

Reimagining Senior Secondary Education in India: The Role of TVPE in Realizing NEP 2020's Vision

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Abstract

This research paper examines the transformative potential of Technical, Vocational, and Professional Education (TVPE) within India's senior secondary education framework under the National Education Policy (NEP) 2020. It highlights how TVPE can address critical skill gaps, enhance employability, and foster holistic student development. The paper emphasizes strategic integration, institutional collaboration, and policy reforms necessary for TVPE's successful implementation. It also proposes actionable recommendations for curriculum design, digital infrastructure, industry collaboration, teacher training, and assessment reforms to ensure effective alignment with NEP 2020. By bridging the gap between education and employability, TVPE can revolutionize Indian education, equipping students with lifelong learning abilities and future-readiness.

Keywords

NEP 2020, Technical Education, Vocational Education, TVPE, Senior Secondary Education, Skill Development

1. Introduction

The evolving landscape of senior secondary education in India necessitates a paradigm shift towards holistic, skill-based learning models. While traditional academic approaches have value, they often lack the practical competencies required by a dynamic, global workforce. The National Education Policy (NEP) 2020 presents a visionary framework, emphasizing the integration of Technical, Vocational, and Professional Education (TVPE) within school curricula. NEP 2020 aims to cultivate critical competencies, foster creativity, and instil resilience by embedding TVPE alongside academic subjects. This integrated approach transforms educational spaces into exploration, innovation, and empowerment hubs, encouraging active student engagement. The policy's strategic vision supports entrepreneurship, industry readiness, and lifelong learning while bridging rural-urban educational divides and fostering socio-economic equity.

The policy advocates a multidisciplinary, application oriented approach that bridges traditional silos, making engineering, management, law, medicine, agriculture, teacher education, and vocational training more holistic, inclusive, and industry aligned. It aims to integrate skill based learning within senior secondary education, moving away from rote memorization towards experiential, employability driven pedagogies that foster critical thinking, entrepreneurship, and lifelong learning. At the school level, NEP 2020 proposes the establishment of “hub and spoke” vocational labs, modular courses, and seamless linkages with industries, technical institutions, and local enterprises, ensuring that students gain practical competencies that are both globally relevant and rooted in local socio economic realities. To actualize this ambitious vision, statutory and apex bodies such as the All India Council for Technical Education (AICTE), the National Board of Accreditation (NBA), the National Council for Vocational Education and Training (NCVET), the National Skill Development Corporation (NSDC), the Bar Council of India (BCI), the Medical Council of India/National Medical Commission (NMC), the Indian Nursing Council (INC), and the National Council for Teacher Education (NCTE) have been entrusted with critical responsibilities. These authorities are mandated to redefine quality standards, overhaul accreditation and certification processes, and foster academia industry collaborations. Together, they form an ecosystem that ensures TVPE is no longer a peripheral pathway, but a mainstream, aspirational channel for nurturing the talents and competencies required to drive national economic growth and social advancement (**Government of India, 2020**).

2. NEP 2020 and the Need for Educational Reform

The National Education Policy (NEP) 2020 focuses on helping students gain practical skills and academic knowledge. From Grade 6 onward, students will start learning vocational subjects that prepare them for real-life jobs. As they move into higher classes, they will get even more hands-on experience (Ministry of Education, 2020). The government's target is that by 2025, half of all students will have participated in some form of vocational training.

NEP 2020 also wants education to become flexible and skill-based rather than just focused on exams. This means students will learn to think creatively, solve problems, and apply knowledge in everyday life (Gupta & Sharma, 2021). The policy combines regular lessons with practical training, so students are ready for today's rapidly changing job market (Singh & Mehta, 2021).

Another important part of the policy is to build strong partnerships between schools, industries, and technical institutions. Through these partnerships, students can take part in internships, apprenticeships, and workplace training following the guidelines of the National Skills Qualifications Framework (NSQF). The policy also promotes learning skills such as coding, digital literacy, and using new technologies, making career decisions easier for students.

