Article of Significant Interest

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Using Technology for Vocational Education and Training (VET) during COVID Times: Issues and Challenges

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Abstract

The paper primarily derives its feet to ascertain pedagogical concerns on using technology for vocational education and training (VET) for different skill development programmes in institutions during COVID times. The educational institutions cutting across levels have massively used technology for teaching and learning during the pandemic period (COVID-19) to transact the curriculum prescribed for learners. The use of technology for transaction of curricular practices is also no way exception to the skill training programmes as well though it is supposed to be focussed on hands-on-training. The potentiality of using technology has been well recognised in the context of TVET way back 2005 by European Union as it states "the development of IT and e-learning in iVET institutions is closely connected with broader issues such as the evolution of the information society, the lifelong learning paradigm and the general development of secondary education" (EU 2005). Similarly, the researches have proved that "if access to TVET is to increase, new ways of developing and delivering courses must be explored. TVET must be taken outside of the classroom and into the communities, the workplaces and the homes of the students. Traditional ways of thinking about TVET must be put aside and different ways of packaging and delivering knowledge and skills must be developed" (Hampton, C. and Bartram, J. 2002:63). The present paper strives to look into some of the issues and challenges in using technology for TVET with emphasis on accessibility, facilitation of teaching and learning, sustaining learner's motivation, addressing social and economic issues & challenges and ensuring teaching-learning process more enjoyable, including addressing institutional developmental plans.

Keywords : Technical and vocational education and training (TVET), skill development, technology

Introduction

The vocational education and skill training programmes in India have come a long way. The training allows a diverse social group to be able to earn their livelihood in a particular area, which makes them easily employed. It has been evident that there exists a gap between the employed and the unemployed due to the fact that lack of skill required to perform a task. With the inception of the government programmes like Pradhan Mantri Kaushal Vikas Yojana (PMKVY) and others, a large number of unemployed youth had been able to join the workforce. The emerging trends in vocational education is to make sure that the youth of the country has access to a large number of opportunities that are otherwise not available for them. The idea of work-based learning (WBL) and vocational education and training (VET) play a crucial role in preparing individuals for the workforce by imparting practical skills

and bridging the gap between academic learning and the world of work. The development of vocational education is embracing flexible learning models, such as online courses and micro-credentials to provide accessible and personalized learning opportunities throughout one's career and prepare people as lifelong learners. The National Education Policy (NEP) 2020 also emphasises on the use of technology for education. The use of technology was much wider at the time of COVID-19 when most of the educational set-ups were shut down due to the effect of pandemic worldwide and India was no way exception to this. Not only in India, but across the world, the pandemic period brought together a time when the resilience towards using technology was felt the necessity and to move ahead with time. Therefore, through this paper, it is necessitated to understand how the technology could bridge the gaps that existed during the pandemic period to make it possible to embark its journey for teaching learning in the context of vocational education and training.

The objective of this piece of work is to explore the issues and challenges the educational institutions embarked while organising teaching learning activities by using available technology and the difficulties faced by the learners for co-oping up with the process of learning in the context of vocational education and training.

Status of VET in India

If one would like to understand the genesis of VET, as reported by the UNESCO in April 1996, (A. Dyankov) had stated that in more than 8,000 institutions, including industrial/ technical schools, agricultural/ veterinary/ animal husbandry/ fisheries/ forestry schools, pharmacy/ nursing/ paramedical schools, commerce/ accountancy/ secretarial practise schools, arts/ crafts/ dress making schools, and institutes of higher learning were engaged in the system. Most of these programmes were offered using face-to-face teaching learning strategies. As a result, numerous technical and vocational initiatives had taken place based on the recommendations of the National Education Policy (NPE 1986) and subsequently operationalised through a well exhausted Programme of Action (POA, 1992) in India. However, not all these initiatives boosted effectively for spread on VET in the country as it could covered only around 5% students in the vocational education stream, (though targeted for 25%), as reported by the NEP 2020.

