Jeebanlata Salam

Vocationalisation of School Education
Prospects and Challenges
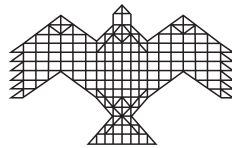
National Institute of Advanced Studies
Bengaluru, India

Vocationalisation of School Education

Prospects and Challenges

Policy Research Highlights

Supported by Tata Trusts

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PROSPECTS AND CHALLENGES

Executive Summary

Vocationalisation of School Education: Prospects and Challenges explores the status, prospects, and challenges associated with the policy of vocationalisation of school education in India. It highlights different policies related to vocational education at the school level in India, assess the status of provisioning of vocational education or Technical and Vocational Education and Training (TVET) or Vocational Education Training (VET) in Indian schools, examines the success of models in Indian states implementing TVET provision, and provides international perspectives on vocational education at the school level. The introduction of this paper sets the context for the study, the importance of vocational education, and its potential benefits in equipping students with practical skills, enhancing employability and become self-reliant with positive contributions to society. The paper then delves into an in-depth analysis of different policies related to vocational education at the school level in India, including the new National Education Policy (NEP) 2020 with an ambitious target of at least 50% of secondary level students trained in vocational education by 2025. The paper also evaluates the status of TVET provisions in Indian schools, which includes an assessment of curriculum, teaching methodologies, and financial provisions. One of the leading schemes, vocationalisation of school education is implemented under the umbrella of "Samagra Shiksha Abhiyan". The aim of the scheme is to prepare educated, employable,

and competitive human resources for various sectors of the economy, and global market by integrating vocational education with general academic education, especially at the school level. The curriculum of vocationalisation of school education has different types of provisions such as field visits, hands-on training, guest lectures from industry, on-the-job training for students in industrial setup and providing apprenticeship training to students passing out with vocational subjects. Apart from provisioning of TVET in schools at different levels, Govt. of India has taken different initiatives and steps such as organising awareness programme to change the general perception and attitude towards vocational education. These initiatives include introducing skill-based activities from pre-school to Grade XII, introducing vocational interest inventory in Grade VIII, and Skill Based Aptitude Test (SBAT) in Grade X for student career guidance, and introducing "LOKVIDYA" (indigenous knowledge and skills in schools through vocational education), which identifies local vocational crafts for organising internship for students on indigenous practices. A significant part of vocationalisation of education is integrating new technology in vocational education training programme for preparing students for industry, introducing new learning methods and digital tools like Massive Open Online Courses (MOOCs), Flipped Classroom, and Virtual Learning method, with the objective of ensuring vertical mobility of students trained in vocational subject. Despite the robust policy developments, and several laudable skill

schemes and initiatives in place, India's current status of vocational education implementation at the school level continues to be far from satisfaction. Only 12292 secondary and higher secondary schools, accounting for 4.2% of the total number of secondary and higher secondary schools have vocational courses under National Skills Qualification Framework (NSQF) with an enrolment rate at 1.53%. Out of 28 states, 13 states have less than 1.53% enrolment rate, which is below the national average enrolment rate. Total budgetary allocation for vocational education at the secondary level during the period 2016-17 is only 0.01%, while a marginal increase such as 0.02% could be noticed in the following year, 2017-18. Case studies of successful models such as Haryana, Himachal Pradesh, Goa, Sikkim, and Delhi in implementing TVET provisions at the school level provide valuable insights into effective strategies, best practices, and lessons learned. International perspectives on vocational education, which include countries with vocational education successfully introduced at the school level, are explored. Some successful countries such as Finland, Germany, and Switzerland have different types of vocational education system including dual system of vocational education, which provides school education with paid apprenticeship. Another aspect of international perspectives on vocational education focusses on South Asian countries. A comparative analysis of vocational education systems in South Asian countries offers a broader understanding of the challenges and opportunities in the region. The global status of vocational education at the school level is summed up, highlighting international trends, best practices, and successful models from different countries. The paper then identifies, and analyses the major challenges, and issues in the vocationalisation of secondary education in India. Finally, a suggestive model of vocationalisation

of school education in India is presented. This model incorporates recommendations based on best practices, international experiences, and the specific context of India. It outlines key elements such as curriculum design, teacher training, industry linkages, monitoring, and evaluation mechanisms. Summing it all, this paper provides a comprehensive analysis of the prospects and challenges associated with the policy of vocationalisation of school education. It offers valuable insights for policymakers, educators, and stakeholders involved in shaping the future of vocational education in India.

1.1 Introduction

In India, beginning with the British period, policy debates of vocational education have been progressing for many decades. It was the Woods Despatch Act of 1854 that first highlighted the need for occupational education at the secondary level. The act formalised vocational education as integral to modern education system in India. Similar concerns were raised by several committees and commissions such as the Hunter Commission (1882), the Hartog Committee (1929), and the Abbot Commission (1937) that argued for introducing polytechnics education. The Sergeant Commission (1944) suggested two streams of education: academic and technical, and recognised specific regional vocations. These developments laid the foundation for developing various aspects of technical education system in India. During Indian freedom struggle, M.K. Gandhi (1953) redefined the meaning of vocational education. Gandhi, with his experience at the Tolstoy farm in South Africa, realised the great educational value of manual work, as Gandhi observed, the weak became stronger in the Tolstoy farm and labour proved a tonic for all. In India, where more than 80% of the population

was involved in agriculture and another 10% in industry, Gandhi noted, it was a crime to make education merely literary and to make boys and girls incapable of engaging in manual work. Gandhi was resolute that manual labour should find a place in the school curriculum; and it should be sufficiently productive. An education system of this kind should be based on the unity of theoretical knowledge with practical experience. Gandhi attempted to promote mass education that inspired cooperative life through the pedagogic practice of 'learning by doing' in an atmosphere of freedom which enabled young people to earn a sense of self-respect, and life-skills for sustainable livelihoods, with positive contributions to society. Gandhi insisted that Indian education system should be primarily vocational.

In post-Independent India, significant policy documents such as the Kothari Commission (1964-66), the Radhakrishnan Commission (1948), the Mudaliar Commission (1952) and the Ishwarbhai Committee(1977) referred to the importance of vocational education at the school level. The same story was repeated in the National Policy Education Resolution (1968), and the National Education Policy (1986). Based on these policies, recommendations of committees and commissions, India focused largely and rightly on formal school education, given India's dismal literacy performance, low transition rates and school enrolment figures, especially at higher grades. On the one hand, the massification of higher education in India, particularly during the last two decades underscored the fact that the traditional role of higher education of producing unemployable educated graduates posed a serious challenge to India as a growing economy. It is with this realisation that India will require individuals with a range of trained, and specific skills to

fuel its economy that the role of vocational skill education received increased significance. India no longer can compartmentalize education and employment separate.

India has one of the most extensive network systems for school education. Like many successful global countries, it is only with the conduit of the education system that the vocational education programme can achieve a wider reach, be made effective and worthwhile. In this direction, several research studies depict the prospects of vocational education at the school level. Noted economist such as Tilak (1988) argues that India's many long-drawn educational problems could be solved by diversifying the secondary education curriculum using measures such as control of the unbridled demand for higher education, easing financial crisis in education by reducing higher education budgets, while providing employment opportunity for secondary and college graduates through suitable vocational designs. Lall's study (2022) observed that the Indian economy is shifting into a knowledge-based economy, and as such a new generation of educated and skilled people is required. Nobel laureate, Amartya Sen (2015) raised the danger of separating out economic growth from the quality of healthy and educated labour forces. In India, since the early 1990s, the provision of vocational education is formally offered at secondary and higher secondary schools. However, vocationalism in academic domains suffers both from quantity and quality concerns. As a result, the number of students enrolled in vocational courses is still stuck in a single digit, i.e., well below 10% (UNESCO, 2020). The low enrolment intake of students in vocational education is attributed to a host of factors. An evaluation study report by MHRD, Govt. of India (2016) on the vocational education provision highlighted several lacunae

at implementation level—lack of clear position of vocational education in formal education system, absence of regular trained teachers, lack of training among teachers, insufficient financial allocation, non-flexible duration, lack of delivery of need-based courses, mismatch between training and skills in demand, high financial implication for states as stakeholders, lack of commitment from the central government, inadequate monitoring, poor vertical mobility, and so on. This plethora of challenging issues stems mainly from a lack of clear organisational structure, management, and policy direction. Also, there are concerns raised on the lack of national aspiration for vocational programme among youth that vocational education is perceived as dead-end, and non-rewarding. This problem is mainly attributed to the non-involvement of industries in tracking emerging skills in the market and thereafter participating in designing and executing up-to-date vocational curricula in school. Also, it is this lack of industry involvement in vocational programme that is perceived to be a key contributing factor

for India's lack of adequate skilled labour force. According to a survey report by the Federation of Indian Chambers of Commerce and Industry (FICCI, 2011), 90% of sample respondents of various companies faced shortage of skilled labour force. Another report of the Ministry of Labour & Employment, Govt. of India (2016-17) reveals that the total employment in India was around 47 crores (organised and unorganised sectors) in 2011-12. Out of 47 crore workforce, 39 crores were from unorganised sector, accounting approximately 82% of the total employment in India. This indicates that a disproportionate population of the workforce is either semi-skilled or unskilled labour force. Generally, these workers have no formal training related to their occupation or trade. FICCI's survey (2011) and the annual report 2016-17 of the Ministry of Labour & Employment, Govt. of India raised concerns about the lack of skilled labour force in India.

As depicted in Figure 1, the educational status of workforce varies from illiterates to those who

Figure 1. Distribution of Workforce by Level of Education and Training in India
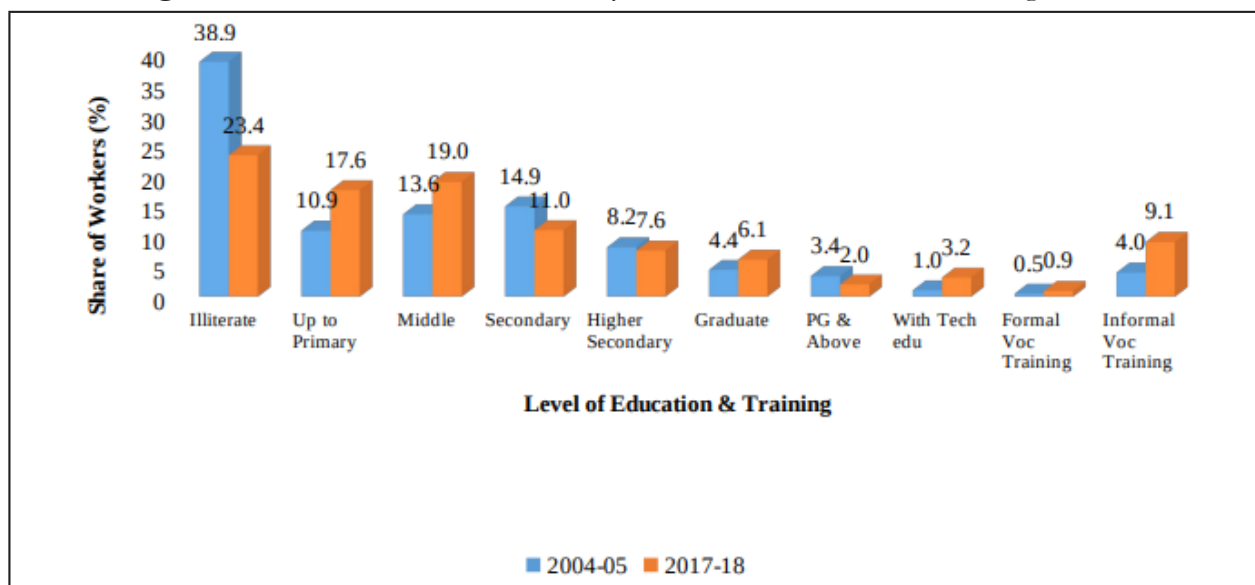
Source: Mehrotra and Parida (2019)

have completed senior secondary education. In 2017-18, of the total workforce, illiterates formed the highest labour force at 23.4% followed by 17.6% workforce with only primary level of education; 19% workforce with only middle school level of education; 11% workforce with only secondary level of education, and 7.6% workforce with higher secondary level of education. During the same period, only 0.9% of the workforce had formal vocational training as against 9.1% of the workforce having informal vocational training. This points to the urgency of scaling up TVET provision, especially at the school level. UNESCO (2016) defines TVET comprising education, training, and skills development relating to a wide range of occupational fields, production, services, and livelihoods. Vocationalisation of school education thus refers to a diversified curriculum having both types of content—vocational and academic. The diversified curriculum has a wider range of skills activities such as crafting, fitting, technical labour, agriculture, banking/insurance, electronics & electrical, ICT, food processing, health care, beauty & wellness, paramedical, media & entertainment, tourism, green jobs, and other newer demands by service economy. The purpose of vocational skill education is thus designed towards a quick entry into labour market as skilled workforce and geared towards sustainable livelihoods.

Global experiences reveal that in countries with high skilled labour force, there is substantial convergence of vocational skill education component with regular curriculum in schools and serve multiple purpose. Research studies from global trends clearly establish that interposing vocationalism in schools also acts as an effective strategy to prevent student dropout mid-way, exposes students to holistic career guidance programme, career aspirations and

goal setting preparing them for school-to-work transition. Vocationalisation of school education is also seen as the solution to low student enrolment and high student dropout tendencies. For example, Hamilton's review (1986) on successful dropout prevention programme reveals that vocational education programme in schools emerges as one of the most important intervention strategies of dropout reduction. Similar studies on vocationalism and dropout reduction were conducted by Rumberger (1987); Spence (1986); Dynarski, Clarke, Cobb, Finn, Rumberger, and Smink, (2008). These studies found that successful prevention of dropout resulted from a mix of academic and vocational programme. Furthermore, Rumberger (1987) observed that integrating vocational courses into academic programme provided more individualised instruction, while making teaching staff more sensitive and responsive. Vocational education also increases the interest and motivation of learners due to activity-based or experiential learning method (Dynarski, Clarke, Cobb, Finn, Rumberger, and Smink, 2008). These observations suggest that when vocational education is imparted in schools, students feel encouraged to stay put in schools for longer duration. Therefore, when dropout prevention strategies are designed, effective provisioning of vocational education programme in schools emerges as an effective tool in dropout prevention (Pittman,1981). This is a significant observation especially for students of higher grades whose dropout tendency increases. More specifically, take the case of India that registers high student dropout rate, especially at secondary stages. The data of Unified District Information System (UDISE), NIEPA, Ministry of Education, Govt. of India reveals that the gross enrolment rates at the primary level during 2018-19 and 2020-21 were 101.3% and 103.3%, respectively. During the same period, the corresponding figures for

upper primary level were 87.4% and 92.3%, while these figures were 76.9% and 79.8% for secondary grade and 50.14% and 53.8% for higher secondary grade. The data trend reveals low transition rate as students enter higher level of schooling, and disproportionate dropout rates at the secondary and higher secondary stages. Adolescent students dropping out of school mid-way occurs only after they have previously achieved access to school successfully. By leaving school mid-way, most school dropouts, due to lack of opportunities in obtaining additional education and skill training, find it difficult to secure steady employment, and a decent income for a lifetime. This is true especially in the context of today's increased use of new technologies and structural changes in job composition in the wider economy. As noted from the present data, in the educational hierarchy of school education, India registers disproportionate rate of dropout at secondary level—an important transitory/preparatory stage for preparation of higher education and/or the world of employment. Linking students with dropout tendencies to career oriented programmes, vocational courses and introduction to school-to-work opportunity could encourage these students to stay longer in schools. This observation has strong empirical support. Drawing from a field-based research study on vocational skill policy, dropout reduction and employability among adolescent youth from across three Indian states of Odisha, Assam, and Manipur (2020-2023), conducted by the National Institute of Advanced Studies (NIAS), Bangalore, India, it was found that when compared with lower grades, dropout rate among sample students of Grade 1X and X was as high as 40% in the states of Assam and Odisha, while the case of Manipur illustrates abysmally low enrolment and retention rate especially in poor performing government schools. The study further depicts a universal concern among local schoolteachers that

if students are provided with quality vocational job-oriented opportunities in schools, it's much more likely that high dropout tendencies among these students could be reduced while parents feel encouraged to send children to school as they anticipate economic returns within a short span of children's education.

In a nutshell, vocationalism in schools promotes social inclusion. Pavlova and Maclean (2013) argue that the aim of vocationalisation at school is to promote social inclusion of less privileged groups in education and training, narrow the educational gaps and avoid social fragmentation. Similarly, Lills and Hogan (1983) maintain that vocational education aims to alleviate unemployment, reorient student attitudes towards rural society, halt urban migration, and transmit skills and attitudes useful in employment. Tilak (2007) too opines that vocational education is an antidote to urban-biased elite education, promotes equity with a rural bias, and serves the need of the relatively poor. On vocationalisation of education, Balogh (1969) argues that it promotes rural socio-economic prosperity. Vocationalism in school education also provides an opportunity to economically weak students to start their career at a relatively early stage as skilled workers just after the completion of schooling. Weisberg (1983) stated that "vocational education is a logical, effective way of integrating those at the bottom of the economic heap into the mainstream" (p. 356). According to Lauglo (2005), countries pursuing social democratic, and populist policies on education favoured the inclusion of practical and vocational subjects to break down social class barriers and encourage respect for manual labour. All these studies present the great potential of vocational education for promoting social-economic upliftment, especially among disadvantaged youth.

Countries such as China, Japan, South Korea, Switzerland, Germany, and Australia among others, demonstrate successful vocational programme intervention at the school level. In these countries, vocational intervention takes in two different forms: exclusive vocational schools and diversified secondary schools running general academic courses and vocational courses. In stark contrast, as Tilak (1988) observed, there are no such exclusive vocational schools at the school level in South Asian countries, including India, Bhutan, Nepal, and so on. These countries have vocational education in the form of diversified courses at secondary levels, while exclusive vocational programmes are offered at technical institutes, that require completion of secondary school education. Lauglo (2005) expressed that in these countries, the curriculum of vocationalised secondary education is overwhelmingly general or academic in nature, while including vocational or practical subjects as a minor portion of the students' timetable during the secondary school course. Whereas, in developed countries, there is a difference between school-based vocational education and vocationalisation of school education. The school-based vocational education has the practical-skills dominated curriculum and less academic curriculum, whereas vocationalised school education has fewer practical skills curriculum and more general stream curriculum. Vocationalised school education has a smaller number of vocational subjects in the curriculum. Most South Asian countries follow the model of diversified courses with fewer practical skills curriculum with general academic course in the name of vocationalisation of secondary education. In contrast to South Asian countries, Shavit, and Muller (2000) observed that in practice, most of the world's education systems maintains a distinction between academic/general education and vocational education

at the secondary level. The academic/general secondary education prepares students for college and universities, and vocational education prepares students for immediate entry into the labour market. Most South Asian countries like India, Nepal, and Bangladesh are more focused on the vocationalisation of secondary education than the exclusive vocational secondary school.

1.2 Vocational Education at the School Level in India: Policy Trajectories

India has had a long history of TVET programmes that have been the primary avenues for skills training through short courses that enable students' entry in labour market. In 1976, the National Council of Educational Research and Training (NCERT) provided a document, "Higher Secondary Education and Its Vocationalization" for the integration of vocational courses at the level of higher secondary education. The document emphasised vocational education streams along with the academic streams at the level of senior secondary education. The document recommends that at least three to four schools with relevant facilities for vocational education should be open in each district during the five-year plan and all the senior secondary schools should offer vocational education during the sixth five-year plan. Later, the Ishwarbhai Committee, 1977 categorically recommended the compulsory introduction of Socially Useful Productive Work (SUPW) at the secondary schools. In 1978, a national review committee was setup under the chairmanship of Macolm S. Adiseshiah with the title, 'LEARNING TO DO' for reviewing the plus two curriculum of school education. The Committee was appointed mainly for higher secondary education with special reference to

vocationalisation of higher secondary education while recommending SUPW for school level. Yet, overall enrolment for vocational education at secondary education was lowest at 0.7% against 99.3% in general education in 1975. By the year 1986, there were 1760 schools with provision for vocational courses. Among the states, Maharashtra had the maximum vocational courses such as 46 for students at the +2 stage, while Delhi as union territory, with 21 vocational courses topped the list of union territories. The POA 1992, as a follow up of NPE 1986, provided framework for achieving vocational coverage of 10% of higher secondary students by 1995 and 25% by 2000. As an outcome of these policy efforts, over 17 ministerial departments ran 70 plus schemes of vocational courses covering a wide area of occupational trades including agriculture, health, technology, engineering, paramedical services and so on. On the downside, as noted by POA1992, due to highly fragmented, unregulated, and underdeveloped structure and poor management of these departments, both at national and state level, vocationalisation of secondary education scheme remained a policy failure.