Connecting Classroom Learning with Careers

Adding Technical, Vocational, and Professional Education (TVPE) to school curricula helps students get ready for real jobs. This training allows them to apply their theoretical knowledge to practical situations, especially in fields like artificial intelligence, digital technologies, and sustainable industries (Ministry of Education, 2020).

Students will also have access to skill certifications, on-the-job training, and internships that help them transition smoothly into the working world (Sharma & Rao, 2021). Besides job training, students will learn how to start their own businesses, manage money wisely, and think innovatively.

By working directly with industries, students can participate in live projects that develop leadership, teamwork, and decision-making skills. The policy also allows for continuous learning, so students can keep improving their skills over time (Patel, 2022).

This system aims to reduce unemployment and help India grow into a global centre for skilled professionals and innovators.

3. Analysis of previous policies in Support of TVPE:

India's journey in the field of education has not only revolved around academic excellence but has also focused on nurturing practical and professional skills. The country has a long history of recognizing the importance of **Technical, Vocational, and Professional Education (TVPE)** to prepare students for real-world challenges. Before the **National Education Policy (NEP) 2020**, several policies laid the foundation for integrating skill-based education into the mainstream schooling system. These steps were meant to help students learn skills that would prepare them for jobs and self-employment.

The first significant change happened in 1968 with the National Policy on Education. This policy suggested that schools should not only focus on book learning but also teach practical skills. The idea was to help students learn trades and crafts so they could find jobs more easily after finishing school. This would also reduce unemployment and help the country grow by creating a skilled workforce.

Later, the 1986 policy, which was updated in 1992, made a stronger push to introduce vocational training at the senior secondary level, that is, after Grade 10. The goal was to ensure that at least 10% of students in senior classes would learn job-related skills. The policy also encouraged schools to work together with local industries and companies, so students could learn by doing real-world tasks through internships and training programs. It also tried to change the mindset that vocational courses are less valuable than academics.

To make this idea work, the government started the Vocationalisation of Secondary Education (VOSE) program in 1988. This program introduced job-based courses in areas like farming, health care, construction, and small businesses. The aim was to prepare students for work directly after school if they did not plan to go to college.

In 2009, the government launched the National Skill Development Mission. This program aimed to skill 500 million people by the year 2022. It focused on making vocational training a regular part of school and college learning. The government also started Sector Skill Councils to help create courses that match industry needs.

To make the learning system more flexible, the National Vocational Education Qualification Framework (NVEQF) was introduced in 2011. This system allowed students to switch easily between vocational and academic streams, so they could

keep studying or start working based on their choice. In 2013, this system was upgraded to the National Skills Qualification Framework (NSQF), which created 10 levels of skill qualifications. This helped students grow step by step in their careers or education without having to start over.

All of these past efforts prepared the ground for NEP 2020. Today, India's education system is moving towards a model that supports both learning and earning. By combining practical skills with academic study, the system helps students become ready for jobs, self-employment, and lifelong learning.

4. Best Practices and Global Models of TVET

Across the globe, many countries have successfully integrated **Technical and Vocational Education and Training (TVET)** into their mainstream education systems, providing valuable lessons for India's evolving skills landscape. These global models highlight the importance of aligning education with real-world employability while fostering academic and vocational flexibility.

One of the most cited examples is **Germany's Dual System**, a well-structured model that combines theoretical learning in classrooms with practical training in industries. This approach is built on strong collaborations between educational institutions, companies, and government agencies, ensuring that students are work-ready upon graduation. The dual system not only improves employment outcomes but also supports seamless transitions between vocational and academic careers, breaking the traditional divide between the two (Euler, 2013).

Similarly, **Switzerland's TVET system** is celebrated for its flexibility and learner mobility. Students in Switzerland can easily move between vocational training and higher academic education, which enhances both social equity and economic productivity. This model empowers learners to adapt their career paths according to evolving interests and market demands, without being locked into a single trajectory (Wolter & Ryan, 2011).

