A Comprehensive Review of Vocational Education and Training (VET) in Secondary School

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ABSTRACT

This Review paper extensively discusses VET integration at the secondary level, ranging from historical and present relevance to prospects. Stemming from historical apprenticeships, VET education took off in the 20th century, being an essential curriculum for either vocational or academic-oriented learning globally. Mainly characterized by practice-oriented learning, VET connects theory with practical experience from internships or work-based settings. However, there are challenges such as combating stigmatizations and slow curriculum development, given the graded advancement in technology. VET has an extensive historical precedent in India. With new legislation such as NEP 2020, India aims to improve VET through targeted 50% student exposure by 2025. NEP 2020 emphasizes careful curricular adjustment, industry engagement, and early career exposure among other measures. To conclude, the research on entrepreneurship in India highlights the centrality of VET in promoting self-employment and reducing skill gaps. Re-envisioning VET as agile and equitable is central to the aspiration of the broader economy. Efforts such as enhancing public-private partnerships, infrastructure, as well as sectoral initiatives, are critical components. Other complementary measures would be minimizing rural-urban differences, improving teach distribution, and aligning vocational education to the mainstream system. Setting up new production-cum-training centers, and upscaling research complement these interventions. More importantly, addressing various concerns as a whole would be in the best interest of making VET work in secondary schools.

Keywords: Vocational Education and Training (VET), Secondary Schools, NEP2020

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Over the past years, education has undergone notable changes towards incorporating vocational education and training in the secondary school curriculum. This shift in the paradigm underscored the increasing recognition of the diverse needs and desires of the students, let alone the demands of the global economy that is constantly changing. According to AICTE “Vocational education or Vocational Education and Training (VET), also called Career and Technical Education (CTE), prepares learners for jobs that are based in manual or practical activities, traditionally non-academic and related to a specific trade, occupation or vocation, hence the term, in which the learner participates. It is sometimes referred to as technical education, as the learner directly develops expertise in a particular group of techniques or technology”. This review extensively analyses various aspects of VET at the secondary school level. It does so from a view of the historical aspect of VET, current practices, challenges, and possible future aspects. Vocational education is intended to assist young people lead productive and fulfilling adult lives as workers and citizens. It is considered a continuum whose historical apprenticeships, and upscaling research complement these interventions. More importantly, addressing various concerns as a whole would be in the best interest of making VET work in secondary schools.

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of these pathways. Thus, a social campaign should change the traditional “vocational education is second-rate” evaluation to “vocational education is an alternative first-rate”. In addition to the aforementioned, an even greater challenge for educators and policymakers is the quality and eligibility of VET programs. Given the fast-paced nature of the industries and the mutations, the job market makes due to the rapid technological development. TVET is also described by UNESCO-UNEVOC, a recognized international TVET center as “the acquisition of knowledge and skills for the work of work” (UNESCO, 2016). VET curriculums must be highly flexible and responsive to modern needs and requirements. This means, in turn, that close integration is needed between the educational facility, the industry facilities, and the government directives to attest that VET is eligible to modern industry standards and requirements. One factor influencing the expansion of industries and employment prospects in the global skills race has been the role of TVET in human resource development (Clarke et al., 2012). Given the above-outlined discussion, this review aspires to analyze the critical issues surrounding the VET programs offered in secondary schools. The intention is to appraise the best practices, novelties, and potential specificity that may need to be approved. According to Triyono et al. (2023), the goal of vocational education is to raise worker quality and sustain, accelerate, and generate social jobs to increase community production. Through the lens of existing research, empirical findings, and the frameworks of policies, the idea is to make an innovative differentiation and add-on to the existing understanding of how VET in secondary schools. VET currently is global recognition and features as a cornerstone of the SDG Goal for education by 2030 (Parveen, 2020).