Over the recent decades, especially in 2000s, policy discourse on vocational education has deliberately sought to re-define the notion of relevant skills and rethink the mechanisms for training. Two of the most widely cited reports on higher education, the National Knowledge Commission Report (2006-2009) and the Yash Pal Committee Report (2008), noted with concern that 'skill deficit' is among the toughest challenges for India's education sector, which has witnessed dramatic expansion over the years. The 'skills deficit' is also considered a major hindrance to India's economic development and growth. Also, of late, vocational education has been increasingly recognised as a key

conduit to address the persisting skill gaps and employability of youth by making it an integral part of higher education system. In this context, a renewed emphasis on skill development within the government at different levels as well as the private sector has sought to frame the questions of skills, knowledge and employability in two distinct ways:1), recent policy initiatives have sought to bridge the distance between academic and vocational tracks of education; and 2), the skill development enterprise has opened up a broad range of actors that have been encouraged to get involved though arrangements such as public-private partnerships and corporate social responsibility initiatives. The formation of the National Skill Development Agency (NSDA), National Skill Development Corporation (NSDC) and several connecting agencies active in skills training, development, and quality assurance across a wide range of unorganised and organised sectors illustrates the growing importance placed on relevant skills training across various sectors. The need for skilling India's young population is reflected in government policy initiatives and documents such as the creation of Ministry of Skill Development and Entrepreneurship along with the introduction of the skill universities across the country. The new skill India initiative has made visible strides in some sectors of few Indian states.

National Knowledge Commission (NKC) 2006-2009

Among policy developments in VET provisioning, the NKC was the first commission to recommend rebranding the name of vocation to skill development. Other significant recommendations of the commission are increasing flexibility of VET within the mainstream education system, expand capacity through innovative delivery models including robust public-private partnerships, enhance

training options for the unorganised and informal sector workers by ensuring a robust regulatory and accreditation framework, and provide easier pathways for mobility into higher education streams seamlessly. Also, NKC deliberated strategies to strengthen both long-term and short-term skilling goals by placing VET under the MHRD to avoid fragmented management and recommended for setting up of Vocational Education Planning and Development to formulate strategy; advise the government and undertake research and development related to technology and workforce. Another significant recommendation is increasing flexibility of VET within mainstream education system through retaining some aspects of general education to enable students to return to mainstream education, acknowledge distinct tracks for students of educational attainments in Industrial Training Institutes (ITIs) and polytechnics; criteria of multiple entry and exit options in vocational education stream; linkages between vocational education stream, school education and higher education while specific skill training to be introduced at the primary and secondary levels; opening vocational training opportunity at various literacy and adult education centres; introduction of lifelong skill up-gradation and a provision for generating a cadre of multi-skilled persons and monitoring the impact of vocational education. Increasing resource allocation to vocational education, strengthening of existing institutions, and ensuring a regulatory and accreditation framework were other significant recommendations of NKC. These policy shifts necessitated the government of India in adopting new skill policy directions wherein VET is programmed as one of the key conduits through which the persisting skill gaps could be plugged by making :1) VET an integral component of higher national education system; and 2) make VET attractive and competitive to meet specific skill demands at local, national, and international

requirements. As paradigm shift, currently, policy attempts are in place, with a drastic restructuring of VET sector to suit specific local, national, and international skill needs.

Eleventh Five Year Plan (2007-12)

As stated in five-year plan 2015, it was not until the eleventh five-year plan (2007-12) of the Govt. of India that there was adequate focus on measures and efforts to strengthen vocational education and training programme. FYP 2007-2012 provided a detailed road map to improve various aspects of skill development both in terms of quality and quantity and harmonise various skill development initiatives of different key players. The eleventh five-year plan proposed a "Coordinated Action on Skill Development", which was subsequently approved by cabinet in May 2008 (Planning Commission, 2008). The Coordinated Action on Skill Development set up a three-tier institutional structure consisting of the PM's National Council on Skill Development, the National Skill Development Coordination Board (NSDCB), and the National Skill Development Corporation (NSDC) under the Ministry of Finance. Formulating objectives, governance, financing model, strategizing skill development, providing guidelines and reviews of several skill related schemes, and coordination of different initiatives such as public/private sector interface and so on are the main objectives of NSCD. Figure 2 shows the structure of Prime Minister's NCSD design.

The National Skill Development Coordination Board (NSDCB) is entrusted with coordinating and harmonising skill development efforts of different Central Ministries/Departments and States. The main aim of the NSDCB is to provide suitable strategies for implementing decisions of National Skill Development Council, establish a national database and skill inventory on a web portal, coordinating and establishment of a

Figure 2. Structure of National Council on Skill Development

Source: https://www.voced.edu.au/content/ngv%3A51609
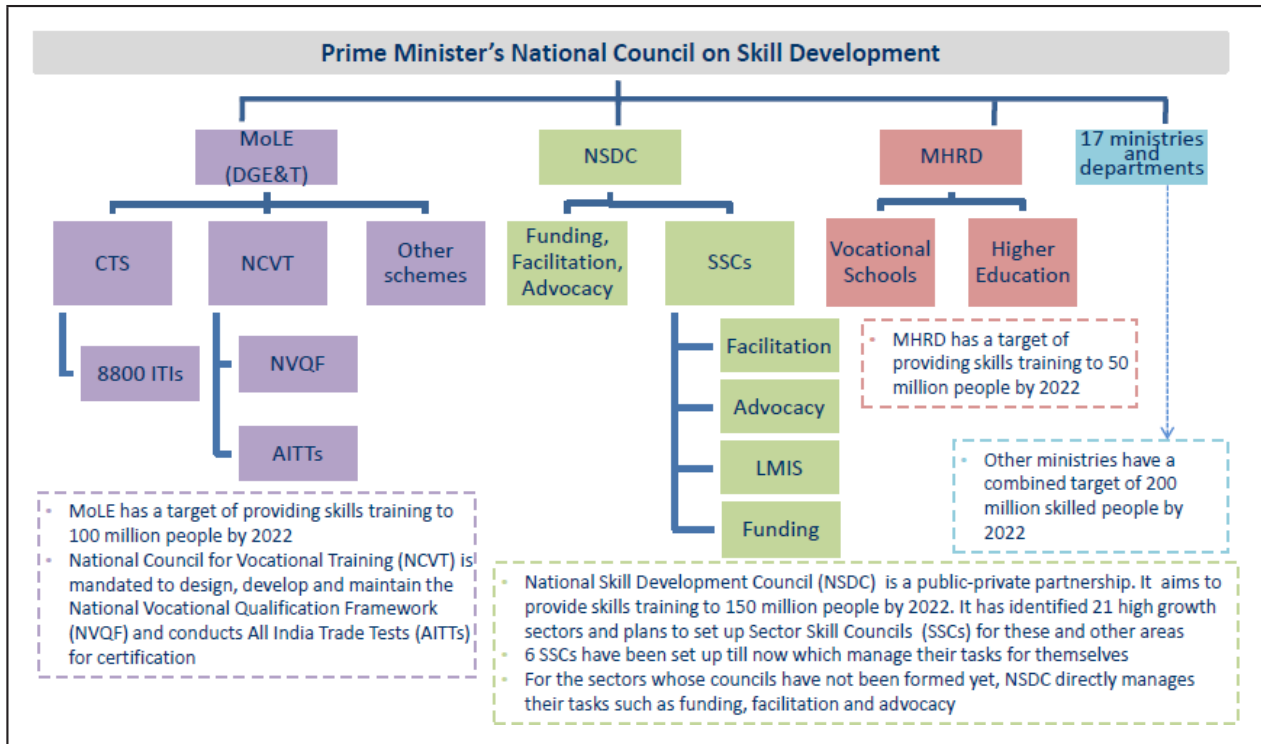
"credible accreditation system" and a guidance framework for all accrediting agencies. National Skill Development Corporation (NSDC) is a non-profitable public-private partnership-based company, established to catalyse the setting-up of large scale, sustainable vocational institutions in the country, by encouraging private sector participation and providing low-cost funding for training capacity. Other major steps taken for vocational education during the eleventh five-year plan include the formation of National Skill Development Policy, 2009. The aim of the National Skill Development Policy was to create 500 million skilled workforces by 2022 and 15 million work force every year to meet the requirement of both organised and unorganised sector. The three-tier structure together facilitates implementation of skill development on the ground through three main channels: central ministries, the state governments, and private and public training organisations. The three-

tier structure was subsumed under National Skill Development Agency (NSDA). NSDA is an autonomous body that coordinates and harmonises all skill development efforts of both public and private sectors to achieve the skilling targets of the 12th Five Year Plan and beyond.

Vocationalisation of Secondary and Higher Education Scheme and National Vocational Education Qualification Framework (NVEQF) 2012

Vocationalisation of Secondary and Higher Secondary Education Scheme mandates vocational education as an integral component of general education. The policy aims to enhance employability of youth through demand driven competency based vocational skills by employing several national and state designed frameworks to implement vocationalisation of secondary education, linking vocational education and employment

in various skill sectors with the help of key stakeholders in public-private mission mode. Based on a pilot study on National Vocational Education Qualification Framework (NVEQF) in Haryana, the scheme of vocationalisation of secondary education was revised, in which the scheme was formulated as vocationalisation of secondary and higher secondary education. The scheme was then subsequently subsumed under Rashtriya Madhyamik Shiksa Abhiyan (RMSA, 2009). The new policy not only introduces vocational education for the first time, nationally, at the secondary level, but also seeks to integrate vocational education with general education, mainly to enhance employability of youth through modular vocational courses imparting demand driven skill competency. Its components include introduction of vocational education from Grade 9 onwards in government schools, aided- recognised and un-aided private schools. Under this scheme, vocational modules are offered as additional or compulsory subjects at secondary stage, which are compulsory at higher

secondary level. The policy is implemented on financial sharing mode (75:25) between Centre and States. For implementation of vocational courses, National Skill Development Corporation is mandated to conduct skill gap analysis across states and union territories, while parents and students' aspirations are prioritised at the time of skilling individual students in particular trades. Special priority is given by focusing on schools located in educationally backward blocks, violence-affected districts, and districts with high dropout rates at the secondary level.

NVEQF is another crucial framework in preparing skilled persons for vocations/trades in organised and un-organised sectors. Partnering institutions in implementing NVEQF are ITIs, Polytechnics, Skill Development Centres, Accredited Vocational Education and Training Centres of NIOS. As seen in Table 1, NVEQF architecture depicts multiple career pathways.

Table 1: Architecture of National Vocational Education Qualification Framework

Level	Certificate	Equivalence	Equivalence	Certifying Body
10	NCC 8	Degree	Doctorate	University and SSC
9 8	NCC7 NCC6	PG Diploma	Master's degree	University and SSC
7 6	NCC5 NCC4	Advanced Diploma	Bachelor's Degree	Board of Technical Education and SSC, University and SSC
5 4 3	NCC3 NCC2 NCC*1	Diploma	Grade X11 Grade X1	Board of Technical Education and SSC, School Board and SSC
2	NCWP2	Grade X	Grade X	School Board and SSC
1	NCWP*1	Grade 1X	Grade 1X	School Board and SSC
RPL*	RPL2 RPL1	Grade V111 Grade V	Grade V111 Grade V	NIOS/State Open schools and SSC NIOS/State Open Schools and SSC*

Source: https://www.aicte-india.org/downloads/NVEQF_Notification_MHRD_GOI.pdf

RPL*: Recognition of Prior Learning
NCC*: National Competency Certificate
NCWP*: National Certification for Work Participation
SSC*: Sector Skill Council

Important functions of NVEQF are described below:

- Formulate national principles for providing vocational education leading to international equivalency.
- Facilitate multiple entry and exit between vocational education, general education, and job markets.
- Interface between industry-training-education centres, credit framework, accumulation, and transfer of credits & accreditation of skill knowledge, assessment, certification, and quality assurance.

According to the NVEQF framework, NCWP1, NCWP 2, NCC1, and NCC2 are tools for certifying students. These bodies, in consultation with Sector Skills Councils (SSCs), develop credit framework for each job role and level of learning to meet the dual objectives of achieving skill competencies of a particular level and general education learning requirements of equivalent level. As indicated in Table 1, through NVEQF, vocational students at the +2 level have access to vocational courses at first degree diploma programmes offered by polytechnics and universities and colleges to facilitate their pathway to the highest degree, i.e., upto doctorate level, in which the process is facilitated by the School Education Department, Department of Higher & Technical Education. In addition, as a catalyst of promoting vocational courses, students of +2 level are provided with apprenticeship training, which is implemented through Boards of Apprenticeship Training (BOAT) at Mumbai, Kolkata, Chennai, and Kanpur.

NVEQF thus provides the framework that organises qualifications according to a series of levels, defined in terms of learning outcomes such as competencies which a learner acquires regardless of formal / non-formal / informal education or training acquisition. Qualifications are made up of National Occupational Standards (NOS) for specific areas of learning units to inform stakeholders such as learners, education and skill training providers, and employers about the broad equivalence of qualifications across specific skill sectors. Financial assistance is provided for vocational courses when developed in reference to notified NOS. NOS for each job roles are laid down by Sector Skill Councils (SSCs). The curriculum for vocational courses is developed in reference to the NOS/ Qualification Packs (QPs) developed by SSCs. Pandit Sunder Lal Sharma Central Institute of Vocational Education (PSSCIVE), Bhopal is responsible for developing exemplar curricula for quality assurance and relevance of the course. While school principals act as chief coordinators, schoolteachers and skill trainers are trained to implement courses on need basis. Industry too plays an important role in providing master trainers and resource persons for various vocational courses in schools under the guidelines framed by PSSCIVE/NCTE (National Council of Technical Education), whereas, specialised practical work and training can be taught in commercial and industrial establishments, ITIs, Polytechnics, Community Colleges, hospitals, farms and so on.

The new policy framework on vocationalisation of education is strategically a breakaway from the previous existing system by allowing flexibility and creativity in its structure, management, and delivery through democratisation and participation by all stakeholders such as Ministry of Human Resource Development, Departments from Central, State and Union Territories, Industry-business establishments such as FICCI (Federation of Indian Chambers of Commerce and Industry), Confederation of Indian Industry (CII), Associated Chambers of Commerce

and Industry of India (ASSOCHAM), schools, parents, students, PSSCIVE, NIOS, and representatives from National Skill Development agency. The new policy framework is a carefully crafted design to meet challenges of fast changing national and international markets, multi-skill demands, and societal aspirations from education. With these policy developments in place, vocationalisation of secondary and higher secondary education was again restructured by the Govt. of India in February 2014, to align it with the National Skill Qualification Framework into which the NVEQF model has been merged. The main objectives of the revised centrally sponsored scheme of vocationalisation of secondary education and higher secondary education are: i) to enhance the employability of youth through demand-driven competency based modular vocational courses; ii) to maintain their competitiveness through provisions of multi-entry multi-exist learning opportunity and vertical mobility/interchangeability in qualifications; iii) to fill the gap between educated youth and unemployment, and (iv) to reduce dropout rate at the secondary level.

Meanwhile, the Ministry of Skill Development & Entrepreneurship (MSDE) 2015 was established to achieve the vision of a "skilled India" through providing skills on a large scale in fast pace with high standards. The MSDE department has great responsibility of coordinating all skill development efforts across India by different Central Ministries/Departments and States and the National Skill Development Corporation (NSDC), minimising the demand and supply gap of skilled manpower, and preparing vocational and training framework. In the same year, the Ministry prepared a policy document entitled, "National Policy on Skill Development and Entrepreneurship", with the objective of meeting the challenges of skilling at scale, speed, and standard (quality). It provides an umbrella framework of all skilling activities being carried out within the country and aligns them with common standards. In addition to laying down the objectives and expected outcomes, it will endeavour to identify the various institutional frameworks which can act as the vehicle to reach the expected outcomes. The national policy will also provide clarity and coherence on how skill development efforts across the country can be aligned within the existing institutional arrangements and link skills development to improve employability and productivity as demanded by industries/markets.

Sustainable Development Goals and India's Strategy for Technical and Vocational Education and Training (TVET)

The Sustainable Development Goals, popularly known as SDGs, also known as the Global Goals, were adopted by the United Nations in 2015, as a universal call to action to address 3Ps: people, planet, and prosperity. More specifically, SDGs call for ending poverty, protecting the planet, and ensuring that the global community enjoys peace and prosperity by 2030. India is among 196 countries that adopted SDGs at the UN General Assembly. There are altogether 17 SDGs addressing economic, social, and environmental dimensions. These SDGs are indivisible in nature and interrelated. Also, the UN identified an indicative set of 232 distinct global indicators for monitoring the SDGs. In this direction, the Govt. of India, under the Ministry of Statistics and Programme Implementation, developed a National Indicator Framework (NIF) comprising about 300 national indicators of the performance and progress on the SDGs both at the national and state levels.

The 2030 Agenda, amongst others, underlined the need for inclusive quality education, which is comprehensively addressed under Goal No. 4 of SDGs. The agenda asserts that providing quality

education for all is fundamental to creating a peaceful and prosperous world. It is education that ensures people get the knowledge and desired skills needed to get employment, stay healthy, and foster tolerance for all. Regarding the emphasis given to TVET, the agenda has the following salient features achievable by 2030:

- **Target 4.3** Ensure equal access to affordable and quality technical, vocational, and tertiary education, including university education for all women and men.

- **Target 4.4** Substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

- **Target 4.5** End gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples, and children in vulnerable situations.

- **Target 4.7** Ensure that all learners acquire the knowledge and skills needed to promote sustainable development through education for sustainable development and lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development.

National Education Policy (NEP) 2020

NEP 2020, with a special chapter on vocational education entitled "Re-imagining vocational education", brings the focus back on vocational programme in school education. NEP 2020 is a bold step in declaring a sense of urgency of restoring vocational education in its rightful status in school education. The policy recognises that one vital role of formal education is to impart gainful skills to enable students earn decent income for sustainable livelihood when they enter adulthood. Along with this chapter, several parts of the policy also refer to vocational education. NEP 2020, in line with the SDG 2030 Agenda, has committed to significantly expand TVET to promote livelihoods and social justice for all through quality lifelong learning opportunities. Unlike the previous education policies—NPE 1968, NPE 1986, and POA 1992, the NEP 2020 pays considerable attention to vocational programme integration in all educational institutions such as schools, colleges, and universities to bring a sea change in skill landscape and help leverage its multiple benefits to individuals and society.

On vocational provision in school education, the salient provisions of NEP 2020 are delineated below:

- 50% of secondary students to have exposure to vocational education. The goal is set to be achieved by 2025. Hence NEP 2020 has a much more ambitious targeted goal than any other previous education policy.

- The NEP shows broad based liberal education at school level and continues to higher education, while allowing students access to vocational subjects.

- Minimise hard separation between vocational and academic streams to reduce hierarchies among different areas of learning opportunities.

- Incorporate physical education, art & craft, and vocational skills courses throughout school curriculum.

- It also recommended that students of Grades 6-8 take a fun course in multiple vocations and gain hands-on experience of few selected vocational crafts based on the needs of local communities, which connects students to one's own local community/resources and enable students to address local challenges.

- Support secondary students of Grades 9-12 to take up at least one vocational course covering NSQF levels (1-4).

- The policy also recommended that all students participate in a 10-days bagless period during which the students intern with local vocational expert.

