small Industries Corporation (NSIC), the Panchayati Raj Institutions UdyamiMitrasempanelled under Rajiv Gandhi UdyamiMitraYojana (RGUMY), and other relevant bodies.
- **Tool Room & Training Centres (DC, MSME):** The government of India has established these centres to facilitate the development and production of instruments. Manufacturing cutting tools, fixtures, gauges, plastic moulds, press tools, pressure casting dies, and forging dies are just some of the products these facilities provide for India's burgeoning network of small-scale manufacturers. In order to better equip businesses with supervisors, employees, designers, engineers, etc., these hubs also provide training facilities in tool design and tool manufacture.
- **National Manufacturing Competitive Council (NMCC):** The Government of India established the National Common Minimum Program in 2004 as part of this initiative, with a primary emphasis on the Manufacturing Industry, to boost GDP growth. The education and training systems in India must annually create a minimum of 1.5 million technically trained personnel, according to a statement cited by NMCC, if Indian manufacturing is to develop at a rate of roughly 12.5% per year.
- **Council for Advancement of Rural Technology (CAPART):** For the purpose of funding various nonprofits to carry out development projects, CAPART was established via the merger of the "People's Action for Development India" and the "Council for Advancement of Rural Technology" (CART). Over 12,000 non-profits are supported by these groups with the primary goal of supporting rural residents in improving their standard of living via participation in a variety of livelihood-enhancing activities and the provision of vocational training (Gautam & Singh, 2015).
- **Society for Rural Industrialization (SRI, Ranchi):** In order to better equip the kids in rural areas, this organization provides educational opportunities for them. The government and other institutions in the nation may take use of the organization's training in

management, as well as its training of trainers. Training in areas such as business management, interpersonal skills, and self-improvement are central to the mission of this group.

- **Ramakrishna Math and Ramakrishna Mission:** Swami Vivekananda, a follower of Sri Ramakrishna's Paramhans (1836-1886), founded the Ramakrishna Math monastic community and recognized organization. In order to achieve their goals, the members of this group must work together to provide a wide range of social services throughout the nation. Vocational training in areas like beekeeping, carpentry, pisci-culture, dairy-farming, incense stick rolling, poultry-farming, weaving, etc. is also provided to facilitate the establishment of self-help organizations and the attainment of a subsistence level of living in rural and tribal communities. As an example, the Gandhiji Ashrams in Madurai and Wardha aren't the only places you may get vocational training. To improve the economic and social standing of rural residents, Nanaji Deshmukh and many others have made significant contributions to the area of vocational education (Ashokkumar, 2024).

8. ALL INDIA COUNCIL OF TECHNICAL EDUCATION (AICTE)

An act of parliament established the All India Council for Technical Education (AICTE) in 1954 as an advisory body at the national level. Its purpose was to coordinate the expansion of technical education across the nation, conduct facility surveys, and promote technical education. The area of technical education and public finance are within its jurisdiction. The group is legally obligated to establish and maintain standards, guarantee quality by funding where it is needed, accredit, oversee, and assess, and guarantee uniformity in certification and awards.

Training research, hotel management, applied arts and crafts, catering technology, town planning, architecture, management, pharmacy, and certificate courses through postgraduate and research levels are all overseen by the AICTE (Kadam, Patel, 2024).

Now, vocational education and training programs have legal protections.

The terms "legislative" and "provisions" encompass everything having to do with the process of making or amending a law. Both the central and state governments of India are bound by the Constitution, which is considered the highest legislation of the nation. Elementary and secondary education funding should come from both the federal government and the individual states.

Lawfully recognized institutions of national significance and the formation and coordination of standards in higher and technical education are both responsibilities of the Union (Ghai, 2024).

In addition to the constitution, five acts of parliament at the level of the central government address technical vocational education and training. :

- The Industrial Training Institutes Act 1961
- The Apprentice Act 1961
- The Architects Act 1972
- The All India Council for Technical Education Act No. 2, 1987.
- National Institutes of Technology Act 2007

State and federal funding and administration of the Vocational Education and Training system are both laid out in these statutes. Carpet and handicraft manufacture are examples of vocational courses that fall under this umbrella. They detail the methods via which these courses are taught, as well as those in professional engineering.

The National Institute of Fashion Technology (NIFTs) is a brand new institution established by the most current statute. To prepare for their transition to NIT status, current high-performing technical institutes are actually receiving more funding to employ more faculty and develop new infrastructure (Maseeh, 2023).

With four million applicants vying for 5,000 openings at India's prestigious institutes of technology every year, this is a smaller step in a bigger effort by the government and other groups to expand access to technical higher education in the country (Sahasrabudhe & Bhagat, 2021).