Fig 1.1 Vocational Education Roadmap

Source: Re-Imagining Vocational Education: The NEP-2020 Perspective

Background of vocational education and training (VET):

One feature that stands out throughout Indian education history is the focus on vocational education within the schooling system. Even under the British stature, the Woods Despatch recognized the necessity of practical skills in addition to academic knowledge. This priority was followed up by later commissions and committees, most notably by the Indian Education Commission of 1980, which recommended the establishment of practical subjects at the secondary level. Even the Hartog Review and the Sapru Enquiry in the early 1900s emphasized the need for diversified courses at the secondary level that would prepare students for primary industries and commerce. The Wood-Abbot Advisory Committee of 1936 also recommended the opening of polytechnics and the introduction of diploma courses in technical education (Wood-Abbott Commission, 1936). Apart from these, it also focused on eliminating the dual process of theoretical knowledge and practical work. The Zakir Hussain Committee recommended a craft-centered approach to organizing education to stop the discrimination against manual and intellectual work (Wardha Plan, 1937). The Sargent Report of 1944 also contended for the duality of both academic and technical education at the school level. This system would also underscore a maximum life span of skill development. During independence in a post-colonization period, education commissions were also set up to reform the system. The University Education Commission 1948 also suggested the implementation of vocational training in agriculture, technology, commerce, etc. At the national level, disciplines such as agriculture were given more importance to inform national economic programming, making education a priority at all levels in rural areas, especially as...
well (Radhakrishna Commission, 1948). According to the Secondary Education Commission of 1952-53, students should be exposed to several avocations, advocating for the establishment of multi-purpose schools (Mudaliar Commission, 1952). The National Education Commission of 1964-66 furthered the above line’s recommendation and suggested that opportunities for vocational education in both secondary and middle schools be both broadened and intensified (Kothari Commission, 1964). Furthermore, with the declaration of the National Policy on Education in 1968, vocational instruction received a major boost by generalizing vocational education courses in general education institutions (NEP, 1968). Subsequent policies in 1986 and 2009 further reassessed the importance of vocational education in building a robust work ethics system, improving employability, and helping to link the demand and supply of skilled human capital. The National Skill Development Policy of 2009 went a step further to harmonize vocational through the National Vocational Qualification Framework which required competency-based qualifications and certifications based on national occupational standards. The central government enacted “the National Vocational Education Qualification Framework” to provide a reliable and harmonized framework for driving and supporting the skill development reforms. The framework covers all education paradigms from schools to vocational institutions and industrial training facilities to higher education providers. It is a wholesome system built on robust occupational standards and activities. Given the National Skill Development Policy 2015 objective of fusing skills acquisition with formal education, the framework seeks to introduce skills in vocational training classes directly linked to local economies from grade nine onwards in at least 25 percent of schools over the next five years. In addition, the framework seeks to adequately cater uniquely to the needs of children and youth dropping out of school or out of higher education at any level by providing them with skills for alternative Sustainable Livelihood careers. NEP 2020 makers have focused on the reimagining of vocational education. Regularly less than 5% percent of workers aged 19 – 24 have formal vocational education: the extreme contrast is, in developed countries such as the USA, Germany, and South Korea, the proportion is much higher National Educational Policy, 2020. To close the coverage gap and provide access to quality vocational education within a short period necessitates rapid expansion across India. Therefore, there are enabling provisions in the NEP to integrate vocational education into the mainmainstream educational ecosystem. To complete the enabling provisions, it also provides the flexibility of integration of vocational students to mainstream space but also smooth vertical and horizontal mobility of students within the NSQF. Emphasizing the “alignment of Indian standards with internationally recognized classifications of other nations”. The target to achieve by 2025 is that a minimum of 50% of learners in the school and higher education systems will have been exposed to vocational education. NEP 2020 presents several recommendations addressable to enhance vocational education across various explicitly described areas of focus. The first is access, in which the system recommends starting the exposure to diverse careers as early as the 6th grade. This will be implemented via the Samagra Shiksha Abhiyan program and will see children get acquainted with the work environment and the careers available to work in. As regards “equity,” NEP 2020 “integrates vocational education into general education courses by ensuring that all students acquire at least one vocational skill and students are exposed to at least one vocational career.” And, “adaptability and flexibility” as the third aspect demanded updating vocational education curricula “on an ongoing basis to ensure that it is consistent with changes in industry and global trends”. To integrate vocational education into the mainstream, the NCERT is allowed to integrate vocational education into the National Curriculum Framework and supply guidelines, handbooks, and textbooks for vocational education. “Community and industry partnerships” are also demanded for successful integration. Collaboration with ITIs, polytechnics, local artisans, industries, and other members is also required to accomplish this. Assessment and evaluation in vocational education should be competency-based, as per National Education Policy 2020, the NCERT shall be provided with appropriate guidelines to assess the vocational education students. “Professional development of vocational teachers,” various training modules will be undertaken including digital and online modules, workshops, seminars, and teacher development programs. The NCERT will be placed under the Planning and Development Division to prepare teacher training modules and handbooks along with the collaboration of the Universities’ Departments of Education. In the impending decade, vocational education will be integrated with mainstream education in schools and higher education institutions. 50% of students will be exposed to the vocational education program by 2025. Further, a National Higher Education Qualification Framework will be created to function in convergence with the NSQF, enabling the incorporation of vocational education in higher education institutions without disrupting each other. Open-up of Open Vocational Education programs through open and distance learning modes continues to extend the reach of vocational education courses. A broad-based NSQF would be developed for various vocations and professions. It may support a Recognition of Prior Learning strategies for the reintegration of dropouts into the system, including general education to vocational education course transfers. A more extensive NSQF is proposed to cover all vocational sectors and occupations. National Skills Qualification Framework as a mechanism for RPL should be used as the foundation for reintegrating the dropouts and to enable a move from general education to vocational education. It is essential to promote and document good working practices in various vocational fields combined with this promotion and documentation of knowledge made of these working practices. To develop Lok Vidya, the latest monitoring program received reauthorization The setting-up of PSSCIVTE is defined as a top priority. Quality human resources, finance, scientific infrastructure, and technology inputs are essential to expanding vocational education on a large scale effort.
Review Process: To conduct a comprehensive review of the literature on VET in secondary school articles were collected from online databases such as Elsevier, Springer, Researchgate, and Google Scholar. Apart from this review included the perusal of books, dissertations, abstracts, and doctoral thesis. The review examines the progress and implementation of VET in secondary schools and also examines the benefits of VET in secondary schools.