- Under NEP 2020, special short training provision is made available for hiring local eminent persons to teach at schools as a master instructor in vocational sub-fields.

- Vocational education to be integrated into the educational offerings of all secondary schools in a phased manner over the next decade with schools collaborating with industry stakeholders such as ITIs, polytechnics, and local industries.

- Higher education institutions to offer vocational education either on their own or in partnership with industry and NGOs.

- Conduct short-term certificate courses in various skills including soft skills.

Keeping the above vision, NEP 2020, with its targeted goal of imparting quality vocational education to 50% of India's secondary learners, has directed state schools to integrate vocational programmes and establish skill-labs in a hub-and-spoke model through which skilling and employment opportunity of adolescent youth could be generated. The goal clearly has its trickle-down effects among potential school drop outs, thereby preventing them from leaving school mid-way. Also as stated in the policy articulation, NEP 2020 mandates to bring about progressive reforms in the education sector by improving teaching-learning aids in schools, improve planning and implementation of programmes, coordination with stakeholders, research and innovation, training, and capacity building, and reaching out directly to disadvantaged sections of society.

1.3 Status of Provisioning of Techincal and Vocational Education and Training (TVET) at School Level in India

India has vocational and training education system that represents the single most significant area in which educational policy must attempt to make a breakthrough. In this direction, the policy trends and developments clearly reveal renewed commitment to integrate vocational programme in school education. Since the early 1990s, secondary schools (Grades XI and XII) in India have been engaged in the provision of vocational education. Of late, to scale up with speed in skilling youth in India, concerned departments, and ministries of the government of India have taken up programmes such as Pradhan Mantri Kaushal Vikas Yojana; SWADES; Seekho aur Kamao; Jan Shikshan Sansthan; Sankalp; Udaan; School Initiatives and Higher education; Craftsman Training Scheme; Vocational Training programme for Women; vocationalisation of school education, and so on. Some of these programmes and schemes are at the school level and some schemes/programmes are running as informal training schemes. For example, the aim of Jan Shikshan Sansthan scheme is

to raise the efficiency, productive ability, and livelihood opportunity of the non/neo literates, school drop out learners and persons having rudimentary level of education up to Grade 8 through improving their occupational skills and technical knowledge. These efforts have made notable progress in the skilling of workforce. As per the NSDC report (2022), there are 538 NSDC training partners and 10373 training centers offering 1500+ job roles. These training partners and centers are managed by 38 sector skill councils. As informed by the report, these centers trained 20.45 lakhs students, of which 1.86 lakhs students got placement or employed.

Vocationalisation of school education is one of the leading skilling schemes for school going adolescent students. The scheme is implemented under the umbrella of integrated scheme for school education—"Samagra Shiksha Abhiyan". The scheme has provisions of vocational education for students from Grades VI to XII. Students from Grades VI to VIII must get exposure and orientation of vocational education, which helps them to choose their subjects in higher Grades. At the secondary level i.e., Grades IX and X, students study vocational modules as an additional subject while at the senior secondary level, i.e., Grade XI and XII,

Table 2: Scheme of Studies at Secondary Level (Grade IX/X) and Senior Secondary Level (Grade XI/XII)

Scheme of studies at secondary level (grade IX/X)	
Subjects	**Description of Subjects**
Compulsory	Language 1
	Language 2
	Science
	Mathematics
	Social Science
Optional	Skill Subject
	Language 3/Any academic subjects other than those opted above
Subjects of Internal Assessments	Art education Health & Physical Education (work education subsumed)
Scheme of studies at senior secondary level (grade XI/XII)	
Subject I	Language 1: Hindi or English
Subject II	Language 2: Language other than Language 1 Or elective subjects from academic elective
Subject III, IV, & V	Two elective subjects from academic elective and one skill subject from skill elective or One elective subject from academic elective and two skill subjects from skill elective Three skill subjects from skill elective or Three Academic elective
Subject VI Additional Subject (Optional)	One language at elective level or one subjects from academic elective or skill elective
Subjects VII to VIII (Internal Assessments)	General foundation course Health & Physical Education (work education subsumed)

Source: https://cbseacademic.nic.in/skill-education.html

students study vocational subject as compulsory (elective) subjects. The scheme of studies at secondary and senior secondary level as per the CBSE framework is shown in Table 2.

List of optional skill subjects at the secondary level and elective skill subjects at senior secondary level are provided in Tables 3 and 4 presented in the current paper.

The curriculum of vocationalisation of school education provides practical engagement provisions such as field visits, hands-on-training, guest lectures from industry, on-the-job training for students in industrial set up and apprenticeship training facility for students passing out with vocational subjects. Another mandatory part of the curriculum of vocational courses is employability skills module. The employability skills module focuses on self-management skills, communication skills, information and communication technology skills, entrepreneurship skills, etc. To date, the scheme covers 55 job roles in 19 skill sectors—

Table 3: Skill Subjects Offered at Secondary Levels

Sl. No.	SUB CODE	COURSE NAME	JOB ROLES
1	401	Retail	Store Operations Assistant
2	402	Information Technology	Domestic IT Executive/ Operator
3	403	Security	Unarmed Security Guard
4	404	Automotive	Automotive Service Technician
5	405	Introduction To Financial Markets	Business Correspondent
6	406	Introduction To Tourism	Assistant Tour Guide
7	407	Beauty & Wellness	Assistant Beauty Therapist
8	408	Agriculture	Solanaceous Crop Cultivator
9	409	Food Production	Assistant Chef (reg.)
10	410	Front Office Operations	Front Office Executive
11	411	Banking & Insurance	Field Executive
12	412	Marketing & Sales	Marketing Assistant
13	413	Health Care	General Duty Assistant
14	414	Apparel	Hand Embroider
15	415	Multi Media	Texture Artist
16	416	Multi Skill Foundation course	Multi Skill Assistant
17	417	Artificial Intelligence	
18	418	Physical Activity Trainer	Early Years Physical Activity Facilitator
19	419	Data Science	
20	420	Electronics & Hardware (NEW)	Field Technician – Other Home Appliances
21	421	Foundation Skills for Sciences (Pharmaceutical & Biotechnology) (NEW)	
22	422	Design Thinking & Innovation (NEW)	

Source: https://cbseacademic.nic.in/skill-education.html

Table 4: Skill Subjects Offered at Senior Secondary Levels

Sl. No.	SUB. CODE	NAME	JOB ROLES
1	801	Retail	Sales Associate
2	802	Information Technology	IT Helpdesk Assistant
3	803	Web Application	Web Developer
4	804	Automotive	Automotive Service Technician
5	805	Financial Markets Management	Equity Dealer/ Mutual Fund Agent
6	806	Tourism	Tour Guide
7	807	Beauty & Wellness	Beauty Therapist
8	808	Agriculture	Agriculture Extension Worker
9	809	Food Production	Trainee
10	810	Front Office Operations	Counter Sales Executive
11	811	Banking	Sales Executive (Banking product)
12	812	Marketing	Marketing Executive
13	813	Health Care	General Duty Assistant
14	814	Insurance	Sales Executive (Insurance)
15	816	Horticulture	Floriculturist / Entrepreneur
16	817	Typography & Comp. Application	Executive Assistant
17	818	Geospatial Technology	GIS Operator
18	819	Electrical Technology	Field Technician /Home Appliances
19	820	Electronic Technology	Installation Technician
20	821	Multi-Media	Animator
21	822	Taxation	Asst. Tax Consultant/GST Acc. Asst.
22	823	Cost Accounting	Jr. Accountant
23	824	Office Procedures & Practices	Executive Assistant
24	825	Shorthand (English)	Stenographer
25	826	Shorthand (Hindi)	Stenographer
26	827	Air-conditioning & Refrigeration	Service Technician
27	828	Medical Diagnostics	Medical Lab Technician
28	829	Textile Design	Design Assistant (Apparel/Textile)
29	830	Design	Assistant Designer
30	831	Salesmanship	Sales Executive
31	833	Business Administration	Business Executive
32	834	Food Nutrition & Dietetics	Assistant Dietician
33	835	Mass Media Studies	Media Assistant
34	836	Library & Information Science	Library Assistant
35	837	Fashion Studies	Assistant Fashion Designer
36	841	Yoga	Yoga Instructor
37	842	Early Childhood Care & Education	Early Childhood Educator

Sl. No.	SUB. CODE	NAME	JOB ROLES
38	843	Artificial Intelligence	
39	844	Data Science	
40	845	Physical Activity Trainer (NEW)	Primary Years Physical Activity Facilitator
41	846	Land Transportation Associate (NEW)	Land Transportation Associate
42	847	Electronics & Hardware (NEW)	Installation Technician – Computing and Peripherals
43	848	Design Thinking & Innovation (NEW)	

Source: https://cbseacademic.nic.in/skill-education.html

Information Technology / Information Technology Enabled services (IT/ITeS), Agriculture, Telecom, Tourism & Hospitality, Banking, Finance and Insurance Service, Physical Education & Sports, Apparel Made ups & Home Furnishing, Automotive, Beauty and Wellness, Power Retail, Construction, Electronics & Hardware, Healthcare, Media & Entertainment, Multi- Skilling, Plumber, Security, and Transportation Logistics & Warehousing (Ministry of Education, 2022). CBSE offers 11 different skill modules for students learning in Grades VI to VII and 22 different skill subjects for students learning in Grades IX and X. At the senior secondary level, a total of 43 different skills subjects are being offered. Few skill modules such as coding and data science have been added from Grade VIII onwards.

The Pandit Sunder Lal Sharma Central Institute of Vocational Education (PSSCIVE), a constituent unit of NCERT is the nodal agency for curriculum and courseware development of the vocational courses. The PSSCIVE prepares curriculum and courseware in consultation with the representative bodies of Sector Skill Councils (SSCs). The SSCs is an autonomous industry led body setup under the NSDC for creating occupational standards and qualification, conducting skill gap studies, and developing competency framework. Currently, 38 sector skill councils are operational to maintain vocational education in their respective sectors. Some of these sectors actively operational are Apparel Made-Ups & Home Furnishing Sector Skill Council, Beauty and Wellness Sector Skill Council, Aerospace and Aviation Sector Skill Council, Agriculture Skill Council of India, Capital Goods Sector Skill Council, Automotive Skill Development Council, and BFSI Sector Skill Council.

Apart from provisioning of TVET in schools at different levels, Govt. of India has taken several initiatives and steps such as introducing skill-based activities from pre-school to Grade XII; vocational interest inventory in Grade VIII and Skill Based Aptitude Test (SBAT) in Grade X for student career guidance; and "LOKVIDYA" (indigenous knowledge and skills in schools through vocational education). Under this initiative, local vocational crafts are identified for organising internship for students on indigenous practices; new technologies are integrated into VET for preparing students for industry 4.0; new learning methods and digital tools like Massive Open Online Courses (MOOCs) and Flipped Classroom, and virtual learning methods are also introduced to ensure vertical mobility of students with vocational subjects at school and higher levels of learning(PSSCIVE, 2022).

Another recently launched scheme related to vocational education is "Skill-Hub" initiatives 2022 under the Pradhan Mantri Kaushal Vikas Yojana 3.0 (PMKVY 3.0). As stated in the PMKVY 3.0 report, the Skill-Hub initiatives is a joint programme of the Ministry of Education and Ministry of Skill Development and Entrepreneurship with the main objective to orient education towards skills and create industry fit skilled workforce. Skill-Hubs operate as nodal centers for providing skill and vocational training by targeting students of Grade VI to XII, school drop outs, and out of education candidates. Another aim of the Skill-Hub initiatives is implementing skilling of students at different levels of learning, orientation, industry visits, and bagless days scheme of Grades VI-VIII students as an introduction to the world of work; exposing IX-XII students to skill development avenues; and apprenticeship and employment linkage for school drop outs and out of school students. Till now a total of 1946 Skill-Hubs are operating with 332 different job roles. Most of these skill-Hubs are partnering with Kendriya Vidyala or Jawahar Navodya Vidyalya.

Table 5: Status of States with Vocational Education Implemented in Schools.

India / State/ UT	Number of Secondary and Higher Secondary Schools	Number of Secondary and Higher Secondary Schools with Vocational Courses Under NSQF at Secondary/ Higher Secondary Level	Total Enrolment under NSQF at Secondary/ Higher Secondary Level	GER at Secondary Level	GER at Higher Secondary Level
India	291466	12292 (4.21%)	1013996 (1.53%)	79.8	53.8
Andaman and Nicobar Islands	121	49 (40.49%)	5781 (26.70%)	78.2	49.9
Andhra Pradesh	15183	476 (3.13%)	40137 (1.78%)	84.2	53.4
Arunachal Pradesh	476	99 (20.79%)	11067 (15.18%)	68.2	41.1
Assam	9823	339 (3.45%)	20249 (1.38%)	75.6	32.3
Bihar	12334	0(0%)	0	63.5	34
Chandigarh	169	28 (16.56%)	4157 (5%)	86.2	57.6
Chhattisgarh	7275	546 (7.50%)	67893 (4.33%)	86.2	57.6
Dadra & Nagar Haveli	99	9 (9.09%)	911 (2.99%)	77.0	45.0
Delhi	2157	347 (16.08%)	72734 (5.48%)	116.3	82.1
Goa	526	121 (23.03%)	5923 (6.65%)	91.1	69.9
Gujarat	12709	252 (1.98%)	14386 (0.50%)	78.6	41.8
Haryana	8522	1074 (12.60%)	91587 (5.51%)	95.2	66.8
Himachal Pradesh	4259	953 (22.37%)	42074 (9.60%)	100.4	85.6
Jammu and Kashmir	4405	714 (16.20%)	44782 (7.29%)	59.8	50.1
Jharkhand	4961	440 (8.86%)	25698 (1.50%)	63.0	43.9
Karnataka	21068	203 (0.96%)	9119 (0.29%)	90.6	55.6
Kerala	4921	233 (4.73%)	300 (0.01%)	97.6	84.2
Ladakh	161	28 (17.39%)	1151 (8.49%)	58.7	48.5
Lakshadweep	15	0(0%)	0	77.7	67.6

India / State/ UT	Number of Secondary and Higher Secondary Schools	Number of Secondary and Higher Secondary Schools with Vocational Courses Under NSQF at Secondary/ Higher Secondary Level	Total Enrolment under NSQF at Secondary/ Higher Secondary Level	GER at Secondary Level	GER at Higher Secondary Level
Madhya Pradesh	17904	1200 (6.70%)	112084 (3.00%)	71.3	45.4
Maharashtra	28505	661 (2.31%)	49395 (0.75%)	92.6	68.2
Manipur	1214	97 (9.99%)	6945 (4.30%)	75.7	61.2
Meghalaya	1827	22 (1.20%)	1413 (0.80%)	84.9	41.1
Mizoram	900	46 (5.11%)	2411 (3.70%)	91.6	54.1
Nagaland	778	26 (3.34%)	1633 (1.83%)	59.7	33.7
Odisha	11969	953 (7.96%)	78336 (3.78%)	84.5	46.4
Puducherry	385	9 (2.33%)	822 (1.07%)	78.9	67.8
Punjab	9653	989 (10.2%)	84826 (4.78%)	109.2	77.8
Rajasthan	31463	905 (2.87%)	98698 (2.16%)	84.8	62.1
Sikkim	266	194 (72.93%)	14581 (36.34%)	90.0	59.5
Tamil Nadu	13891	120 (0.86%)	18695 (0.49%)	92.6	76.5
Telangana	14554	194 (1.33%)	19865 (1.04%)	92.3	61.8
Tripura	1157	135 (11.66%)	4917 (2.81%)	78.9	45.8
Uttar Pradesh	33196	161 (0.481%)	2192 (0.02%)	66.4	48.8
Uttarakhand	3930	0	0	91.5	72.7
West Bengal	10690	669 (6.25%)	59234 (1.22%)	91.2	58.5

Source: UDISE+ (2020-21)

As depicted in Table 5, under the vocationalisation of school education scheme, the total number of secondary and higher secondary schools having vocational courses under NSQF at secondary and higher secondary level is 12292, accounting for 4.21% of the total number of secondary and higher secondary schools. The data also shows that two states such as Bihar and Uttarakhand, and one union territory such as Lakshadweep do not have secondary and higher secondary schools offering vocational courses. Among the states having vocational courses at the school level, the state of Sikkim has the highest percentage share, 72.93% of secondary and higher secondary schools with vocational courses under NSQF. Out of 28 states and eight union territories, 16 states including Maharashtra, Karnataka, Rajasthan, Uttar Pradesh and one union territory

have less than the national average of 4.21% secondary and higher secondary schools with vocational courses under NSQF with a dismal enrolment rate at 1.53% of the total enrolment in secondary and senior secondary level, while, states such as Bihar and Uttarakhand and union territory, Lakshadweep have no enrolment at the secondary and senior secondary level. The state of Sikkim outperforms other states, with an impressive enrolment rate of 36.34% at secondary and senior secondary level.

Table 6 depicts percentage share of budgetary allocation to vocational programme at the secondary level during 2017-2020. The data indicates that the percentage share allotted to vocational programme during 2017-18 and 2018-19 was as low as 0.02% which was further

Table 6: Budgeted Expenditure on Secondary Education (Revenue Account) - Vocational Education (2017-2020)

(Rupees In thousands)

Sl. No.	State / Union Territory	2017-18 (Actual)	% Age to Total Exp. on Secondary Education	2018-19 (Revised Estimate)	% Age to Total Exp. on Secondary Education	2019-20 (Budget Estimate)	% Age to Total Exp. on Secondary Education
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Andhra Pradesh	0	0.00	0	0.00	0	0.00
2	Arunachal Pradesh	0	0.00	0	0.00	0	0.00
3	Assam	0	0.00	0	0.00	0	0.00
4	Bihar	60000	0.20	50000	0.12	10000	0.02
5	Chhattisgarh	0	0.00	0	0.00	0	0.00
6	Goa	0	0.00	0	0.00	0	0.00
7	Gujarat	156293	0.33	201075	0.35	203945	0.33
8	Haryana	0	0.00	0	0.00	0	0.00
9	Himachal Pradesh	0	0.00	0	0.00	0	0.00
10	Jammu & Kashmir	0	0.00	0	0.00	0	0.00
11	Jharkhand	0	0.00	0	0.00	0	0.00
12	Karnataka	0	0.00	0	0.00	0	0.00
13	Kerala	0	0.00	0	0.00	0	0.00
14	Madhya Pradesh	0	0.00	0	0.00	0	0.00
15	Maharashtra	0	0.00	0	0.00	0	0.00
16	Manipur	0	0.00	0	0.00	0	0.00
17	Meghalaya	0	0.00	0	0.00	0	0.00
18	Mizoram	0	0.00	0	0.00	0	0.00
19	Nagaland	0	0.00	0	0.00	0	0.00
20	Odisha	0	0.00	0	0..00	0	0.00
21	Punjab	0	0.00	0	0.00	0	0.00
22	Rajasthan	0	0.00	0	0.00	0	0.00
23	Sikkim	0	0.00	0	0.00	0	0.00
24	Tamil Nadu	0	0.00	0	0.00	0	0.00
25	Telangana	0	0.00	0	0.00	0	0.00
26	Tripura	20510	0.21	22706	0.18	25162	0.20
27	Uttarakhand	1800	0.01	8234	0.03	3580	0.01
28	Uttar Pradesh	0	0.00	0	0.00	0	0.00
29	West Bengal	0	0.00	0	0.00	0	0.00
	Total States	**238603**	**0.02**	**282015**	**0.02**	**242687**	**0.01**
30	A & N Islands	0	0.00	0	0.00	0	0.00
31	Chandigarh	0	0.00	0	0.00	0	0.00

Sl. No.	State / Union Territory	2017-18 (Actual)	% Age to Total Exp. on Secondary Education	2018-19 (Revised Estimate)	% Age to Total Exp. on Secondary Education	2019-20 (Budget Estimate)	% Age to Total Exp. on Secondary Education
32	Dadra & Nagar Haveli	0	0.00	0	0.00	0	0.00
33	Daman & Diu	0	0.00	0	0.00	0	0.00
34	Delhi	0	0.00	0	0.00	0	0.00
35	Lakshadweep	0	0.00	0	0.00	0	0.00
36	Puducherry	0	0.00	0	0.00	0	0.00
	Total U.T	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**
	Total (State & UTs)	**238603**	**0.02**	**282015**	**0.02**	**242687**	**0.01**

Source: https://www.education.gov.in/sites/upload_files/mhrd/files/statisticsnew/Analysis_of_Budgeted_Expenditure_on_Education_2018-2020.pdf

Table 7: States Classified Based on (2016-17 onwards) Budget Provisions in the Vocational Education Heads at the Secondary and Senior Secondary Level.