9. CURRENT STRUCTURE OF VOCATIONAL & TECHNICAL EDUCATION IN INDIA

As an alternative to traditional higher education and a way to increase students' employability, vocational training is rapidly expanding across India. This is in response to the country's increasing demand for trained workers. A country's ability to prosper is directly proportional to the quality of its human resource, the backbone of which is an educated and trained workforce. It has been proven that vocational education and skill development boost individual productivity, company profitability, and national growth. Vocational education aims to do two things: first, provide young people with the skills that the informal sector of the economy needs to function, and second, prepare them to be self-employed when they grow up (Aithal & Aithal, 2020).

Since only around 7 to 10 percent of the population is actively participating in the official economy, increasing vocational education will better equip workers to compete for employment in the informal market. The most important part of a country's human capital is its

workforce, which includes people with a lot of experience and education. Individual productivity, business profitability, and national progress may all be enhanced via vocational education and skill development. Providing students with the skills they need to succeed in the informal sector of the economy and inspiring them to pursue professions where they may be their own boss are the dual aims of vocational education. The informal sector may gain from a trained workforce and increase production if vocational education were to receive more attention, even if only 7–10% of the population now has jobs in the official sector (Aithal & Aithal, 2019).

The importance of increasing participation in and access to vocational education has been stressed by both the CAGE and the NKC. New York City has advocated increasing capacity through innovative delivery modalities and bettering public-private partnerships because the government has placed a renewed emphasis on vocational education in the XI and XII Five Year Plans (Peterson, Dumont, 2018).

High School Diploma Programs in Various Trades The Centrally Sponsored Scheme of Vocationalization of Secondary Education at the + 2 levels has been in existence since 1988. Since the 1992–1993 fiscal year, a new plan has been in operation. Funding for administrative improvements, vocational surveys, curriculum development, training manuals, textbooks, workbooks, training guides, and teacher training programs is provided by the Scheme to the states. Additionally, funding is provided to strengthen technical support systems for research, development, training, and evaluation. Charities and nonprofits can use the money to launch new programs that provide intense training (Mohanty & Dash, 2018).

Under the initiative, public high schools in the area can offer students the opportunity to enroll in two-year vocational programs. Major revisions to the current Scheme were necessitated by the recommendations of many Committees and Review Groups. As an alternative to the current need that the Scheme be implemented at the higher level (XI standard), it is suggested that it be integrated into RMSA and started at the secondary level (IX standard) for the 12th Plan (Pillay, Muttaqi, 2017).

- Across the primary, intermediate, and postsecondary levels of education, 9583 institutions offer 150 distinct two-year vocational programs. This massive system serves around 10,000 secondary school students over 96,119 different schools spread throughout 20,000 different divisions. There are also eighty distinct occupational courses offered by the National Institute of Open Schooling. Approximately six thousand individuals are now registered in these courses.
- Next Move By creating a consistent set of criteria, the NVEQF will greatly expand

enrollment at vocational schools. With the establishment of a specialized vocational education cell within the Central Board of Secondary Education mandated under the amended Vocationalization of Secondary Education Scheme, vocational education will now be a part of Classes XI and XII. Additionally, it calls on state legislators to increase funding for the approximately 1,000 technical and trade schools across the country. There will be an increase in public-private partnerships and funding for 500 technical schools. An further perk is that the government will cover all teachers' continuing education costs.

- There will be an emphasis on developing 250 competency-based modules for each individual vocational program, in addition to supporting 150 NGOs in launching innovative, short-term education programs. The NVEQF should be expanded to include all fifty states including DC. Infrastructure that is conducive to vocational education must be made available in order for it to be offered. Involvement of private industry in vocational course selection and curriculum development is crucial to the success of NVEQF. Having strong relationships with the industry allows one to anticipate course needs and market trends (Sonia, 2017).

By combining traditional ODL methods with practical experience, NIOS Vocational is able to provide a unique set of online vocational programmes. Fifteen of the states now have active educational systems. In the United States, there are more than 1400 AVIs, or Accredited Vocational Institutions (Ramasamy, 2016).

10. CONCLUSION

In order to keep up with the changing needs of the workforce, it is essential to increase the number of qualified teachers in vocational education programs in India. Teachers can be better prepared to meet the requirements of their students with varying levels of knowledge and ability when they use technology-driven pedagogies, blended learning, and project-based learning into their lessons. The success of these technologies, meanwhile, is highly dependent on strong legislative interventions that encourage ongoing professional development, better infrastructure, and conformity with industry standards. These reforms are laid out in the National Education Policy (NEP) 2020, which is an encouraging foundation; nonetheless, obstacles including cultural differences, bureaucratic red tape, and a lack of funding must be overcome. Vocational education in India has the potential to be improved by incorporating global best practices and tailoring them to the country's unique circumstances. In order to generate lasting improvements in teacher capacity, it is crucial for policymakers, educators, and stakeholders to work together.

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