Australia's TVET framework offers another powerful example. It focuses on **competency-based training** and nationally recognized qualifications that cater to lifelong learning. Partnerships between industries, government bodies, and **Registered Training Organisations (RTOs)** play a crucial role in delivering skill development that is relevant to current labour market needs. This ensures that individuals remain employable, adaptable, and competitive throughout their careers (Smith & Keating, 2019).

Lessons for India

In India, TVET is often perceived as a secondary option and is seen as less prestigious than academic education. However, the global models of Germany, Switzerland, and Australia offer important lessons. For India to transform its **vocational education ecosystem**, the following steps are essential:

- **Strengthening industry-academia partnerships** to align training with real job roles.
- **Promote dual learning pathways**, allowing students to gain both vocational and academic qualifications.
- **Embed flexibility and mobility** in qualifications, so learners can move across sectors and education levels without barriers.
- **Develop a robust National Skills Qualification Framework (NSQF)** to standardize competencies and facilitate smooth progression between vocational and formal education streams.

At the same time, India must **contextualize these best practices** to suit its unique socio-economic fabric. With a large informal economy, regional disparities, and diverse cultural expectations, India needs a localized and inclusive approach. Emphasizing **public-private partnerships, competency-based curricula, and rigorous quality assurance mechanisms** can help create a TVET system that is not just functional but aspirational.

By learning from global models and tailoring them to its needs, India can build a **skilled workforce that fuels economic growth while promoting dignity of labor and social mobility**.

4. Institutional Support for Aligning TVPE with NEP 2020

NEP 2020 advocates embedding TVPE at the senior secondary level through institutional collaborations and multidisciplinary integration. It recommends partnerships with the Ministry of Skill Development and Entrepreneurship (MSDE), National Skill Development Corporation (NSDC), and higher education bodies to ensure skill progression (Singh & Verma, 2021; Kumar, 2022). The policy proposes establishing the National Committee for the Integration of Vocational Education (NCIVE) to coordinate between ministries and oversee vocational initiatives. Tools like the NSQF and digital platforms like SWAYAM and e-Skill India expand TVPE accessibility, particularly in underserved regions. The policy underscores vocational educator training through the Pandit Sunderlal Sharma Central Institute of Vocational

Education (PSSCIVE) for curriculum development, research, and pedagogy enhancement (Patel & Joshi, 2022). It also recommends continuous assessment, skill audits, and outcome-based evaluations, supported by national and state-level monitoring systems, to ensure effective TVPE implementation.

Role of National Agencies and Bodies

- **National Skill Development Corporation (NSDC):** Supports NEP 2020's focus on making vocational training an integral part of senior secondary and higher education by partnering with industries and training institutions.
- **National Council for Vocational Education and Training (NCVET):** Develops standards, regulations, and quality benchmarks for skill and vocational courses across schools and higher education institutions.
- **All India Council for Technical Education (AICTE):** Facilitates skill-focused courses, internships, and industry linkages within engineering and technical education, aligning with NEP 2020's vision.
- **Directorate General of Training (DGT):** Supports the expansion of Industrial Training Institutes (ITIs) and hands on vocational training aligned with NEP 2020 for senior secondary and higher education.
- **Atal Innovation Mission (AIM), NITI Aayog:** Promotes entrepreneurship and innovation by setting up Atal Tinkering Labs (ATLs) and Atal Incubation Centres (AICs), making skill education and design thinking central to NEP 2020.
- **National Educational Alliance for Technology (NEAT):** Supports AI, ed tech, and skill-based learning platforms, connecting learners with industry-ready courses.
- **National Board of Accreditation (NBA):** Supports quality enhancement of technical and professional education by aligning curricula with NEP 2020 and industry standards.
- **National Assessment and Accreditation Council (NAAC):** Promotes quality assurance in higher education institutions, aligning accreditation criteria with NEP's focus on multidisciplinary learning and industry exposure.
- **Sector Skill Councils (SSCs):** Industry led bodies created by NSDC that design curriculum, set standards, and build links between industry and academia, making NEP 2020's skill education agenda actionable.