2016-17	2017-18	2018-19	2019-20
Gujarat, Mizoram, Nagaland	Bihar, Gujarat, Mizoram, Uttarakhand, Delhi	Bihar, Gujarat, Tripura, Uttarakhand	Bihar, Gujarat, Tripura, Uttarakhand

Source: Based on Table 6 and Analysis of Budgeted Expenditure on Education, 2016-2018.

declined to 0.01% during 2019-20. It's also seen that only a few states and union territories have provisions of budget allocation for vocational education at the secondary level.

As indicated in Table 7, only a few Indian states have budget provision for vocational education heads at the secondary level. In 2016-17, only three states such as Gujarat, Mizoram and Nagaland had a budget provision. In 2017-18, the number marginally increased to four states and one union territory such as Bihar, Gujarat, Mizoram, Uttarakhand, and Delhi. In 2018-19 and 2019-20 only four states such as Bihar, Gujarat, Tripura, and Uttarakhand had budget provisions for vocational education at secondary level. From 2017-18 onwards, states such as Bihar, Gujarat, Tripura and Uttarakhand are shown having budget allocation.

1.4 Implementation of Technical and Vocational Education and Training (TVET) Provision at School Level: Success Stories

1.4.1 Vocational Education at the School Level in Haryana

The state of Haryana has been proactive in implementing different central government schemes related to vocational education, in addition to effective implementation of different skill schemes targeting youth population in the state. Haryana started the scheme of vocationalisation of secondary education as a pilot project in 2012-13. Recently, the state announced to make skill development as compulsory subjects for students of Grades IX to XII (The Financial

Express, 2022). Haryana also took up impressive skill development initiatives that every school must have such as "Skill Passbook", "Catchup Programs", and "Class Readiness Programme". The Govt. of Haryana is also making efforts to raise corporate social responsibility fund (CSR) for the school education and vocational education courses in schools. In attempting to achieve these goals, different NGOs are working in collaboration with the education department, Govt. of Haryana. The main NGOs include SRF foundation, Udaan-girls residential programme, Bharti foundation, and Humana People to People India (HPPI). HPPI mainly focuses on teacher training programme based on 560 step-up centres in government primary schools. Other NGOs such as Aparajitha foundation, Central for Science of Students Learning, Maruti Suzuki India Limited, etc. (Govt. of Haryana, 2017) are also working to facilitate vocational-school interface drive. In the year 2022, Haryana School Shiksha Pariyojna Parishad introduced vocational

Table 8: Vocational Sector Wise Enrolment of Students at Secondary and Higher Secondary Level in Haryana during Academic Year 2016-17 and 2017-18

State / UT	Sector	2016-17						2017-18					
		Secondary (IX-X)			Higher Secondary (XI-XII)			Secondary (IX-X)			Higher Secondary (XI-XII)		
		Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Haryana	Agriculture	2353	1094	3447	0	0	0	3079	1465	4544	140	111	251
	Apparel	179	421	600	0	0	0	176	896	1072	0	0	0
	Automotive	5524	406	5930	581	20	601	6186	565	6751	1304	145	1449
	Banking Financial Services and Insurance (BFSI)	1013	632	1645	16	20	36	1698	1225	2923	5	6	11
	Beauty & Wellness	652	9998	10650	38	1871	1909	698	11231	11929	113	2358	2471
	Capital Goods	0	0	0	0	0	0	0	48	48	0	10	10
	Electronics	0	0	0	0	0	0	0	58	58	0	26	26
	Healthcare	2812	6765	9577	341	1001	1342	3390	8221	11611	494	1618	2112
	IT-ITES	11643	10226	21869	1052	1415	2467	15689	14789	30478	1592	2228	3820
	Logistics	0	0	0	0	0	0	37	28	65	0	0	0
	Media & Entertainment	340	325	665	0	0	0	314	442	756	27	60	87
	MultiSkilling	0	0	0	0	0	0	0	0		0	0	0
	Retail	2222	2670	4892	271	765	1036	2880	3165	6045	388	1032	1420
	Security	2429	514	2943	422	80	502	2767	679	3446	482	96	578
	Sports	3908	1976	5884	631	122	753	4545	2577	7122	880	485	1365
	Telecom	23	34	57	0	0	0	18	28	46	0	0	0
	Tourism & Hospitality	964	508	1472	0	0	0	0	0	0	0	0	0
	No Response	0	0	0	0	0	0	13	47	60	0	0	0

Source: https://educationforallinindia.com/wp-content/uploads/2021/04/School-Education-in-India-Flash-Statistics-2017-18-NIEPA.pdf

education in alignment with National Skill Qualification Framework (NSQF) in 112 newly selected government schools for the academic session 2022-23. As per the UDISE report (2020-2021), the state of Haryana has a total of 1074 secondary and higher secondary schools having vocational courses under NSQF and accounts approximately 12.60% of the total number of secondary and higher secondary schools in the state. These schools provide basic training to students on 15 skill sectors—agriculture, apparel, automotive, beauty & wellness, Banking financial service & insurance, health care, IT, retail, physical education, private security, tourism and hospitality, media & entertainment, plumbing, power, and construction (NSQF Haryana, 2022).

Table 8 indicates various vocational sector enrolment wise of students at secondary and higher secondary levels of education during 2016-2018. As notified on June 27, 2022, the state of Haryana, under Haryana School Shiksha Pariyojna Parishad, provides specific directive actions to school principals serving in schools with NSQF. These directive actions to be taken up by school principals broadly include the following activities:

• Conducting awareness programme among students, communities and parents regarding each skill allocated under vocational education of their concerned school.

• Schools to ensure that aptitude of the students is ascertained, and at least 40 students should be enrolled in each skill allotted under vocational education in level-1 for Grade IX.

• To allot one room for each of the skills introduced in their schools under vocational education, which would be used as a workshop.

• Allocation of slot in school timetable for the skill subjects under vocational education.

• To ensure effective linkage with industry for conducting various activities such as arrangement of guest lecture, field visits, on job training/ internship and so on.

1.4.2 Vocational Education at the School Level in Himachal Pradesh

The state of Himachal Pradesh since the academic session 2013-14, provided vocational education programme from Grades IX to XII in schools under NSQF. As per the UDISE report (2020-21), during the academic session 2020-21, under the vocationalisation of school education scheme, 953 schools having vocational education courses under NSQF registered a total of 42074 students in vocational programme. In these schools, a total of 2019 vocational trainers provide vocational training skills in 15 different vocational trades. Under the vocationalisation of school education scheme, 411 guest lectures and 97 industry visits were completed. The Govt. of Himachal Pradesh provides other skill initiatives such as Kaushal Vikas Bhatta targeting unemployed youth of the state. The scheme basically aims to provide allowance to educated unemployed persons for skill upgradation. Under the scheme, Rs. 1500/-per month for persons with disability and Rs.1000/-per month for others is allotted. The maximum duration of allowance is 24 months. Under the vocationalisation of school education provision in the state, apprenticeship and on-job-training facilities are also provided to deserving students. The apprenticeship training is a part of the scheme of vocationalisation of school education and is provided to students below 18 years of age. The apprenticeship scheme helps students to start up for own vocational training programme. Internship/on-

Table 9: List of Sectors (job role wise) for Vocational Education Schools in Himachal Pradesh (2020-21)

Sl. No.	Sector	Job Role for Class IX &X	QPCode	Job Role for Class XI & XII	QP Code
1	Agriculture	Paddy Farmer	AGR/Q0101	Floriculturist (Open Cultivation)	AGR/Q0701
2	Automotive	Automotive Service Technician L-3	ASCJQ1401	Automotive Service Technician L-4	ASC/Q1402
3	Healthcare	Home Health Aide	HSS/Q5102	General Duty Assistant	HSS/Q5101
4	IT/JTES	Domestic Data Entry Operator	SSC/Q2212	Junior Software Developer	SSC/Q0508 SSC/Q0508
5	Media and Entertainment	Story Board Artist	MES/Q0507	Texturing Artist	MES/Q2503
6	Retail	Store Operations Assistant	RAS/Q0101	Sales Associates	RAS/Q0104
7	Physical Education	Early Years Physical Activity Facilitator	SPF/Q4004	Primary Years Physical Activity Facilitator	SPF/Q4005
8	Private Security	Unarmed Security Guard	MEP/Q7101	**JOB ROLE NOT RECEIVED**	**QP CODE NOT RECEIVED**
9	Telecom	Optical Fiber Splicer	TEL/Q6400	Optical Fiber Technician	TEL/Q6401
10	Tourism and Hospitality	Food and Beverages Service Trainee	THC/Q0307	Tour Guide	THC/Q4502
11	Banking, Financial Services & Insurance	Microfinance Executive	BSC/Q2401	Business Correspondent & Business facilitator	BSC/Q8401
12	Apparels, Made ups & Home Furnishing	Sewing Machine Operator	AMH/Q0301	Specialized Sewing Machine Operator	AMH/Q2301
13	Beauty & Wellness	Assistant Beauty Therapist	BWS/Q0101	Beauty Therapist	BWS/Q0102
14	Electronics and Hardware	Field Technician - other Home Appliances	ELE/Q3104	Field Technician - Wireman Control Panel	ELE/Q7302
15	Plumber	Plumber (General)	PSC/Q0104	Plumber (General-II)	PSC/Q0110

Source: https://nsqfhp.org/uploads/noticeboard/13911950452consolidated_job_roles_2020.pdf

job training is another essential component of vocationalisation of school education scheme in the state. Under the scheme, it is expected that a student must undergo a minimum 80 hours of internship/on-job training in a job role. The provision of internship/on-job training is helpful for students in getting exposure to the world of work, training in relevant skills, and experiences in the field of vocational courses, and help them in smooth transition from school to work for employment (NSQF HP, 2022). From the academic session 2020-21, 15 different job sectors related to vocational courses were offered at the secondary and senior secondary levels of education. As indicated in Table 9, the job sectors are similar both at secondary and senior secondary levels of education, but the job roles are different.

1.4.3 Vocational Education at the School Level in Goa

In implementing the National Skills Qualification Framework, the union territory of Goa introduced vocational education courses in 38

government schools under the NSQF during 2014-2015. A total of 2086 students of Grade 1X enrolled in vocational education at level 1 of the NSQF in four different sectors such as Automobile, IT/ITeS, Healthcare and Retail. A total of 44 vocational instructors were appointed in all these 38 schools. During the same academic year, an awareness workshop was conducted for 2000 teachers highlighting the benefit of vocationalisation of school education. In Goa, the number of students enrolled in vocational courses has been gradually increasing. During 2015-16 academic year, 1161 NSQF students appeared in skill examination, and 1053 students cleared the examination. In the subsequent academic year 2016-17, the number of students who appeared in the skill examination increased to 1782, and the corresponding number of students who passed the examination also increased to 1775 (NSQF Goa, 2022). Interestingly, out of 1053 students who passed in 2015-16 academic session, 153 students passed the examination because the students passed in six vocational subjects out of seven subjects that students opted for under NSQF. The number of students who passed the examination was 202 during the academic session 2016-17. The Goa experience clearly indicates that successful

Table 10: Vocational Sector Wise Enrolment of Students at Secondary and Higher Secondary level in Goa during 2016-17 and 2017-18.

State / UT	Sector	2016-17						2017-18					
		Secondary (IX-X)			Higher Secondary (XI-XII)			Secondary (IX-X)			Higher Secondary (XI-XII)		
		Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Goa	Agriculture	159	142	301	0	0	0	145	157	302	2	5	7
	Apparel	60	129	189	0	0	0	41	116	157	0	0	0
	Automotive	648	23	671	0	0	0	796	126	922	46	0	46
	Beauty & Wellness	16	54	70	0	0	0	22	62	84	0	0	0
	Banking Financial Services and Insurance (BFSI)	0	60	60	0	0	0	0	56	56	0	12	12
	Construction	104	23	127	0	0	0	113	24	137	0	0	0
	Electronics	27	0	27	0	0	0	58	0	58	0	0	0
	Healthcare	106	627	733	0	0	0	110	813	923	0	7	7
	IT-ITES	465	305	770	17	20	37	408	280	688	19	29	48
	Logistics	78	120	198	0	0	0	89	120	209	0	0	0
	Media & Entertainment	51	29	80	0	0	0	66	53	119	0	0	0
	Retail	215	135	350	3	3	6	209	135	344	12	26	38
	Sports	164	92	256	0	0	0	170	103	273	0	0	0
	Telecom	28	56	84	0	0	0	1	43	44	0	0	0
	Tourism & Hospitality	185	139	324	0	0	0	185	164	349	2	0	2
	No Response							12	9	21	0	0	0

Source: https://educationforallinindia.com/wp-content/uploads/2021/04/School-Education-in-India-Flash-Statistics-2017-18-NIEPA.pdf

interposing of vocationalism in school education not only equips students with skills but also helps students in completing certain meaningful level of education. Table 10 indicates vocational sector wise enrolment of students at secondary and higher secondary stages during 2016-2018. During 2016-17, vocational courses were offered in 15 different job sectors that increased to16 different job sectors at the school level during the period 2017-2018. During the same period, the student enrolment rate was found higher particularly in automation and retail sectors.

In Goa, since the academic year 2020-21, a total of 121 secondary and senior secondary schools,

accounting for approximately 23.03% of the total secondary and senior secondary schools came under NSQF. Under the scheme, NSQF instructors organise field visits for students, invite resource persons to conduct training on current job role, and organise job exhibitions by involving NSQF students. Also, there are 12 sector skill councils actively involved in vocationalisation of school education in Goa. These sector skills councils are Tourism and Hospitality Council, Automotive Skills Development Council, Agriculture Skill Council of India, Beauty & Wellness Sector Skill Council, Construction Skill Development Council of India, Logistic Sector Skill Council, IT-ITes

Table11: Skill Sectors Offered under National Skills Qualifications Framework for Grades 1X, X, X1 and X11 in Goa

Sl. No.	Grade IX & X		Grade XI & XII	
	Sector	Job Role	Sector	Job Role
1	Automotive	Automotive Service Technician	Automotive	Automotive Service Technician
2	IT/ITeS	Domestic Data Entry Operator	IT/ITeS	Domestic CRM Voice
3	Retail	Store Operations Assistant	Retail	Sales Associate
4	Tourism & Hospitality	House Keeping Attendant Food and Beverage Service Trainee	Tourism & Hospitality	Customer Service Executive Tour Guide
5	Agriculture	Solanaceous Crop Paddy farmer	Agriculture	Gardener Floriculturist Open Cultivator
6	Beauty & Wellness	Assistant Beauty Therapist	Beauty & Wellness	Beauty Therapist
7	Telecom	Telecom	Telecom	Telecom
8	Electronics	Field Technician – Other Home Appliances	Electronics	Field Technician – Computing and Peripherals Installation Technician – Computing and Peripherals
9	Construction	Assistant Mason	Construction	General Mason
10	Plumbing	Plumber	Plumbing	Plumber II
11	Apparel, Made-Ups & Home Furnishing	Sewing Machine Operator	Apparel, Made-Ups & Home Furnishing	Self Employed Tailor
12	Logistics Management	Warehouse quality checker	Logistics Management	Documentation Assistant
13			Health Care	General Duty Assistant
14			Media & Entertainment	Texturing Artist

Source: https://www.gssnsqf.in/academics/programmes-offered

Sector Skill Council, Healthcare Sector Skill Council, Retailers Association's Skill Council of India, Electronics Sector Skills Council of India, Media & Entertainment Skill Council and Telecom Sector Council (https://www.gssnsqf.in/academics/sector-skill-council)NSQF, Goa,2022). Table11 indicates different skill sectors offered from Grade IX to XII. It further shows that there are 12 skill courses available for Grades IX and XII, while 14 skill sectors are provided at Grades XI and XII.

1.4.4 Vocational Education at the School Level in Sikkim

Recently, the state of Sikkim has notched up in its performance of skilling youth. In 2009, the state established the State Institute of Capacity Building (SICB) to train and skill manpower (Govt. of Sikkim, 2022). The SICB looks after vocational training courses related to livelihood skill programme. In addition, the state also has several schemes related to skill development programmes such as the Chief Minister's self-employment scheme; training for the educated unemployed youth; and comprehensive educational loan scheme. These schemes are implemented through Sikkim Industrial Development & Investment Corporation Ltd. (SIDCO). In 2009, Sikkim established 31 livelihood schools. Currently there are 41 such skill schools. It's reported that all the livelihood schools function efficiently under the guidance of SICB. These schools along with SICB have become centres for youth to learn about their strengths, needs and aspirations, and facilitate in preparing youth for successful life (Govt. of Sikkim, 2022). These schools have tie-up with other institutions like the Indian Institute of Entrepreneurship (IIE), IGNOU, Northeast Rural Livelihood Project (NERLP), Ministry of Development of North East Region, Dimensions research & training service private limited, and

Northeastern Regional Agriculture Marketing Corporation Limited (NERAMAC). These schools operate in sectors such as Construction, Logistic, Retail, Electronics & IT & ITeS, Hospitality & Tourism, Aviation, Beauty & Wellness, Medical and Nursing, and Automotive. The minimum qualification for admission in this course is Grade V level. The Govt. of Sikkim also initiated different skill development schemes like craftmanship training scheme, apprenticeship training scheme, Chief Minister's Start-Up scheme, Sikkim state model career counselling centres, modular employable skills etc. to provide vocational training for early school leavers and existing workers, especially in unorganised sector to improve their employability (Gupta, Sharma & Jha, 2017).

1.4.5 Vocational Education at the School Level in Delhi

Delhi, the national capital of India implemented NSQF from the academic year 2014-15. According to the UDISE 2020-21 report, out of the total 2157 secondary and senior secondary schools, 347 secondary and higher secondary schools offer vocational courses under the NSQF scheme. A total of 72734 secondary and senior secondary students, accounting for 5.48% students were enrolled in vocational courses at the secondary and senior secondary levels. Since 2018-19 academic year, 605 vocational trainers have been engaged in all the secondary and higher secondary schools offering vocational courses under NSQF. Under this scheme, the Govt. of Delhi provided students with a workbook and facilitator manual related to general employability skills. During the 2018-19 academic session, a total of 2164 industrial visits, 10365 guest lectures and 4-day in-service training of vocational trainers were conducted under the vocationalisation of school education scheme. During the academic session 2017-18,

boot camp was organised in all the secondary and senior secondary schools under the NSQF scheme. The major focus in the boot camp was on soft-skills training, general employability skills, mock interviews, and preparation of curriculum vitae. Skill competition and career conclave were also organised to provide guidance to thousands of students on educational and employment prospects in vocational fields (Samagra Shiksha Abhiyan, Delhi, 2022). In the academic year 2019-20, 6454 students completed internship for a period of 10-15 days during summer/winter vacations. The main objective of the internship is to make students understand the world of work, make informed career choices, gain confidence in finding employment and so on. For successful completion of the internship programme, different steps were taken such as providing training and capacity building of vocational trainers and vocational coordinators, regular monitoring of the internship through field visits and online data collection, organising internship competition for Grade XII students to share their experience of internship and submit a report of internship programme in an online portal. A state level internship celebration event was also organised where all the stakeholders such as vocational trainers, school heads, employers, students, and parents participated and shared their experiences.