Challenges in Implementing Vocational Education:

Vocational education is facing many challenges like lack of enrollment in vocational education and the absence of vocational subject teachers in the class. Low-level classroom quality is a challenge in vocational education as it creates inefficiency among the students and this problem remains due to inadequate infrastructure, outdated teaching materials, and inadequate teacher training. According to Singh et al., (2018) found that the problems of vocational education and skill development in Nagpur district, India. Low classroom quality and industrial training failure served as an impediment to the activities of vocational training organizations. Moreover, a lack of industrial services restricts interference in the annual training process. The study aimed to identify the correlation between classroom facilities and industrial training quality, which required a standard improvement to meet future trends. In vocational education, there is a lack of infrastructure as well as lack of a proper curriculum. There are geographic disparities in India and vocational education programs are not accessible to all, especially in rural or economically disadvantaged areas where such students have fewer opportunities. The curriculum taught in the classroom does not align with industry demands, so skilled workers are not being prepared. This reduces their employability and limits their career advancement opportunities. According to Kumar, P (2015) employability, through improved vocational education, is a multidimensional and complex issue that requires varied interventions. These factors were based on demographic shifts, economic and labor social justice policy, the educational system, and industry engagement and participation. One of the challenges of vocational education is to adapt to rapidly evolving industry needs and essential technology changes, which require constant curriculum updates and teacher training. Rathidevi et al., (2019) studied 158 secondary school students from private and government schools. The researchers found that the attitudes of students towards vocational education were moderate and more comprehensive among males than females. Family size, birth order, parental education, kind of family, and maternal employment were found to be insignificant in determining attitudes. Most students were unaware of the types of courses being offered, eligibility, scholarships, and available opportunities. India would have to adopt a holistic approach with the accompanied assistance of both the public and private sectors to overcome the current demographic dividend threat and skill education barrier. It did not solely involve governmental programs and centers, and the many privates that had gathered over the years experienced an equally significant job as well in contributing to positive development for a better society. Mamta Arora (2018). Limited funds and resources hinder the delivery of high-quality vocational education, which hinders the use of modern equipment and the implementation of innovative teaching methods. Chakravarty et al., (2020) found that students, parents, and communities did not show enough interest in vocational education. There is a lack of awareness and promotion of vocational education among students, parents, and teachers which leads to low enrollment rates and a huge gap between available job opportunities and skilled workers. the challenges faced and the betterment of vocational education across various spheres of its need is necessary Singh et al. (2015).
Impact of vocational education on skills development:

Vocational education always attention to learning practically not only theoretical by which students gain practical skills relevant to industry. It helps the students get the skills and it also facilitates skills development in a real-world context. Skills that help get employment should be indispensable for every vocational education and training. Because skills will help those students to enter the job market. Tirth (2002) found that for individual organizations as well as national economic growth things that play an important role are Training in general and skill development means the process of attaining the best abilities to perform the different functions of technological development in connection with their present and future roles. Vocational education should be implemented according to the needs of the industry so that the skills learned should be in line with employment. This alignment enhances employability, as they have the skills sought by employers. Employability skills should be required for all TVET students. Employability skills are essential for preparing TVET students to enter the labor market.

According to Amjad et al., (2005), skill development and vocational training affect national products and competitiveness. He concludes that an educated and skilled labor force helps countries transition their economies from labor-intensive to skill-intensive.

Vocational education focal point on specific skills to provide individuals with the skills needed for various occupations. Whether it's carpentry, plumbing, healthcare, or information technology, vocational training provides learners with the guidance they need to excel in their chosen field. Vocational education not only leads to employment and skill development but also promotes an entrepreneurial mindset. Through practical training and exposure to industry practices students often develop the confidence and skills necessary to start their own business.

The skills of the youth population are important for increasing innovation and productivity in the economy. Young people bring creativity and innovative approaches to work, which contribute significantly to skill development. The ability to think creatively and outside the box promotes economic growth by promoting competition and efficiency in industries. According to Ansari et al., (2018), The skill set of the youth population plays an important role in the development of the economy. VET programs are tailored to specific industries, providing participants with the skills they need for their careers. This specialized training equips individuals with the specialization to master income-generating roles. Bhalla et al., (2023) found that VET is an essential component of any skill development program aimed to assist people to gain the information and skills required to thrive in a certain field of work that generates money. In today's changing environment, people give priority to versatile qualities so that the needs of the industry can be met. These include social skills, effective communication skills, technological skills, creativity, and critical thinking. Nagra et al., (2020) found that “The industry believes that the most coveted graduate traits are social skills, engineering knowledge, communication skills, technology and information skills, managerial skills, creativity and innovation, problem-solving abilities, and critical thinking”. According to Tiwari et al., (2020) found that Enterprise Skills, Workplace Skills, Professional Practice and Standards, Interpersonal Skills, and Integration some of the factors are contributing to skill development. The statistical analysis also showed that skill development has a significant effect on employability.

Effectiveness of Vocational Education Program:

The study of the effectiveness of vocational education programs includes the rate of enrollment in vocational education, integration of vocational education with general education, perception of teachers and students about vocational education, etc. The effectiveness of vocational education is revealed through the evaluation of vocational education, through which the currently prevalent vocational education is in line with the demands of today's industry or not, and at the same time evaluation gives information to the students about the effectiveness of vocational education. Saputro et al., (2021) found that There is a disparity between vocational high school graduate's abilities and industry needs. To overcome this, the teaching factory creates an industry-based learning paradigm. Learning at vocational high schools refers to industry-specific standards and processes that are implemented in response to current industrial conditions.