The most recent Human Resource Requirement Report as prepared under the auspices of Ministry of Skill Development and Entrepreneurship (MSDE), Govt. of India points out the sectoral and geographical spread of incremental skill requirements across 24 high priority sectors between 2013-17 and 2017-22 estimated as 1203.34 lakhs workforce needed across all states as per the table given below (MSDE Annual Report;2021-22).-

(In lakhs)

SLNo.	State	Incremental HR Requirements
1	Andhra Pradesh	108.71
2	Arunachal Pradesh	1.47
3	Assam	12.34
4	Chhattisgarh	30.43
5	Delhi	63.41
6	Goa	2.27
7	Gujarat	57.57
8	Haryana	34.84
9	Haryana	0.93
10	Himachal	12.06
11	Jammu and Kashmir	11.22
12	Jharkhand	44.52
13	Karnataka	84.77
14	Kerala	29.57
15	Madhya Pradesh	78.16
16	Maharashtra	155.22
17	Manipur	2.33
18	Meghalaya	2.49
19	Mizoram	1.40
20	Nagaland	0.97
21	Odisha	33.45
22	Punjab	28.99
23	Rajasthan	42.42
24	Sikkim	147.82
25	Tamil Nadu	135.52
26	Tripura	2.59
27	Uttar Pradesh	110.11
28	Uttarakhand	20.61
29	West Bengal	93.42
	Grand Total	**1203.34**

Source: *MSDE (2022), Annual Report 2021-22*

Keeping in view the requirement, the MSDE, Govt. of India has launched numerous initiatives through Skill India Mission and National Skill Development Mission-:

- Launching of the Pradhan Mantri Kaushal Vikas Yojana (PMKVY).
- Notification of common norms for bringing about uniformity and standardization

- Setting up of Sector Skill Councils (SSCs) as industry-led bodies to develop National Occupation Standards (NOSs).
- Implementation of Skills Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP)
- Launching of Skill India Portal to provide information of trainees, training providers and trainers; and many more related initiatives.

Technology and Its Accessibility in India: Current Status

As of 2020, 50% of people in India had access to the internet and this is growing much faster rate in rural areas through 'Digital India' initiatives. The 'Digital India 'is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. In 2019, there were 264 million internet users in rural India compared to the 310 million internet users in urban India (NITI Aayog, June 2022). The rate at which the Information Technology (IT) is growing today is evident from the fact that it has invaded almost every part of our life. Technological progress can be harnessed by augmenting both expansion as well as quality of education. Present endeavour in this direction has been mainly towards providing the infrastructure and network to the educational institutions, especially to the institutions of higher learning cutting across urban and rural areas. It is well recognised that the digital resource development and its effective utilization by offering digital based certified programmes and courses need to be fully exploited by the universities.

In view of the Government's vision, the educational institutions are keen to use the technological resources in helping its mission to make higher education accessible to all, including the disadvantaged segment of the society. In this regard, earlier it had launched its National Mission on Education through Information and Communication Technology (NMEICT) in 2009 to provide the opportunity for all the teachers and experts in the country to pool their collective wisdom for the benefit of every Indian learner, especially in the context of promoting professional education, and, thereby, reducing the digital divide. Under this Mission, a proper between content generations, research in critical areas relating to imparting of education and connectivity for integrating knowledge with the advancements in other countries was attempted. In view of the digitalization of learning resources, it is imperative to reach out to the critical masses in vocational education and training cutting across different sectors through well designed network with complete dedication. Although disjointed efforts have been going on in this area by various institutions / organizations and isolated success stories are also available, a holistic approach is the need of the hour. This mission seeks to support such initiatives and build upon the synergies between various efforts by adopting a holistic approach. It is obvious that emphasis on Information and Communication Technology (ICT) is an urgent need as it acts as a multiplier for capacity building efforts of educational institutions without compromising the quality. The mission is also necessary to sustain a high growth rate of our economy through capacity building and knowledge empowerment of the people and for promoting new, upcoming multi-disciplinary fields of knowledge (*Source: https://www.meity.gov.in/accessibility*).