During the 2019-20 academic session, NSQF schools conducted multi-skills foundation course. The course is a two-year multi-skill job and life-skills training programme that integrates vocational training with secondary education curriculum to introduce secondary school students to the world of work. The multi-skill programme covers four courses such as basic engineering (wielding, carpentry, fabrication, plumbing, etc.), energy and environment (electrical wiring, solar energy, biogas), home and health (nutrition, hygiene, basic health care)/food processing technique, and gardening, nursery, & agriculture techniques (Samagra Siksha Abhiyan, Delhi, 2022). As a part of the course, a mobile lab/workshop bus, named "Skills on Wheels" and with all the necessary tools and equipment related to the multi-skill foundation course, was allotted to all the schools to demonstrate practically, and orient the students towards vocational courses while spreading awareness about vocational programme courses in schools.

These recent developments in skill initiatives undertaken by different states and union territories clearly indicate that there has been notable progress made in skilling initiatives at the school level. These states and union territories have responded with commitment and enthusiasm towards the skilling of students through competency based vocational skills by employing nationally and state-designed frameworks to implement vocationalisation of school education on public–private mission mode by involving several key stakeholders. As illustrated by the successful models of these states and union territories, interposing vocational skills in school spurs channels for training in emerging skills, and facilitate job opportunities for adolescent students while retaining them in schools for longer duration. However, these success stories are limited only to a few select states and union territories. State apathy, coupled with a lack of appropriate capacity systems to respond to multiple needs and demands continue to pose a daunting challenge in implementing the policy of vocationalisation of school education in several Indian states. As such, majority of the Indian states and union territories remain non-committal with lukewarm response to the massive skilling initiatives launched by the Govt. of India to implement skilling initiatives at the school level in a significant way.

1.5 International Perspectives

Industrialised countries such as Germany, Australia, Switzerland, Finland, Austria, Denmark, Norway, Japan, South Korea, Singapore, Japan, China and so on supported vocational education at the school level on a large scale since the 1970s. These countries have different types of vocational education systems at the school level, for example, Germany has dual system of vocational education that encompasses school education with apprenticeship training (Hoffman and Schwartz, 2015), Singapore's success story of 'experiential learning programme' (Tucker, 2012), China's model 'factories in schools' or 'schools in factories' (Ministry of Education, People's Republic of China, 2019) etc. Successful vocational education systems at the school level in some of the industrialised countries are explained below.

1.5.1 Finland

Finland has compulsory education system from Grade I to IX. During these stages, the education system follows common school curriculum. Compulsory education begins at the age of seven and completes at 16 or 17. The compulsory education is divided into two parts: 1) primary education from Grade I to VI in the age group of 7 to 12 and 2) lower secondary education from Grade VII to IX in the age group of 13 to 16. After the completion of compulsory education, students of senior secondary have the option to opt for either general programme or Initial VET (IVET) programme. There is an additional one voluntary year provision in between the junior secondary education and senior secondary education for students who want to improve their grades and prepare for the vocational education programme. The general academic upper secondary education program focuses on preparing students for higher education, while the IVET focusses on skill preparation for students. IVET offers 53 different programmes based on specific trades or occupations (Haltia, Bouret and Jauhiainen, 2022).

Figure 3 depicts structure of education system in Finland, highlighting successful interface between vocational programmes and general education at different levels of education. In Finland education system, it is noted that the transition rate from junior secondary education to upper secondary education is very high, approximately, at 95%. Out of total students enrolled at upper secondary level, 42% students select the IVET programme (Cedefop, 2019). The upper secondary education programme is made free of cost, including free meal provision for all students. The duration of IVET programme is three years. After completion of IVET, students can opt for higher education or specialised vocational education or join the world of work. Higher education system in Finland is divided into two groups based on the academic and professional tracks. These are vocational/professional universities of applied sciences and academic research universities. Both types of learners i.e., general upper secondary education or vocational upper secondary education are eligible for both types of higher education. Haltia et al (2022) observe that the opportunity provided to IVET students to enter higher education system plays an important role for high enrolment in the IVET programme among the students. After VET reforms in 2018, Finland made it mandatory that a VET learner provides personal competence development plan within the first week of the programme. Students prepare the plan with the guidance and support from career guidance counsellor and teacher, while representatives from industry are also involved in the process. Every type of VET programme provides work-based learning opportunity for learners. The

Figure 3. Structure of Education System in Finland

Source: https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/finland-u2
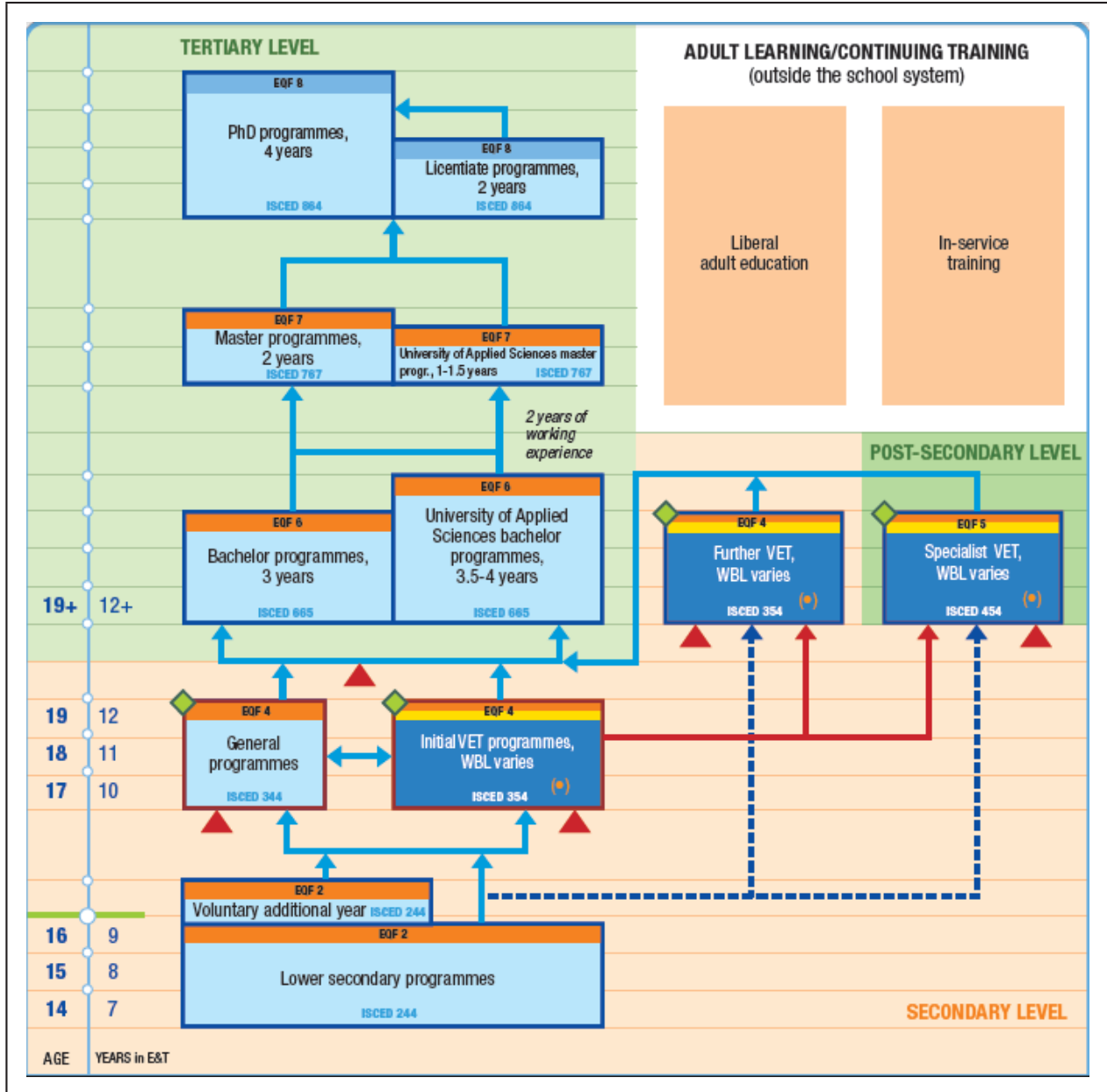
opportunity is provided mainly in companies/ industries. All learners of IVET programme take part in work-based learning (WBL) either through training agreement with company or apprenticeship training. The duration of the WBL is dependent on the learner's personal competence development plan. In the training agreement type of WBL, there is employment-employee relationship between the company and the learner. In the case of apprenticeship training, learners have a fixed time employment contract with stipend facility. In Finland, a greater number of students opt for WBL mode than general academic course. Finland model illustrates good synergy and partnership between schools, IVET, and industry sector.
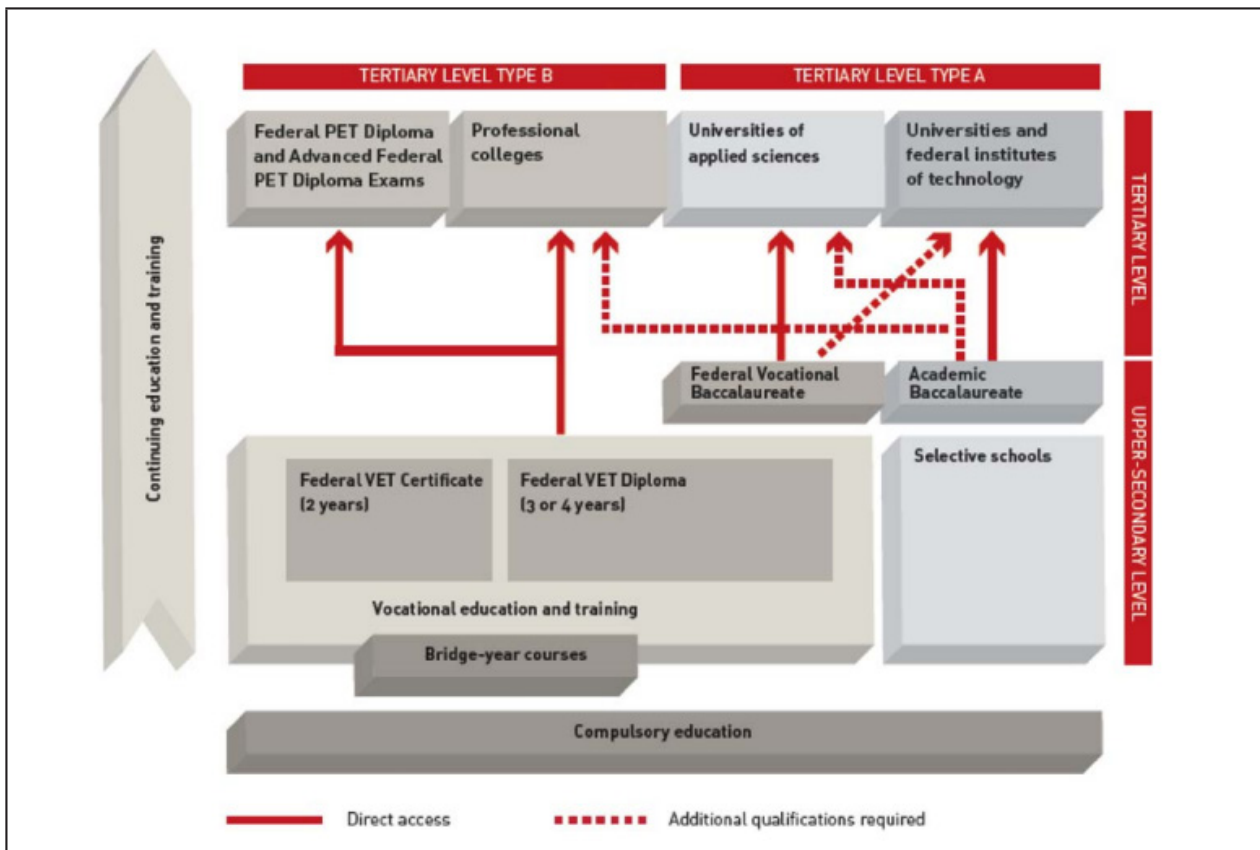
1.5.2 Switzerland

Switzerland has nine years of compulsory schooling, also known as *Volksschule*, comprising primary and junior secondary schools. The compulsory education in Switzerland is divided into two parts: 1) *Primarschule*, comprising first six years starting from Grade 1 to 6, and 2) *Oberstufenschule*, comprising Grades 7 to 9. *Oberstufenschule*, which is junior secondary education, is channelled into three different junior secondary school sections: "*Sekundarschule*", "*Realschule*", and "*Oberschule*". The allocation of students in these different sections is based on their prior achievements and learning potentials (Stadler & Nagele, 2011). After completion of junior secondary education, students have two broad upper secondary options: academic and vocational. The selection at upper secondary education level is based on the student performance and choice of the students. The completion rate at the senior secondary level is approximately 90% (Stadler& Nagele,2011; OECD,2020; Switzerland Global Enterprises, 2019). There are 240 different types of occupational courses run under vocational schools at the senior secondary level (Hoffman and Schwartz, 2015). Vocational education at the senior secondary education is of two types—dual mode of vocational education and full-time vocational schools.

Figure 4 depicts the structure of education system in Switzerland indicating the blend of general and vocational education system at school level.

Figure 4. Structure of Education System in Switzerland

Source: https://www.researchgate.net/publication/233149919_Two-year_apprenticeships_-_a_successful_model_of_training/figures?lo=1

In Switzerland, the dual system is quite popular among aspiring students. According to Stadler & Nagele (2011), five out of six vocational education students choose the dual system, with only one opting for a full-time vocational course. In the dual system of vocational education, students spend one to two days a week in schools and three to four days in apprenticeship. The apprenticeship scheme in vocational education increases the quality of training imparted to students. To sustain motivation, these apprentices are paid an average monthly wage starting from $600. During this apprenticeship, students rotate among three learning sites—workplaces, intercompany courses, and schools. Special arrangements are also made to provide special provision of one year course to bridge the gaps in training for students who could not get the position in the dual system of vocational education after completing junior secondary school.

1.5.3 Germany

Like Switzerland, Germany has nine years of compulsory education. But, in Germany, compulsory education starts at the age of six. Compulsory education consists of primary education starting from Grade 1 to 4 and lower secondary education from Grade 5 to 9. Figure 5 depicts elaborate educational structure in Germany. As indicated in the figure, after the completion of primary education, students can choose options in terms of different types of schools such as Grammar school, Intermediate school, or Secondary general school. Grammar school is mostly academic type of schools that basically focus on higher education. Intermediate schools focus on preparing students for the world of work; while Secondary general school provides basic education (Cockrill & Scott, 1997; Schneider, Krause and Woll,2007). At the upper secondary level, almost 50% of learners choose vocational education and training programme. It is at the upper secondary stage that different types of vocational training programme facilities are made available. These are transition programmes combining general education programmes with vocational orientation, school-based VET programmes and Dual VET programmes. In transition programmes, different types of small duration courses like pre-vocational training year (one year training course), basic vocational training year, and introductory training (6 to 12 months traineeship) are provided to students.

In general education programme with vocational orientation, there are two to three courses offered at *berufliches Gymnasium* type of schools. This programme focuses mainly on agricultural economy, technology, or themes on economy. On completion of this programme, learners can acquire a higher education qualification. The school-based VET programme is a one to three years course that offers full-time vocational schools, known as *Berufsfachschule*. Another type of vocational education programme at the level of senior secondary is the dual system of vocational education, where students learn skills at two venues such as vocational school and company. The dual system of vocational education in Germany is based on the cooperation between key stakeholders—state, private sectors, and other social partners (BIBB, 2022). The dual system of vocational education system prepares students to be both employees and students at the same time. Based on skills/occupation aspirations, students enter a training contract with a company and work as apprenticeship in the company. After the completion of apprenticeship, a final examination is conducted by chambers after which students are awarded certificate. In Germany, vocational students attend vocational schools for one to two days in a week and work as an apprentice

Figure 5. Structure of Education System in Germany
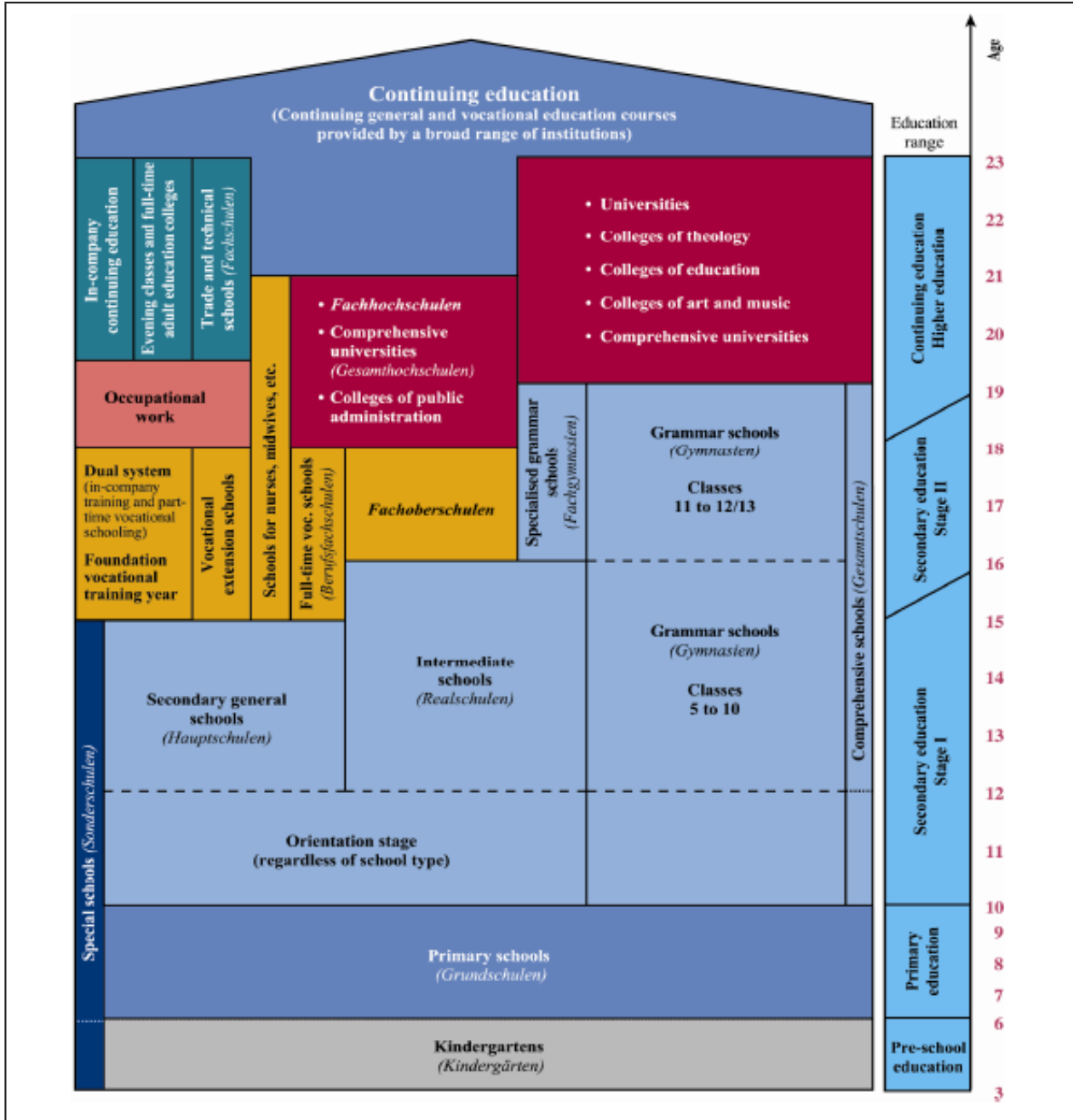
Source: https://www.cedefop.europa.eu/files/5173_en.pdf

in their chosen field for the remaining days. The dual system has been proved more effective and likable with more than 67% of the total vocational enrolled students opting for the dual vocational education training programme (Cedefop, 2020; NSCD, 2020).