- **Confederation of Indian Industry (CII)/FICCI/ASSOCHAM:** Industrial bodies supporting NEP 2020 by providing internships, apprenticeships, and skill building programs that connect students with industries.

5. Impacts of TVPE Integration under NEP 2020

The inclusion of Technical, Vocational, and Professional Education (TVPE) in NEP 2020 focuses on the overall development of students. It is not just about learning skills for jobs but also about building a confident and well-rounded personality. Students get to learn modern technical skills like using computers, coding, working with artificial intelligence, and understanding new-age technologies (Ministry of Education, 2020).

Instead of only studying from textbooks, students participate in project-based activities that teach them how to think critically, be creative, and solve real-life problems (Kumar, 2021). They also get chances to do internships and hands-on business projects, which help them learn how to work with others, lead a team, and communicate better (Patel & Joshi, 2022).

NEP 2020 makes sure that students from all backgrounds—whether from cities or villages—get equal chances to learn these skills. This helps students keep learning throughout their lives and gives them better opportunities to find good jobs (Singh & Verma, 2021). By including TVPE in schools, students become more responsible citizens, skilled workers, and flexible professionals who can handle the fast changes in today’s world.

Specific Impact of TVPE Integration under NEP 2020

- Foster **entrepreneurship and financial literacy**, enabling self-employment among youth.
- **Bridge the skill gap** by emphasizing practical, industry-aligned training.
- Encourage **lifelong learning** through flexible, credit-based vocational pathways.
- Ensure **equal access to vocational training**, helping students from all socio-economic backgrounds gain employable skills.
- Develop essential **soft skills**—leadership, teamwork, and problem solving—through experiential learning.
- Build a **skilled national workforce**, strengthening India’s global competitiveness.

- **Prepare students for emerging sectors** like AI, green technologies, and digital innovation.
- Promote **self-reliance** by teaching practical skills useful in local entrepreneurship.
- Shift from rote learning to **competency-based, hands-on education** for real-world readiness.
- Equip students with **job-ready technical and vocational skills**, aligning education with labour market needs.

6. Policy Recommendations for Strengthening TVPE

Targeted reforms are recommended to optimize TVPE implementation under NEP 2020. Curriculum design should prioritize modular, competency-based learning aligned with NSQF, integrating emerging domains like digital skills, green technologies, and entrepreneurship. Teacher training must be enhanced through continuous professional development via institutions such as PSSCIVE to strengthen pedagogical and technical expertise. Industry collaborations should be institutionalized through formal partnerships with Sector Skill Councils (SSCs) and local enterprises to enable practical learning. Expanding digital infrastructure by leveraging platforms like SWAYAM and e-Skill India is essential for widening TVPE access. Additionally, competency-based assessments, standardized certifications via NCVET, and digital evaluation tools can enhance TVPE program quality. Collectively, these measures will bridge the gap between education and industry, fostering employability, innovation, and lifelong learning among students.

7. Conclusion

The integration of Technical, Vocational, and Professional Education (TVPE) into India's education system through NEP 2020 is not just a policy change—it is a transformational shift in how we prepare young minds for the real world. By blending theoretical learning with practical skills, the policy ensures students are no longer limited to textbook knowledge but are ready to tackle modern workplace demands and entrepreneurial opportunities.

However, to truly realize this vision, concrete actions are necessary. There is a need for regular curriculum updates so that learning remains relevant to evolving industries. Teachers must be continuously trained and re-skilled, not only in new technologies but also in ways to mentor students practically. Stronger collaborations between schools, local industries, and training institutes must be built to provide students with real-world exposure through internships and apprenticeships.

Additionally, making digital tools and learning platforms easily accessible, especially in rural areas, will help bridge the urban-rural gap. Regular assessment and feedback systems should be introduced to track students' progress in both technical skills and life skills.

If these steps are taken sincerely, India can create a generation of skilled, confident, and socially responsible citizens who will not only contribute to the country's economy but also shape a more inclusive and innovative society. This is the moment to act—not just to reform education but to redefine it for the future.

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