To promote VET, vocational education is important which works for skills development on various streams along with proper career guidance which helps the students to understand VET effectively. According to Majumdar, S. Swati (2012) found that the VET system could be more coherently built to promote integration from schools to higher VET sectors. Examining the vocational education offered and industry demands is important to understand their impact on participant's earnings. Vocational programs adequately prepare students for high-demand fields and occupations, ensuring that they retain the skills they have acquired. Are relevant and marketable. Chamadia and Muhammad (2021) discovered that People who received vocational education according to the demand of the industry had an impact on their monthly income; their monthly income was higher than those who received normal academic education.

Conclusion:

In conclusion, this review paper analysis the multifaceted landscape of VET in secondary schools. By tracking its historical evolution from early apprenticeships to modern policies, the review demonstrates its diverse nature, designed to cater to student's varied needs and the convoluted demands of the global economy at the same time. The review has demonstrated that the primary benefit of VET is that it equips students with theoretical knowledge, as well as practical skills, thus paving the way to comprehensive academic and vocational futures. Practical learning experiences, internships, and strong ties with industries make students more employable and provide for fruitful partnerships. Nonetheless, the review has also underlined several problems, such as the alignment with rapid changes in the business environment and the inferior status of the vocational pathway. Overall, eliminating stereotypes, improving program quality, and fostering greater collaboration among educational institutions, industries, and policymakers are some of the ways to
overcome these challenges. Furthermore, the review also points to the crucial influence of governmental policies on the VET landscape as programs such as the National Skill Development Policy and the National Education Policy have worked on promoting further innovation and progress. Overall, the future recommendations refer to enhancing early vocational exposure, ensuring equal opportunities, flexibility, and teacher development. Thus, the secondary VET review makes it clear that it is not a supplementary but an essential component needed to promote skill development, employability, and inclusive growth. the emergence of the National Vocational Qualifications system which enabled elevating the status of manual and trade-related skills and creating opportunities for young learners to educate and train for diverse roles to address the country’s critical skill shortages. One of the core issues in promoting VET in secondary schools, as identified in the report, was ensuring the appropriate quality of programs and qualifications. To achieve this, a proper understanding and alignment of these characteristics was needed. In addition, to regulate the quality of VET, regulatory bodies have developed other methods and strategies, including quality assurance framework, licensing, and joint regulation. The Department of Education in Australia and the Department for Education and Employment in the UK serve as examples of such regulating bodies. Vocational Education and training (VET) programs are at the heart of modern education policy in many countries. Most students now have the chance to gain the necessary practical skills and specific knowledge about a particular industry. In general, the literature review outlines several salient characteristics of vocational education: they are practical, closely related to industry, and give students the chance to undertake internships, apprenticeships, and other forms of work-based learning to round out their theoretical knowledge with practical applicability, thus preparing them for the professional life successfully. On the other hand, Vocational Education and Training (VET) has its weaknesses: stereotypes, scarce resources for updating the curricula, and the lag in instruction. Dealing with these issues more adequately would involve increasing awareness of the value of vocational education, improving the quality of programs, and linking curricula and skills to the industry. However, despite the described inconveniences, vocational education is a tool for developing skills and empowering students. It has shown that Vocational Education and Training (VET) graduates are more likely to earn more or be more satisfied with their jobs than their college counterparts. However, this is only true for programs that are known to be in demand and offered by employers. To a larger extent, the development and expansion of vocational courses should continue to be consistent with the student's and employer's demands. Other necessary areas that must be addressed include the need to integrate vocational education and general education, provision of adequate career guidance, ensure flexibility and responsiveness of the programs, and alignment of the programs to the industry standards among others. In summary, the importance of VET in secondary school cannot be underestimated. The field is critical in preparing the relevant workforce while at the same time promoting economic growth. By taking a proactive approach to challenging the identified constraints and using the above best practices, we shall maximize the potential of vocational education in empowering people, supporting a sustainable community, and driving the achievement of sustainable development goals. With continued research, policy reforms, and cooperative work among educators, policymakers, and other industry majors, a more inclusive and comprehensive vocational education framework can be successfully established and implemented to prepare students with the requisite skills and competencies needed to succeed in today’s economy.

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