1.5.4 China

The Chinese school education system consists of six years of primary education (Grades I-VI), three years of junior secondary education (Grades VII-IX), and three years of senior secondary education (Grades X-XII). The junior secondary

school and the senior secondary education have two types of education systems— general education secondary school and vocational school. The junior secondary vocational schools provide basic professional knowledge and skills. These schools are generally located in economically less developed rural areas (Wang, 2017). At the senior secondary level, there are three types of TVET schools— secondary specialised schools, skilled workers schools, and agriculture vocational schools. The aim of secondary specialised schools is to produce intermediate technicians, administrators, and elementary school teachers. The duration of this type of schools is generally three to four years. Skilled workers' schools are responsible to train beginners and intermediate level technicians. As opined by Wang (2017), vocational high schools are mostly transformed from general high school and provides three year duration training for technicians and service workers. Yuan and Wang (2021) argue that in China, more than 90% of students in secondary vocational schools are exempted from the burden of tuition fees. The Ministry of Education is mainly responsible for the formal TVET system, but, other ministries and departments including the Ministry of Human Resources and Social Security, and Ministry of Agriculture form active partners directly or indirectly in China's vocational education system at the school level. Significantly, it should be noted that China has a vocational education law1996, for implementing 'national development strategy' such as strategy of rejuvenating China through science and education to enhance the quality of labour force and further modernise China. The Chinese law mandates vocational education as an important component of the national education system to modernise China, and is directed mainly to boost employment, and social-economic development (UNESCO, 2022). China promulgated a national vocational education reform implementation

plan. To implement the plan, Ministry of Education revised the Vocational Education Law of the Republic of China (Yuan and Wang, 2021). China continuously expanded the secondary vocational schooling, especially over the past two decades (Yi et al, 2013) to embark on a journey of socio-economic development with inclusive growth. The republic of China currently has the world's largest vocational education system (Ministry of Education, People's Republic of China, 2019). The Chinese education system is well equipped to provide extensive training, adequate capacity for large-scale training of technicians and skilled workforces, serving as an essential lever for accelerating China's economic and social development.

1.5.5 Japan

Historically, Japan has a strong link between education and its national development. Japan strongly believes that its economic well-being is built on school outcomes. The Japanese education system consists of six years of primary education (Grades 1-6); three years of junior secondary education (Grades 7-9); and three years of senior secondary education (Grades 10-12) (Ministry of Education, Culture, Sports, Science and Technology, 2023). The structure of school education system and TVET provisioning at different levels of school education in Japan is explained in Figure 6. The compulsory education for all consists of primary education, known as *shōgakkō* and junior secondary grades or *chūgakkō,* falling in the age group of 6-15. Junior secondary education students, after completing compulsory education can either enter work life or move to the three-year senior secondary school known as *kōtō gakkō.* At the senior secondary level, students are provided three options to choose—General, Specialised, and Integrated courses. General courses provide mainly general education that are suited for both types of learners who wish

to go for further higher education or who prefer to get a job without specific vocational training. Specialised courses basically offer vocational or specialised education in different occupational fields such as agriculture, industry, fishery, music, art, physical education, nursing, and others for those students who have chosen a particular vocational area based on student interest. Integrated courses offer a combination of both general and vocationalised subjects to respond and satisfy students exhibiting diverse interests, abilities, aptitudes, and future career plans. Apart from the above types of schools, a new type of six-years secondary education was introduced in 1999 that combines lower secondary education and upper secondary education with specialised education (Ministry of Education, Culture, Sports, Science and Technology, 2023).

In Japan, apart from the TVET provision in schools, there are two other types of vocational institutions i.e., Specialised training college, and Miscellaneous schools that offer a variety of vocational and technical education programmes. Most of these schools such as Specialised training college, and Miscellaneous schools are privately controlled. Specialised training college basically offers upper secondary courses for those learners who have just completed junior secondary education and post-secondary courses for those learners who have completed senior secondary education. Miscellaneous schools offer vocational and practical courses in skills such as dressmaking, cooking, book-keeping, automobile, driving and repairing etc. Most courses in Miscellaneous schools require the completion of compulsory education for

Figure 6. Structure of School System in Japan

Source: https://www.mext.go.jp/en/policy/education/overview/index.htm
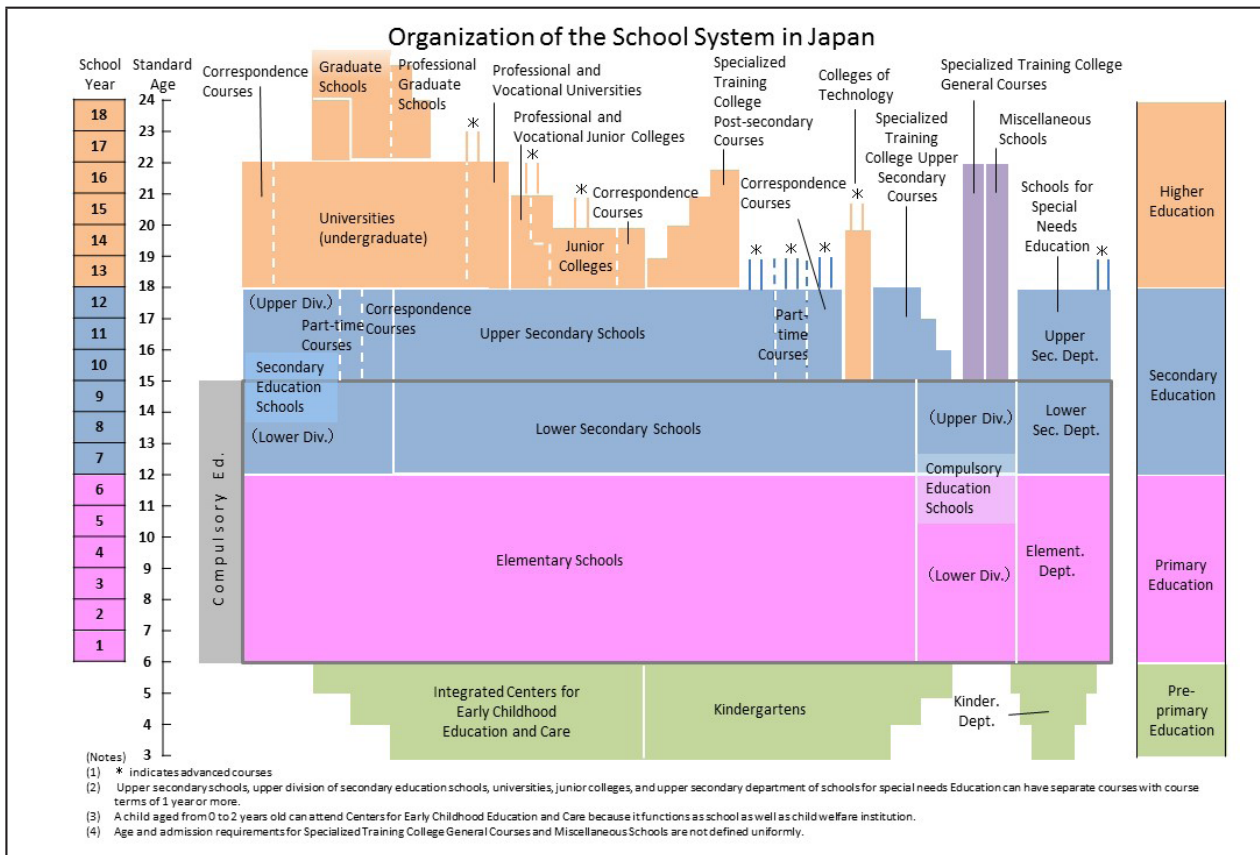
admission in Miscellaneous schools. Of late, due to changing industry skill needs and demands, VET institutions, especially, specialised courses at professional training colleges have become popular among vocational students. Another significant observation is that the Japanese system offers interesting model that facilitates smooth transition of upper secondary vocational students to post-secondary education and improve future career prospects. Citing the OECD report (2020), in Japan, about 98% of upper secondary vocational students have direct access to higher education opportunity.

1.5.6 Mexico

Two decades ago, Latin American countries witnessed vast changes in vocational education and training at the school level by addressing the challenges of youth unemployment and by bringing youth to the labour market through vocational programmes in school education. In the current study, the case of Mexico is highlighted. In Mexico, free compulsory education consists of primary and secondary grades, falling in the age group of 6-18. In Mexico, one can complete compulsory education only after qualifying as a professional technician at vocational schools or getting a general upper secondary school leaving certificate (BIBB, 2022). At the upper secondary level, students are provided two options— general education or vocational education. There are three types of programmes offered at the secondary level of vocational education. The first one consists of a short training programme of three to six months duration that comprises both theories and practical in equal proportion. The second type is CONALEP programme, where 25% of the course is devoted to general subjects, while 75% of the course comprises vocational subjects. In CONALEP programme, there is compulsory 360 hours of practical training. Another type of programme is Technological baccalaureate, where

60% of the course comprise general subjects while 40% of the course is vocational subjects (Ayeni, 2015). However, the most popular type of vocational programme is CONALEP programme. The CONALEP (Colegio Nacional de Education Professional Tecnica) or Mexican National College of Technical Profession Education is the primary vehicle responsible for the vocational education and training of students. The CONALEP programme is based on the German Mexican dual system of VET (BIBB, 2022), which was introduced during 1993-1998. During this period, based on a cooperation agreement between Mercedes-Benz (a German company) and CONALEP, vocational school students, especially from sectors such as motor vehicle mechanic, and electrical mechanic took part in the company's work. The learners who took part in the cooperation agreement got employment. After noticing the success of the cooperation agreement, CONALEP decisively reintroduced the dual training system at mass level. The positive experience led CONALEP Directorate-General to sign an agreement with BIBB (Federal Institute for Vocational Education and Training, Germany) to foster revitalisation of the dual training system in Mexico. CONALEP then commissioned a company "German Mexican Alliance for Technology Transfer" (ALTRATEC) to provide specialist advice at local level to promote and expand training offers from industry sector. Through this dual model of vocational education, the vocational education program becomes more demanding among students and offered through public-private partnership. This dual model enhanced the coordination/interaction between the public and private sectors (Severo, 2012). The dual system of vocational education in Mexico is of three years duration that comprises 75% practical training in a company and 25% theory content. Mexico's dual system has three main pillars (UNEVOC, 2022; BIBB.2022) which are explained below:

- Company based training: The whole VET programme is conducted in the company and the regulation and framework of the programme is based on the German training regulation. The ALTRATEC assists the companies in providing the training.

- Training in Inter-Company Centres: During the company-based training, a three-week course twice a year is offered in inter-company training centres. The inter-company training centres provide VET programme content which the training company is unable to provide.

- Training through the multimedia and learning software "Konstrulab": This software has been designed in an employment-oriented manner and serves to impart vocational school content for school students.

The Mexico model demonstrates the active role played by effective vocational programme intervention practices, mainly engineered by key stakeholders to empower students of different vulnerable social groups such as socially-economically weak students, students at risk of dropping out and even reaching out to rural students with limited learning opportunities by using mobile training units.

1.6 Vocational Education at School Level in South Asian Countries

1.6.1 Bangladesh

The structure of education system of Bangladesh consists of five years of primary education (Grades 1-5), three years of junior secondary education (Grades 6-8), two years of secondary education (9-10) and two years of higher secondary education (Grades 11-12) (ADB,

2008). Bangladesh has two ministries related to education: 1) Ministry of Primary and Mass Education responsible for primary education, non-formal education, and mass literacy and 2) Ministry of Education responsible for secondary education, vocational education, and tertiary education. The Ministry of Education has two divisions:1) Secondary and Higher Education and 2) Technical and Vocational Education. In Bangladesh, vocational education program offering starts from Grade 8th onwards. There are different stages where students are provided the opportunity to select either vocational/technical education or continue with general education. A student can choose vocational education after completion of Grade 8 or 10. After completion of secondary level, a student can opt for tertiary education to get an advanced degree or join technical training institutions to obtain a diploma. Directorate of Technical Education (DTE) and Bangladesh Technical Education Board (BTEB) are primarily responsible for VET education in Bangladesh. The DTE is responsible for setting the overall policy framework of the entire vocational education and training system, whereas BTEB is a regulatory body responsible for maintaining qualification framework for VET, setting training standards, student assessment, certification of results, and accreditation of vocational education and technical education institutions. In total, 20 ministries and departments including department of agriculture extension, department of textile, department of women affairs, etc., are to an extent involved in regulating vocational education system in Bangladesh (ADB, 2015). The National Skills Development Policy (2012) provides a vision direction for future skills development programme. The policy is also closely linked to education policy 2009, non-formal education policy 2006, and youth policy 2003. Under the National Skills Development Act 2018, the National Skill Development

Authority (NSDA) was established in the Prime Minister's office in which the main function is to provide skill development training and award certificates at national level. Based on the NSDA Act 2018, Bangladesh devised the National Skills Development Policy 2020 to establish a sustainable skills development ecosystem (UNESCO, 2022). More recently, to meet increasing local and international demands of trained workforces, Bangladesh has accorded high priority of transforming students into competent manpower through VET system. In this direction, the Govt. of Bangladesh recently developed the Bangladesh National Qualification Framework (2021). The framework weaves together general education, technical-vocational education, and higher education into a harmonised quality assured system.

1.6.2 Bhutan

School education in Bhutan consists of eleven years of basic education, starting from pre-primary to Grade 10. Out of eleven years of basic education, seven years constitute of basic education (pre-primary to Grade 6) and four years of secondary education (Grades 7 to 10 (Gyeltshen & Zangmo, 2020). After Grade 10, students can continue their general education in higher secondary schools and then enroll in technical and vocational education institutions or enter the labour market. In Bhutan, the formal vocational education courses start after Grade 10, but pre-vocational subjects are offered at the secondary level as elective subjects based on local needs, traditions, and availability of equipment ((UNESCO, 2022). The vocational education subjects are also offered as elective subjects at the general senior secondary education level. There is no provision of awarding certificates for vocational education courses at the school level. The Ministry of Labour and Human Resources plays a key role in managing and

coordinating technical and vocational education, while Ministry of Education is responsible for vocational education at the school level. In addition, other ministries, and departments such as the Ministry of Agriculture and Forest, Ministry of Home and Cultural Affairs, Tourism Council of Bhutan are involved in school vocational programme. The Department of Occupational Standards was established in 2003 as the Bhutan Vocational Qualification Authority and later named as Department of Occupational Standards under the Ministry of Labour and Human Resources (MoLHR). In 2013, MoLHR prepared a technical & vocational education and training policy to strengthen the policy guidelines, regulatory frameworks, and curriculum development that include vocational education courses at school level and strengthen education-industry linkage. Based on this policy, the Department of Occupational Standards prepared a Bhutan vocational qualification framework in 2013 (UNESCO, 2022). This qualification framework has eight levels. The first level of this framework is equivalent to Grade 10; second level is equivalent to Grade 11; and so on. Currently, the Ministry of Education is launching TVET programme at schools (Wangdi, 2020). The Royal Education Council provides a framework for adding vocational education courses at primary and secondary schools. This framework adds different components in curriculum at different levels of school education. In Bhutan, all schools start a vocational club for Grades 4-6 students to build a foundation for higher technical and vocational training courses. For Grades 7 and 8 students, pre-vocational orientation programme is being provided and few vocational education programmes are offered as elective subjects for 9 and 10 students. As envisaged in Bhutan Education Blueprint (2014-2024), the education system in Bhutan aims to create highly skilled citizens capable of meeting

emerging global challenges, while simultaneously emphasises that Bhutanese students be equipped with both Bhutan's traditional, indigenous, and contemporary knowledge to enable them to lead a rewarding life.

1.6.3 Nepal

In Nepal, expansion of school education and opening of educational opportunities was seen as a mark to improve state's relationship with its people and the outside world (Caddell, M. 2007). Beginning from pre-1950s, the growth of formal school education in Nepal was marked by sluggish literacy rate of about 2% (Basnet, Eun and Kim, 2009). To improve quality education, a total of eight commissions were formed (Garanja, 2008, as cited in Basnet, Eun and Kim, 2009). Yet, Nepal's education system continues to face challenges in providing quality and employable education (Kanel, 2015). The school education system of Nepal consists of primary education, lower secondary education, secondary education, and higher secondary education. The lower secondary education comprises three years of schooling from Grade 6 to 8; and the secondary education comprises two years of schooling from Grade 9 to10. At the end of Grade 10th, a national level examination, known as school leaving certificate (SLC) is conducted. The higher secondary education also comprises Grades 11 and 12. In Nepal, the significance of vocational programme at the school level was notified in the National Education System Plan (NESP, 1971). NESP, perceived to be the most significant education policy document that highlighted the importance of bringing school system firmly in line with the economic development and labour force requirements of Nepal and recommended including vocational subjects such as poultry, farming, metalwork, auto-mechanics, plumbing and so on in the secondary curriculum. Of late, the Ministry of Education, Govt. of

Nepal introduced a school sector reform plan in 2009. Based on this plan, Nepal introduced pre-vocational courses at Grades 6 and 8 and vocational subjects at Grades 9 and 10. In Nepal, all educational institutions are regulated by the Ministry of Education, Science and Technology (MoEST). The MoEST also promotes technical and vocational education in some community schools. In Nepal, the technical and vocational education system is mainly under the supervision of Council for Technical Education and Vocational Training (CTEVT) (Paudel and Eberhardt, 2023). The CTEVT established in 1989 is the national autonomous apex body of Technical and Vocational Education and Training (TVET) sector committed to produce technical and skillful human resources required for the Nepalese nation. The significance of vocational education in Nepal emerged with the aim of training school dropouts and preparing them as lower and middle level workers. The entry of the students in formal TVET programme at a technical school commences at Grade 10th of general school education. CTEVT offers long-term programs on pre-diploma and diploma level through technical schools/polytechnics, affiliated partner schools as well as through community schools. At present, CTEVT's long-term programs in various subjects are offered through its 63 constituent schools, 42 partnership schools, 572 community schools and 429 private technical schools (Bhandari, 2023). The duration of TVET program ranges from 3 to 36 months for a youth of 16 years and above. The Technical School Leaving Certificate (TSLC) Program varies from 15 to 29 months duration for Grade 10 and SLC pass students. Diploma and technical certificate programs for SLC pass students last 36 months (ADB, 2015). In 2018, Nepal introduced dual VET apprenticeship with the aim of preparing youth to meet market driven labour demand (CTEVT, 2018). The

guidelines for Apprenticeship Training, 2018 describe apprenticeship training as a form of learning where learners are placed in a real work environment after acquiring theoretical knowledge in school (Paudel and Eberhardt, 2023). However, unlike the experience of other South Asian countries such as Sri Lanka, in Nepal vocational-school interface initiatives are still at a nascent stage.

1.6.4 Maldives

Maldives, a small country with a series of small coral atolls is located in north-central Indian ocean with about 105 tourist resort islands. With a population of 491,589, one-third of the Maldives population are school-going age children (University of Bristol, 2023). The Maldives education system is greatly influenced by the western education system especially, the United Kingdom. The education system of Maldives is also influenced by the informal religious-based Islamic education. According to Shiyama (2020), in Maldives, the early-childhood education starts at the age of two years when children start attending *Edhuruge*–small informal schools in a person's home to learn reading and writing in *Dhivehi*—the Arabic script to recite Quran, religious prayer and numeracy. The completion of a child's informal education is based on the child's ability to reading the whole Quran. As stated above, the British education system had strong influence in Maldives education system; that the Govt. of Maldives, during the 1980s, began centralising the schooling system by introducing a national primary school curriculum, with English as the medium of instruction in all public primary schools (University of Bristol, 2022). The structure of formal education system in Maldives is 14 years of schooling that is broken up into four distinct phases: 1) pre-primary in the age group of 4-6; 2) primary in the age group of 6-12 comprising Grades 1 to

6; 3) lower secondary in the age group of 12-16 comprising Grades 7 to 10; and 4) higher secondary in the age group of 17-18 comprising Grades 11 and 12 (NCF,2015). There is a General Certificate of Education (GCE) of O level, which is the terminal examination of Grade 10 completion and GCE A level of Grade 12 completion. In Maldives, the formal TVET system began along with a TVET section under the Ministry of Higher Education, Employment and Social Security in 2006, which was funded by the Asian Development Bank (Education Sector Analysis of Maldives, 2019). The vocational education at school level in Maldives is offered at two different programmes i.e., Business and Technology Education Council (BTEC) and Dhasvaaru (school TVET programme). The BTEC qualification is a set of vocational qualification approved by the Quality Assurance Agency, United Kingdom and offered by the EDEXCEL (a British multinational education and examination body formed in 1996). The BTEC is offered as a stream subject when students join Grade 9. While pursuing Grade 9, a student studies four compulsory subjects along with one BTEC course after which completion the student is awarded a Level 2 diploma certificate by the EDEXCEL and it is equivalent to the Level 3 of the Maldives Qualification Framework. The BTEC project was started in 2014 with 376 students from 12 schools with a high proportion of student passing out rate at 84%. Out of all the passing students, 93% were engaged either in employment or further study. As of 2019, 179 schools had BTEC O level programme and 44 schools offering BTEC A level programme. The *Dhasvaaru* programme was piloted in 2014 with 151 students from 11 schools and was further expanded in 162 schools as of 2017 (Ministry of Education, 2019). The *Dhasvaaru* programme was basically started for those students who failed in GCE

O level exam or those who have no interest in GCE A level programme and thus Dhasvaaru provides an alternative pathway for students. The programme is meant for students who are in their last year of secondary schooling or those who have an interest in learning a skill. Under this programme, more than 60 skills were identified, and relevant courses were offered. The vocational education at the school level is also provided by the Maldives Institute of Technology (MIT). The MIT offers a range of short courses for students of Grades 6, 7, 9 and 10 and these courses basically enable students learn about the local industries of Maldives (Maldives Institute of Technology, 2022).