Importance of Technology for VET : The Current Status

Technology plays a very important role in the teaching and imparting of knowledge in vocational education and training (VET). Technology is an inextricable part of our modern culture. In traditional or distance education institutions worldwide, particularly in developed economies, technology has demonstrated dramatic effects on the standard and quantity of instruction, analysis and research. It is well recognised that the judicious use of technology facilitates in development, immersion, flexibility in curricular transaction and engaging material effectively for promoting learning enhances vocational and technical education and learning. It enables students to learn in a more personalized manner. Furthermore, the ICT has the capability to accelerate, enhance and deepen skills, motivate and engage students in learning, assist students in linking experiences to undertake practice and build economic viability for all stakeholders.

Technology, thus, enhances institutions' performance and efficiency, leading to several instruments to improve and promote the pedagogical practices of professional and technical instructors. E-learning, therefore, has become the popular mode of using technology in knowledge generation and facilitation for teaching and learning. The teachers engaged in the professional and technical organisations plan, develop, and transact curriculum keeping in view the individual needs and capability of the diverse student groups and explore the possibility using different e-learning platforms. This is necessitated because extended learning can provide new ways to achieve high standards' on cognitive tasks, including uniqueness, ingenuity, problem resolution, and teamwork, particularly by utilizing web-based technologies.

Realising the importance of technology for VET, MSDE, Government of India, has taken significant steps by harnessing the support of digital technology and some of them are listed below (MSDE, 2022):

National Open Digital Ecosystems for Skills (NODES)

The Indian skill development ecosystem is large, heterogeneous, diversified, fragmented, with heavy friction and low on outcomes. The National Open Digital Ecosystem for Skills (NODES) initiative proposes to seize the ecosystem frictions bull by the horns and make skills a case of definite optimism for the country. The NODES is being designed as a decentralized data-empowerment system with data portability between applications with robust data privacy features.

Digital Skilling Solutions and Innovations

The Digital Skilling Solutions and Innovations (DSI) function at National Skill Development Corporation (NSDC) focuses on the facilitation and aggregation of learning resources for the skilling ecosystem, and thereby enabling structure and consistency across the skilling endeavours in the country.

Digital and Technology Solutions for Learning

"e-Skill-India" is an NSDC's e-learning aggregator portal, the first of its kind e-Skilling platform that leverages digital skilling opportunities by integrating e-Content from various providers across the ecosystem thus bridging the gap between the supply and demand.

Strategic Knowledge and Program Partnerships

A variety of knowledge-partnerships were established based on demand of requisite skills in the country by collaboration and networking with national and international education and training providers, including digital start-ups.

Facilitation and Curation of Learning Resources

A number of Skilling Contents and Participant Handbooks are available for the candidates. This includes facilitating SSCs in creating and designing a takeaway handbook for each candidate based on the curriculum for the targeted job role. Further, the trainer Guide with detailed Training Delivery Plan to assist the training facilitators with structured approach towards training. As on 2021-22, total 219 Facilitator Guides have been made available on NSDC portal free, including Free Resources aggregated Kaushal e-Pustakalaya, an android-based e-Book reader app, etc.

Design and Pedagogy

The e-Skill India launched a COVID training zone cataloguing digital resources for 6 new job roles across 27 e-Courses with over 90 hours of digital content. The e-Books for these courses have been made available for free via e-book reader app. It also launched e-Skill India, a PMKVY Zone, consolidating over 174 additional digital reference content spanning 49 job roles from 18 Sectors for PMKVY candidates. Many more are added under PMKVY 2.4 programme which is currently on offer till 2024. Further, 155 learning hours on English, Employability and Entrepreneurship (EEE) training included under PMKVY on pilot basis across 9 job roles to gauge impact on employability.

Technological Platforms

Due to the limitation of the face-to-face interaction during COVID-19, the policy makers and organisations took significant initiatives to create alternative routes for VET, and most important ones are as below:

- Skill India Portal (SIP): Skill India Portal (SIP) is a comprehensive technology platform that enables administration of PMKVY, and non-PMVY schemes run by both central and state governments.
- Apprenticeship Portal: Apprenticeship portal (accessible through the website https://apprenticeshipindia.gov.in) was developed in 2016 by NSDC with the mandate to implement Government of India's prestigious National Apprenticeship Promotion Scheme (NAPS).
- Skill Management Information System (ASEEM): It is an initiative to ensure the demand of skilled workforce is met with the available supply and hence bridge the demand and supply gap that exists in the market.