1.6.5 Sri Lanka

Sri Lanka's post independent period witnessed rapid educational expansion, with steady rise in school enrolments. The general school education system in Sri Lanka is 13 years, consisting of primary education (Grades 1-5), junior secondary education (Grades 6-9), senior secondary (O/L; Grades 10-11), and senior secondary (A/L; Grades 12-13). The compulsory education in Sri Lanka comprises Grades 1-9. As per the ADB report (2015), the retention rate at primary level is impressively high at 99.5%; but the retention rate at the senior secondary (O/L-Ordinary Level) is quite discouraging. The students who complete senior secondary level (O/L, i.e., Grade 11) proceed on three different directions i.e., senior secondary (A/L- Advanced Level), temporary employment, and the technical and vocational education and training courses (ADB, 2015). Citing the ADB report (2015), about 165000 students leave the school system after completion of senior secondary (O/L); 90000 students leave after senior secondary (A/L), and most of the students join the TVET sector for further education except a small portion who join the labour market. The Ministry of

Skills Development and Vocational Training is responsible for developing TVET policies. Under this Ministry, a tertiary and vocational education commission was established for policy formulation, quality assurance, planning, coordination, and the development of tertiary and vocational education. The Govt. of Sri Lanka developed adequate policies and frameworks to improve the quality of vocational education in Sri Lanka. Notable policies and acts related to vocational education include, Tertiary and Vocational Education Act (1990), Ceylon German Technical Training Institute Act15 (2017), and Skill development plan and employment strategy for hospitality and tourism sector (2018) (UNESCO-UNEVOC, 2022). In 2004, Sri Lanka introduced a national qualification framework which has seven qualification levels. The aim of qualification levels 1 to 4 is to teach students basic skills, while levels 5 and 6 add supervisory and/or process management competencies (UNESCO-UNEVOC, 2022). The Govt. of Sri Lanka is committed to promoting a smoother school-to-work transition including through the promotion of TVET in a variety of ways primarily through the Ministry of Policy Planning and Economic Affairs and the National Youth Services Council. The government aims to target all youth, focusing on the age group of 15-29 years. To improve the prospect of employability among youth, the Sri Lankan government introduced a National Vocational Qualifications Certification system that lends credibility to training courses which together improves the prospect of employability. Alongside, the government introduced market oriented and accredited vocational training opportunities based on industry demand. Youth centric institutions were created to provide career guidance and career counselling facilities. The National Youth Services Council and the Vocational Training Authority annually facilitate

accredited vocational training for approximately 25,000 to 60,000 youth population respectively. On an average, 80% of participants secure employment after completing the vocational training course.

1.7 Vocational Education at School Level from International Perspective: A Retrospect

Drawing from global experience, there is considerable country wise variation in the status of provisioning of vocational education at the school level. The successful countries in vocational-school interface drive such as China, Germany, Finland, Switzerland and so on outperform all South Asian countries. Most of these successful countries practice dual system of vocational education. In these countries, there is strong partnership between industries/skill stakeholders and school spaces to drive vocational programmes with effective delivery mechanisms under clearcut policy directions. In most of these countries, the government dolls out favourable schemes and policies for school going adolescent youth. For example, as Yuan and Wang (2021) observed, in China, more than 90% of students in secondary vocational schools enjoy tuition fee exemption. Also, China has high number of students enrolled at vocational secondary schools, resulting in creating high skilled labour force. What's more, China's success model has been attributed to factors such as industry-school education integration, efficient collaboration with international vocational providers resulting in a significant rise of several high-performing schools, strong disciplines, and high-caliber teacher workforce. In countries such as Germany, Switzerland, Australia etc, there is effective combination of school and work-based

programmes through efficient organisation and delivery of VET programmes. In Mexico, the vocational education system is very much influenced by the German dual system approach of cooperation between employers' premises and vocational schools (Vogelsang, Rohrer, Pilz, and Fuchs, 2022). In each of these success stories, what is common among these countries is that there is strong market/industry involvement in terms of training provision, training cost, placement facility and even employment opportunity. Furthermore, to facilitate smooth student transition from upper secondary and improve their career prospects, these countries create clear and direct pathways from vocational programmes to higher levels of education. The case of Japan model is particularly impressive. In the year 2018, Japan had an exceptionally high proportion of 98% share of upper secondary VET students enrolled in vocational programme and had direct access to tertiary education (OECD, 2020). In contrast, countries of South Asia accord less priority to vocational programme with a greater focus on preparing students for higher general education stream. As a result, there is a well-defined binary articulation between vocational and general education streams, and the distinctions between the two remain as sharp as ever. Majority South Asian countries face several roadblocks and challenges that continue to surround vocational policy domain, failing to translate vocational policies into reality. Table 12 depicts percentage share of students enrolled in vocational education at the secondary level among developed countries and South Asian countries during the period 2016 to 2020. As indicated in Table 12, all developed countries and South Asian countries have secondary students enrolled in vocational programme, yet the developed countries perform far better when compared with South Asian countries. As seen in Table12, in 2016, Finland had the highest percentage share of

Table12: Share of All Students in Secondary Education Enrolled in Vocational Programme (2016-2020)

Indicator	Share of all students in secondary education enrolled in vocational programmes (%)				
Time Country	2016	2017	2018	2019	2020
Australia	37.3	36.6	28.9	32.6	29.1
Austria	35.1	34.6	34.4	34.8	34.8
Bangladesh	3.9	4.0	4.7	4.0	5.0
Bhutan	1.9	2.0	2.0	-	-
China	19.7	19.1	18.8	18.0	17.8
Finland	47.8	48.1	47.8	44.0	43.1
Germany	19.1	19.1	19.1	19.4	19.4
India	1.3	1.7	1.3	1.3	3.1
Maldives	-	-	10.9	6.3	-
Mexico	27.5	26.7	27.6	28.0	26.7
Nepal	-	0.3	-	1.2	1.9
Pakistan	2.5	2.8	3.3	3.1	-
Sri Lanka	4.2	3.7	3.8	-	-
Switzerland	37.4	37.1	36.8	36.4	36.0

Source: http://data.uis.unesco.org/

Table 13: Countries Classified by Level of Enrolment in Vocational Education (%) (2016 -2020)

<3%	3-6%	>10%
Bhutan, Nepal	Bangladesh, India, Maldives, Pakistan, Sri Lanka	Australia, Austria, China, Finland, Germany, Mexico, Switzerland

Source: Based on Table 12

47.8% secondary students enrolled in vocational programme though a marginal decline to 43.1% is noted in 2020. Among South Asian countries, Maldives performs better than its counterparts of South Asian countries, while Nepal had the lowest percentage share of secondary students enrolled in vocational programme throughout the period, 2017-2020.

Further, the data in Table 12 indicates that during the period 2016-2020, countries of South Asia such as Bangladesh, Bhutan, India, Pakistan, and Nepal have shown a marginal increase in enrolment in vocational education. During the period 2016-2020, India's enrolment rate in vocational education at secondary education level had marginal increase approximately by 1.8%. During the same period, Bangladesh registered the highest growth rate in vocational education enrolment from 3.9% in 2016 to 5.% in 2020. Among industrialised countries, Australia registered the highest decline in enrolment from 37.3% in 2016 to 29.1% in 2020.

Table 13 indicates countries classified by level of enrolment in vocational education. South Asian countries such as Nepal, Bhutan, Bangladesh, India, Maldives, Pakistan, and Sri Lanka have

very low enrolment in vocational education programme at secondary level education. In contrast, Australia, Austria, China, Finland, Germany, Mexico, and Switzerland have high enrolment rate at more than 10%. The overall data indicates that all South Asian countries have very low-level enrolment in vocational programme in comparison to industrially advanced countries. Of late, there are noticeable efforts on the part of governments in South Asian countries to build robust skill ecosystem. These developments could be seen as a response to various socio-political, and economic transformations. For example, after economic liberalisation, India's need for skilled workforce began to grow during the mid-1990s and the need for up-skilling its youth population in a variety of sectors including the service sector. In 2000s, India set ambitious targets to mainly address demographic dividend by skilling 500 million youth by 2022; and address several other challenges including India's unprecedented growth of higher education and youth unemployment challenges. NEP 2020 took a bold step in declaring a sense of urgency of restoring vocational education in its rightful

status in school education with a targeted goal of skilling 50% of secondary students by 2025.

Table14 depicts country wise completion rate at the secondary level. The data shows that increase in enrolment in vocational education also tends to positively influence better completion rate at secondary level of general education. This is particularly noted from countries such as Finland, Austria, Switzerland, and Mexico. The experience of Maldives can be an exception. In Maldives, the completion rate at secondary level is as high as100% (and above), despite low proportion of students enrolled in vocational education. Maldives' impressive transition and secondary completion rate could be attributed to quick absorption of secondary completed students in occupational trades such as tourism sector.

As indicated in Table 15, the gross enrolment ratio at secondary level is generally high in countries having a high share of enrolment of vocational students at the secondary level. These countries include Australia, Austria,

Table14: Country Wise Lower Secondary Completion Rates (%) (2016-2020)

Country	2016	2017	2018	2019	2020
Austria	97.2	97.7	97.5	97.7	…
Bangladesh	79.4	80.4	88	…	…
Bhutan	80.2	81.4	82.5	85	85.1
China	…	…	…	…	…
Finland	99.8	99.5	99.5	101	…
India	85.9	85	…	83.2	84.6
Maldives	102	108	111	111	…
Mexico	96	97.2	91.5	90.7	…
Nepal	89.6	94.6	…	99.5	99.5
Pakistan	47	46.9	48.3	49	…
Sri Lanka	94.8	96.4	…	98	…
Switzerland	98.4	96.3	95.1	95.6	…

Source: https://worldstatistics.org/indexres.php?code=SE.SEC.PROG.ZS?name=Progression%20to%20 secondary%20school%20(% #top-result

Table 15: Gross Enrolment Ratio at Secondary Level (%)

Indicator	Gross enrolment ratio, secondary, both sexes (%)						
Time Country	2016	2017	2018	2019	2020	2021	2022
Australia	153.0	150.3	132.7	140.6	134.4	..	..
Austria	100.9	100.4	99.9	100.1	100.3	..	..
Bangladesh	71.4	69.6	72.6	72.5	74.3	75.4	..
Bhutan	85.3	87.8	90.0	..	..	..	..
China	..	..	..	..	..	..	..
Finland	152.1	153.9	154.8	145.3	144.2	..	..
Germany	98.8	98.4	97.5	97.5	97.1	..	..
India	75.0	73.4	74.1	73.7	75.4	77.9	..
Maldives	..	..	85.2	81.3	..	..	..
Mexico	102.4	104.3	105.1	104.6	101.8	..	..
Nepal	70.7	76.2	..	80.1	85.5	84.6	85.5
Pakistan	40.9	40.4	42.6	44.8	..	..	..
Sri Lanka	97.6	98.0	100.3	..	..	..	..
Switzerland	102.5	102.4	102.5	102.3	102.5	..	..

Source: http://data.uis.unesco.org/

Finland, Mexico, and Switzerland. The data in the table shows high percentage share of vocational students at the secondary level in countries such as Australia, Austria, Finland, Germany, and Switzerland. However, when the proportion of students enrolled in vocational courses decreases, the gross enrolment ratio of students enrolled in general academic also declines. For example, in Australia, during 2016 to 2020, the gross enrolment ratio in secondary education declined from 153.0% to 134.4%. During the same period, the percentage share of vocational students at the secondary level also declined from 37.3% to 29.1% as indicated in Table 12. In Finland, the gross enrolment ratio at the secondary level during the period of 2016 to 2020 decreased from 152.1% to 144.2%. During the same period, the percentage share of vocational students declined from 47.8% to 43.1% as shown in Table 12. The data trends tend to establish positive association among vocational intervention programme in schools, dropout reduction, high transition, and completion rates of students.

1.8 Comparison of Vocational Education System of South Asian Countries

Barring the case of Sri Lanka, almost all South Asian countries have similarities in general education programme especially up to Grade 10. In Sri Lanka, the compulsory education is up to Grade 9, which is like many OECD (Organisation for Economic Co-operation and Development) countries. Most South Asian countries have vocational education after completing compulsory education levels. The vocational programme is formally offered at different levels of education–secondary, higher

secondary, and post-higher secondary level. However, as the case of majority South Asian countries illustrates, these countries fail to pay adequate attention to vocational programmes in schools with policy commitment, instead, focuses on training institutions such as ITIs and polytechnics. In these countries, the status of vocational education programme dwindles in the larger general education system. This stems from a plethora of challenges including highly fragmented, unregulated, and underdeveloped structure, and poor management at various levels of governance of education. Figure 7 depicts different certification bodies of vocational

Figure 7. Certification Agency of Vocational Education in South Asian Countries

Education level	Bangladesh	India	Nepal	Pakistan	Sri Lanka
Secondary	**Secondary School Certificate (SSC)** Grade 8 pass required at entry 2 years of training	NA	NA	**Vocational training certificates** Grade 8 pass required at entry	**Certificates** General Certificate of Education (GSE) O level required at entry
Higher secondary	**Higher Secondary School Certificate (HSSC)** Grade 10 pass required at entry 2 years of training	**National Trade Certificate** Grade 8–12 pass required at entry, depending on trade 6 months–2 years of training **Apprenticeship training** Grade 8–12 pass required at entry 6 months–4 years of training	**Technical School Leaving Certificate (TSLC)** Grade 10 pass required at entry 18 months of training	**Vocational training certificates** Grade 10 pass required at entry **Diplomas** Grade 10 pass required at entry 1–2 years of training	**National Certificates** GSE O or A level required at entry
Post-secondary	**Diplomas** offered by polytechnics and monotechnics General or vocational SSC required at entry 4 years of training	**Diplomas** offered by polytechnics Grade 10–12 pass required at entry 3.5 years of training	**Diplomas or proficiency certificate levels** Grade 10 pass required at entry 3 years of training	**Diploma of Associate Engineering** Grade 10–12 pass required at entry 3 years of training	**Diplomas** GSE A level required at entry
				B.Sc technology 4 years of training	**BA technology**

Source: https://documents1.worldbank.org/curated/en/783541582176626881/pdf/Ready-to-Learn-Before-School-In-School-and-Beyond-School-in-South-Asia.pdf

education at different levels of education in different South Asian countries. As noted in the figure, in India and Nepal, there is no specific certification agency for the vocational education programme at the secondary education level, while Bangladesh, Pakistan and Sri Lanka have special agencies for certification of vocational education at the secondary level. In majority South Asian countries, vocational education at the secondary level forms a minor part of the general education stream. For example, in India, different boards such as Central Board of Secondary Education (CBSE) and Indian Certificate of Secondary Education (ICSE)

Figure 8. Regulatory and Coordinating Vocational Training Institutions of South Asian Countries.

Countries	Institutions	Mandates
Bangladesh	National Skills Development Council (NSDC) established in 2008	Overall policy guidance
	Executive Committee of the NSDC	Implementation of policies
	NSDC Secretariat	Monitoring of implementation progress; advice on curricula revisions; oversight of the operations of all training centers
India	National Skill Development Agency within the Ministry of Skill Development and Entrepreneurship established in 2013–14	Overall policy guidance; coordination and harmonization of all activities and stakeholders; monitoring and evaluation of programs; monitoring of implementation progress and achievement of targets; maintaining a logistics management information system
	National Council for Vocational Training	Defining standards and curriculum for long-term training
Nepal	Council for Technical Education and Vocational Training (CTEVT)	Standards and course accreditation
	National Skill Testing Board under the CTEVT	Testing and certification of skills formally or informally acquired
Pakistan	National Vocational and Technical Training Commission	Autonomous regulatory body sets national occupational standards and regulates accreditation and certification
	Punjab Technical and Vocational Training Authority Sindh Technical and Vocational Training Authority	Management and supervision of training centers at the provincial level; registration of providers; curriculum development; controlling authority of the Trade Testing Board and of the Board of Technical Education (in charge of conducting exams and certifying candidates)
Sri Lanka	Ministry of Skills Development and Vocational Training established in 2015	Overall policy guidance; coordination of all stakeholders; implementation of government's strategy
	Tertiary and Vocational Education Commission	Policy formulation; quality assurance; monitoring

Source: https://documents1.worldbank.org/curated/en/783541582176626881/pdf/Ready-to-Learn-Before-School-In-School-and-Beyond-School-in-South-Asia.pdf

provide certificates that include both vocational and general education.

Several ministerial departments and agencies involved in vocationalisation of secondary education programme. In India, over 17 ministry departments and stakeholders are involved in vocational education programme. However, it was until recently that two ministerial departments such as the Ministry of Skill Development and Entrepreneurship and the Ministry of Education are entrusted with more accountability than other departments. Similarly, in Bhutan, different ministries are involved in vocational education, but the Ministry of Labour and Human Resources and the Ministry of Education are more responsible. Figure 8 shows different institutions that are directly involved in providing and maintaining quality of vocational education. In India, there are different agencies/ skill stakeholders like National Skill Development Corporation (NSDC) and National Council for Vocational Training (NCVT). Bangladesh also has NSDC for vocational education policy guidance. In Pakistan, a national level regulatory body, National Vocational and Technical Training commission and two provincial level authorities i.e., Punjab Technical and Vocational Training Authority and Sindh Technical and Vocational Training Authority are involved in the management and supervision of training centres at the provincial level.

The national qualification framework is one of the important criteria for the development and qualification requirements based on a set of parameters indicating a level of learning. Every country has its own national qualification framework deigns that indicates the qualification levels based on the minimum level of learning at different stages of education. Figure 9 indicates national qualification framework

practiced in different South Asian countries. In all the South Asian countries, the qualification level starts at 1, but in vocationally successful countries like Switzerland, the qualification level starts at 0 (Sengupta, 2021). India, Maldives, and Bangladesh have 10 levels of qualification parameters, whereas Bhutan and Nepal have 8 levels of qualification, while Sri Lanka has 7 levels of qualification in their respective qualification frameworks.

Another major challenge is that of implementation by integrating qualification frameworks in general education system with sufficient budgetary allocation to meet demand-driven skills. According to Tilak (1988), there is hardly 10 % of the educational (recurrent) budgets allocated for vocational education in the South Asian countries. Besides low budgetary expenditure on vocational programme, when there is growing financial squeeze in general, and increasing budget cuts in education in particular, it remains difficult to expect that a higher budgetary allocation could be made for vocational education. Another concern arises mainly from longstanding challenges that most South Asian countries continue to grapple— widespread illiteracy, poor enrolment, low retention, poor transition rate, low female participation in education and so on. For example, the literacy rate of Pakistan depicts downward spiral at 59.3% (Dawn, September 9th, 2023), while literacy rates (2021 Census) of majority South Asian countries range from 70.9% (Bhutan),71.1% (Nepal),72% (Bangladesh) to 77.7% (India). When it comes to male-female participation in literacy, females are in specific disadvantaged position—57% in Nepal, 62.8% in Bhutan, and 71.5% in India. Similarly, female participation rate in vocational programme in these countries is also low as indicated in Table16.

Figure 9. Qualification Frameworks of South Asian Countries
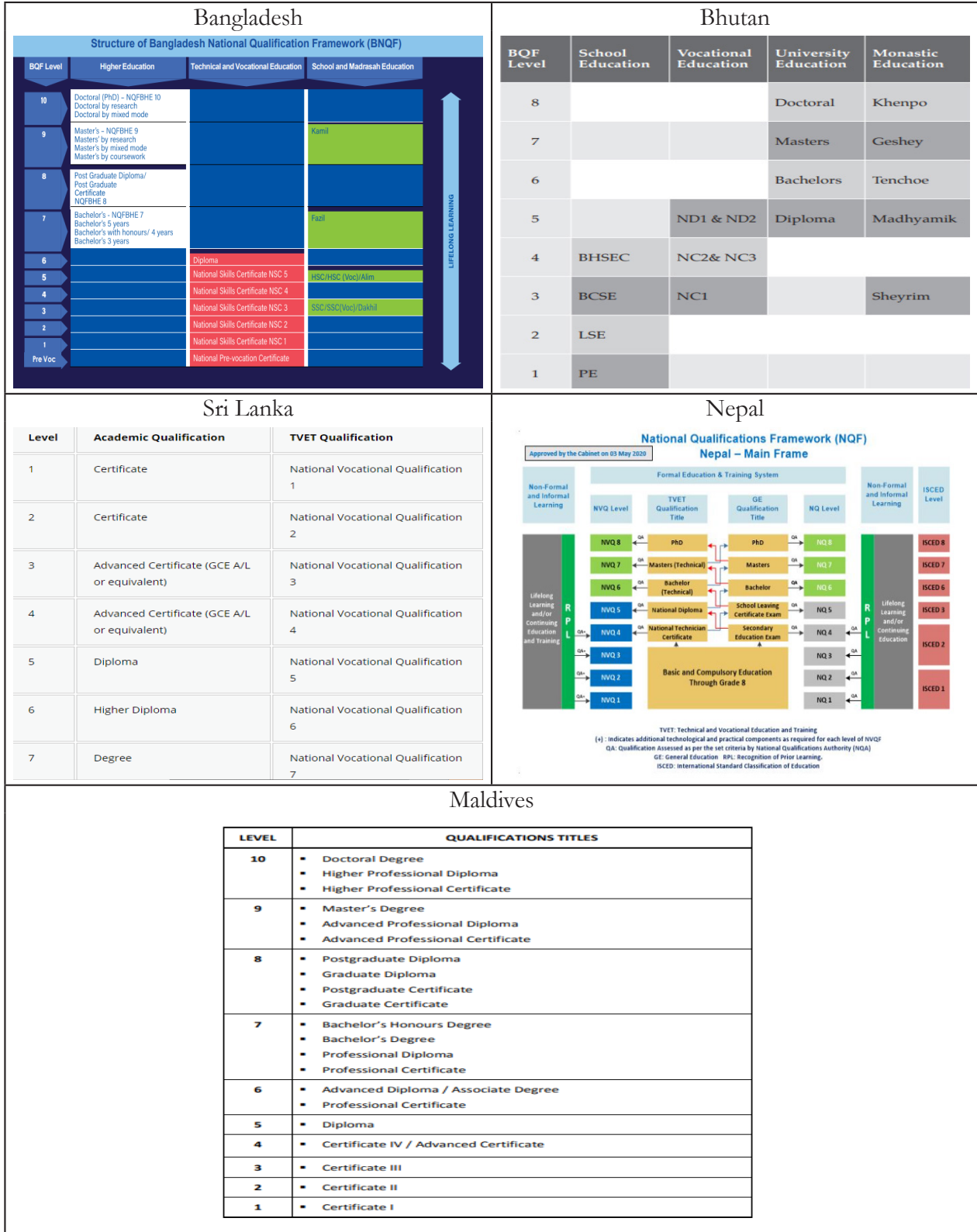
Table 16. Percentage of Female Students in Secondary Education Enrolled in Vocational Programme

Country	2015	2016	2017	2018	2019
Bangladesh	27.4	27.6	27.3	27.6	...
Bhutan	29.7	33.8	34.9	34.9	...
India	16.5	16.6	16.6	...	...
Maldives	...	...	...	...	...
Nepal	...	...	...	...	51.2
Pakistan	34.3	34.9	34.1	33.5	...
Sri Lanka	...	40	47.6	44.8	...

Source: https://world-statistics.org/index_res.php?code=SE.SEC.ENRL.VO.FE.ZS?name=Secondary%20education,%20vocational%20pupils%20(%%20female)

As depicted in Table16, except Nepal and Sri Lanka, all South Asian countries reveal low female enrolment in vocational programme. The data trend indicates that the percentage of female students enrolled in vocational education at the secondary level is discouraging. Among all South Asian countries, countries such as Sri Lanka, Bangladesh, Bhutan, and Pakistan are shown to have better female participation in vocational education. Among all South Asian countries, India registered the lowest percentage of female students in vocational education at the secondary level—16.5% in 2015, with a marginal increase to 16.6% in 2016, while Nepal registered the highest female participation rate at 51.2% in 2019.

1.9 Major Challenges and Issues in Vocationalisation of Secondary Education in India

Post-independent India witnessed significant policy trajectories such as Kothari Commission in 1964, NPE 1968, NPE 1986, POA 1992, National Council of Education Research and Training (NCERT), and NEP 2020, culminating with the Prime Minister's National Council on Skill Development 2022. Along with these developments, robust policy framework incorporating various aspects of skilling had been already established by interfacing with general education for vertical pathways. The NPE 1986 set a target to cover 10% of higher secondary students under vocational programme by 1990 and 25% by 1995, while the latest education policy, NEP 2020 has shown renewed commitment to achieve the targeted goal of 50% of secondary students' exposure to vocational programme. Furthermore, NEP 2020, notified that all educational institutions—schools, colleges, and universities to integrate vocational education into their offerings paving the way for its rapid expansion in the country. There are strategic interventions underway to interpose vocational skill programme with secondary and higher secondary education to support India's policy reforms in skill sector through effective planning and implementation by partnering with key stakeholders. In this direction, the Govt. of India has taken several initiatives to bring skill ecosystem in schools to empower, mainly adolescent youth for sustainable livelihoods and inclusive growth. Interposing vocationalism in schools opens avenues for training in emerging skills opportunities; enables youth

to make informed choices about emerging life skills; and livelihood opportunities. Also, the attempt for skill intervention in schools has the potential of optimising the benefits of India's emerging demographic dividend. India's efforts to provide vocational skilling programmes by integrating into mainstream education is an attempt to ensure that every student acquires at least one vocational skill and even several more including those involving Indian arts and artisanship constituting an important pillar of Lok Vidya (UNESCO, 2020). Specific states such as Tamil Nadu, Haryana, Sikkim, Himachal Pradesh, Chhattisgarh, Odisha, and union territories such as Goa and Delhi have responded to the initiatives undertaken by Govt. of India. However, it remains a concern among stakeholders including policy makers, and educationists that there is widespread state apathy and lukewarm response to the initiatives of vocational-school interface initiatives of the Govt. of India. Presently, the percentage share of secondary and higher secondary schools in India having vocational courses under NSQF accounts for only 4.21%, with dismal enrolment rate of 1.54 % among secondary and higher secondary students (UDSIE 2020-21).Furthermore, policy implementation of vocational programme at the school level remains even more uneven, fuzzy, and complex to provide a comprehensive national picture.

While India's recent initiatives on skill ecosystem drive has been proved to be key assets for skilling youth, these efforts have not yet impacted the school corridors in bringing vocational skill components to Indian schools. In this direction, sufficient attention has not been paid to creating strong institutional support and there is still lack of departmental convergence and key stakeholders interaction to drive vocational-school interface at the school level in several Indian states.

Key stakeholders such as school management committees, and teachers are still ill-equipped of the know-how of policies of provisioning of vocational education in schools, and hence fail to respond to initiatives taken in this direction as policy prerogative with accountability and enthusiasm. Coupled with this, is the lack of adequate funding for implementation and support mechanisms from concerned education departments and skill/industry stakeholders. Notable education commissions, and policies from the Kothari commission to the new NEP 2020 have shown concerns for the urgency to increase educational budget by recommending that minimum 6% of India's total GDP should be allocated to education budget. Despite these concerns, India's budgeted expenditure on education is hardly 2 to 3% of the total budget. Of this, only 0.2% of the secondary education budget is allocated to vocational programme, which is almost none (Govt. of India, Ministry of Education, 2020). The analysis of budget expenditure on education during 2018-20 shows that a few states such as Gujarat, Tripura, and Uttarakhand have budget provisions for vocational education at the secondary and senior secondary level, while most of the states have no budget allocation for vocational education at the secondary and senior secondary level. The cost of vocational education is also high in comparison to the general education system. The vocational education system has various trades; each needing a good infrastructure for theoretical and practical classes, with periodical workshops (Chakravarty & Gupta, 2020, and Bhaskar 2019). Without adequate budgetary allocation, it is difficult for the schools to develop a proper infrastructure and resources needed to provide competitive and quality vocational courses in schools. This observation can be further corroborated from the findings of the study conducted by National Institute

of Advanced Studies, Bangalore (2020-2023), on the potential association between vocational skill policy, dropout reduction and employability among school students across three Indian states— Odisha, Assam, and Manipur. Drawn on the study, it is observed that a small percentage, 21% and 22% of sample secondary schools in Assam and Odisha were found implementing vocational programmes in poultry farming, agriculture, plumbing, travel and tourism, automobiles, IT application, stenography, textile design, and computer application. The findings from Manipur are rather discouraging that students of almost 90% of sample schools (Govt., Aided and Private schools combined) are deprived of quality vocational courses. The study further observed that only a handful of these schools providing vocational courses were equipped with basic infrastructure facilities and professionally qualified vocational teachers; thereby failing to provide training needs with quality employable skills. The study further observed widespread scenario of poor provisioning of school facilities including school infrastructure, basic and ancillary facilities, lack of laboratory facilities, trained manpower etc. which are pre-requisites to drive vocational-school interface. When multiple questions were asked about the reasons of non-implementation of vocational programmes in own schools, most often, teachers cited lack of funds as the main reason of non-implementation of vocational courses followed by lack of qualified and trained professionals.

Apart from policy implementation issues, the policy objectives of vocational programme tend to create hurdles in the success of the vocational education itself. For instance, NPE 1986 focuses on vocational education with the objective of reducing the demand for higher education. However, in India, vocationalisation failed to reduce the demand of higher education (Jain, 1992). The perception that VET is a substitute to higher education resulted in non-creation of linkages and pathways between the two streams, thereby, leading to poor take off of vocational programme as youth tend to perceive that it might confine them to manual jobs with little or no opportunity for higher education (Tilak, 2007). Another important observation is, one of the factors that reduces the effectiveness of vocationalisation of school education is the focus of the vocationalisation itself orienting to students who are either school dropout or those demonstrating high dropout tendency. This creates a misconception that vocational education is mainly for the low achiever or who do not want to study further in general education. Although this misconception has been a dominant perception, it finds little credence to support as evident from empirical studies. The study entitled, Aspiration, Social Capital and Vocational Career Choice (Salam et al, 2022) focusing on vocationally trained graduate employees such as ITIs and diploma graduates employed in three manufacturing industries, Bangalore depicted that 28% of sample respondents aspired to opt for higher academic studies even after completion of vocational training, while few of them were found enrolled in non-vocational courses either in the evening programme or through correspondence, mostly in the field of social sciences and humanities such as sociology, economics, and English literature. The research study further reveals that participants in the study who come from families with few economic resources are more likely to view vocational profession as a viable career destination by scaling down their higher educational aspirations.

In India, vocational education continues to be stigmatised due to societal prejudice that

vocational education is inferior to higher academic learning, and it's meant for rural folk. With our hierarchical consciousness, we tend to devalue the meaning of vocational education. For several decades, this false narrative is pervasive and widespread in Indian society. This narrative has misguided key stakeholders such as the school community and parents alike. On the contrary, vocational education seeks to integrate theoretical cognition and productive labour; it can promote a meaningful pedagogy— learning through doing or learning the 'skills' for a sustainable living and positive contributions to society. Therefore, at a time when a highly over-populated country like India is experiencing the spectre of youth unemployment, it is important to rethink our pedagogical practices, and reinvent the possibilities in vocational education, by creating pathways into higher education for students opting vocational courses and overcome the stigma attached to vocational education.

Another major challenge India currently faces is the creation of opportunities to provide skilling opportunity in a wide range of competitive skills to make vocational programme attractive and national aspiration among young students. Based on NIAS research findings (2020-2023), an overwhelming proportion of adolescent students—about 80%(average of three states combined) aspired to acquire vocational skills before leaving secondary school. The variety of vocational skills these students wish to acquire include a range of vocational subfields such as electronics & hardware, beauty & wellness, tourism & hospitality, home furnishing, jewelry making, textile & handloom, banking & financial, food processing, agriculture, engineering & technology, aerospace & aviation, green jobs, sports trainer, tailoring, plumbing, mining, construction, soft skills and so on. The student sample population represents students from rural, small town, semi-urban, and urban population groups. What's more, the study also depicted high number of parents such as above 95% strongly supporting for children's vocational skill aspiration before completing school, while local teachers concur that vocational programme in schools could mitigate dropout tendencies among vulnerable students, while quipping them with employable skills, improve knowledge, attitude, and outlook. This study prompted widespread support for vocational education among key stakeholders. This positive development in the shift of attitude and perception among stakeholders, especially among school community and parents towards vocational education can be understood considering massive skill related schemes launched by the Govt. of India.

Given India's uniquely rich and diverse landscape, geography, and bioresources, the economic activities of its population are bound to vary. In the larger sense, almost every Indian is gifted with some sort of skills which are local and specific. These skills provide an important source of their livelihood with a sense of ownership. Again, consider the interesting findings from NIAS' study (2020-2023)— in Manipur, about 35% of sample schools from Imphal east district and Bishnupur district provide vocational courses in traditional skills such as craft & embroidery, music, floral skills, and *Thang Ta (*martial art) in rudimentary form, while a few sample schools from Kamjong district impart music lessons as pastime among students. When these indigenous skills of different trades, crafts and arts are learned through vocational education, it aims to prepare an individual to be more productive, and self-reliant. As envisioned in 'LOKVIDYA' of NEP 2020, the above findings make one to reflect on the need to preserve and promote India's vast reserves of local indigenous specific skills – an important activity that can create livelihoods for large numbers of local young

students while simultaneously instilling a sense of pride and ownership among them. True, challenging issues of liberalization, globalization, and privatization (LPG) of Indian economy have resulted in a paradigm-shift in the economic system which reduced the demand for traditional vocational education courses. Due to this, a demand and supply gap has also been generated. Considering such new needs and demands, creating opportunities for skilling, upskilling, and reskilling through high quality courses in existing, new, and upcoming areas must be provided. Creation of such opportunities will be able to provide a clear pathway from education to employment and livelihoods for many aspiring students who would be encouraged from the pursuit of education of a desirable level.

1.10 Suggestive Model of Vocationalisation of School Education in India

Vocationalisation of school education policy in India can draw inspiration from the effective models of countries such as Finland, Germany, Mexico, China, and Switzerland. Here is a detailed model that combines key features from these countries as well as the best practices of successful Indian states to create a comprehensive vocational education system in India:

1. Integration of Vocational and Academic Education:
   - Introduce vocational streams within all existing schools.
   - Offer a combination of vocational courses and academic subjects to ensure a well-rounded education.
   - Provide flexibility for students to choose their vocational specialisation based on their interests and aptitudes.

2. Practical Training and Industry Collaboration:
   - Forge strong partnerships with industries, businesses, and trade associations to develop vocational curriculum that ensures job-market relevance.
   - Incorporate practical training, internships, and apprenticeships to provide hands-on experience and exposure to real-world work environments.
   - Establish vocational training centers equipped with modern facilities, tools, and equipment relevant to the chosen vocational streams.

3. Qualified and Trained Faculty:
   - Develop a robust system for training and certifying vocational teachers to ensure they possess both subject expertise and pedagogical skills.
   - Introduce business, industry, and/or trade sabbatical for vocational teachers to ensure expertise in ever-evolving industry trends and the attendant workforce skills.
   - Provide continuous professional development opportunities for the career advancement of vocational teachers.
   - Facilitate teacher exchange programs with countries known for their strong vocational education systems.

4. Career Guidance and Counselling:
   - Integrate comprehensive career guidance and counselling services to help students make informed vocational choices based on their interests, aptitudes, and market demands.
   - Collaborate with vocational experts, career counsellors, and industry professionals to provide personalised guidance and mentorship to students.

- Organise career fairs, workshops, and vocational exposure programs to familiarise students with different career paths and industry requirements.

5. Standardised Certification and Recognition:

   - Develop a national certification framework that provides standardised qualifications for vocational skills.

   - Collaborate with industry representatives and professional bodies to design certification standards and ensure their alignment with industry requirements.

   - Establish partnerships with international organisations to ensure the recognition and portability of vocational qualifications beyond national borders.

6. Entrepreneurship and Innovation:

   - Introduce entrepreneurship education as an integral part of vocational programs, nurturing creativity, problem-solving skills, and business acumen.

   - Encourage students to develop innovative projects and business ideas through mentorship programs and incubation centers.

   - Foster collaboration between vocational students and startups or small businesses to provide practical exposure to entrepreneurship.

7. Government Support and Funding:

   - Allocate adequate resources, funding, and infrastructure for the development and implementation of vocational education programs.

   - Create policies that incentivise industries to participate in vocational training initiatives and provide apprenticeship opportunities.

   - Establish regulatory bodies to monitor the quality of vocational education and ensure adherence to standards.

8. Public-Private Partnerships:

   - Foster collaborations between educational institutions, industries, and civil society organisations to leverage expertise and resources.

   - Encourage industries to actively engage in curriculum development, mentorship programs, and internships to bridge the gap between academia and the job market.

   - Promote corporate social responsibility initiatives that support vocational education, scholarships, and skill development programs.

Implementing our model of vocationalisation of school education in India, as elucidated can help equip students with practical skills, enhance their employability, and address the growing demand for skilled workers in the country. Furthermore, as noted from various policy articulations, successful integration of vocational programmes to schools is seen as an antidote to the failing school education, resulting in education for lifelong learning opportunities, entrepreneurship, sustainable livelihoods, success in labour market, and dropout reduction.

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DOCUMENT CONTROL SHEET

1	**Document No and Year**	:	NIAS/SSc/ED/U/RR/18/2023
2	**Title**	:	Vocationalisation of School Education: Prospects and Challenges
3	**Type of Document**	:	Research Report
4	**No. of Pages and Figures**	:	62 + iv pages, 16 tables and 9 figures
5	**No. of References**	:	112
6	**Author**	:	Jeebanlata Salam
7	**Originating School**	:	School of Social Sciences
8	**Programme**	:	Education
9	**Collaboration**	:	None
10	**Sponsoring Agency**	:	Tata Trusts

11 **Abstract:**

The paper is a comprehensive policy review with a focus on secondary school education in India. The study provides the status of provisioning of vocational education at the school level, the success models in Indian states implementing this provision, the history and summaries of various policy trajectories culminating with the Prime Minister's National Council on Skill Development. The paper then highlights a comparative analysis of vocational education systems in South Asian countries, global trends, best practices, successful models from industrialised nations and concludes by offering suggestive models based on best practices in the specific context of India.

12 **Keywords:**

Vocationalisation of school education, Dropout reduction, Aspiration, Skilling, Sustainable livelihoods, Inclusive growth

13	**Security Classification**	:	Unrestricted
14	**ISBN**	:	978-93-83566-47-1

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