Use of ICT during COVID Times: Issues and Challenges

Accessibility to the Training Infrastructure

The COVID-19 pandemic affected economies and societies around the world and caused an unprecedented fall in economic activity, the loss of working hours and income, and a sharp rise in unemployment and underemployment. The research conducted emphatically showed in the context of TVET that most of the training centres were closed during the period. However, many training organisations took the step to shift towards remote training mode to ensure continuity of training but at the same time there were very low-key response from the trainees. This is due to the fact that the trainees face many obstacles and major ones are lack of general and technological infrastructure, lack of distance-learning platform, lack of staff capacity and financial resources. In most TVET programs, practical training is a critical dimension which is not easily deliverable through remote modalities for diverse occupations (Chun, H. K. et.al. 2021). During COVID-19, the learners had to face a challenge in order to make sure that they have access to what their institution was trying to impart to them as a form of course content. It was the time when people had to face the problem of not having a proper infrastructure at home to be able to use technology for educational purpose. The lack of sufficient resources and support for technology adoption was the major challenge faced by most learners (Bozkurt, A., and Sharma, R. C. (2020).

The primary goal of using technology for learning purpose and making people aware about its benefits have not come to make its mark in the long run. The fact that teaching and content creation remained moving at a snail's pace is a bigger issue for the vocational education institutions offering skill training programmes as well as for learners. Further, it was ascertained that what the curricular practices organised in the institutions, especially in the TVET context, had secondary importance as most of them were unable to have practice based curricular inputs. Further, one need to keep in mind that how much the students would remember not only the educational content delivered but also how they were cooping up to the teaching learning process during these hard times.

Technology as facilitation of teaching

One of the classic literatures available in the field of educational technology identifies the role of technology in the education sector and how technology is used for education and training, especially in the context of India (Kulkarni: 1969). While technology is attributed majorly of two functions: the contributions of engineering the technology for teaching learning purpose and contextualising to the programmed learning the application of the behavioural sciences to the improvement of the teaching/ learning process.

No doubt the accessibility to the contemporary technology is important, but at the same time programmed learning as a method of organizing learning experiences and how it has been beneficial to the major stakeholders i.e. teacher, curricular developers, students and policymakers has also to be taken into account. It has further been argued that the stakeholders identify it with teaching machines – hardware, involve a great deal of expenditure and fear that introducing educational technology might lead to replacing teachers, thereby dehumanizing the educational process. However, researches in the context has proved that the highly affected counties could moderately sustain their teaching learning due to greater facilitation of using technology during COVID times (Stracke et al., 2022).

Sustaining learners' motivation

The skill development issue in India is pertinent both at the demand and supply level. Generating employment is definitely a challenge given the enormity of the population entering the workforce each year. From the supply side, the issue is primarily related to employability of the workforce due to varying reasons ranging from poor education, lack of training facilities, inadequate skilling, quality issues leading to mismatch of skill requirements, and poor perception of vocational skilling vis-à-vis formal education (Joshi et. al, 2018). These have inadvertently created skill shortages and also contributed to higher unemployment. Hence, both employment and employability are key factors of concern today. Unfortunately, the current size of India's formally skilled workforce is very small. Top of it when technology is used for vocational education and training, it adds into the further challenge for creating an ambience for training in a shop floor. Passionate learner, who is motivated and encouraged by their mentors, has to solve all their problems virtually over their lifespan, no matter the variation of the pandemic they may encounter. Further it is argued that '…through disciplined nonconformity, and in learning communities, and across cyberspace, we may now reimagine a singular planet; exciting and far more integrated connectivity of disciplines and topics; and, utilizing the flexibility that online modules provide' (Naylor 2021). It is often felt amongst the trainers that when they are not present physically, the chances of diversion of attention of students are higher due to the lack of infrastructure at home during the COVID times. This is a big challenge as the teacher has to ensure that students maintain the motivation till the end of the course.

Social Issues

It has often been realised that skill development enhances both people's capacities to work and their opportunities at work, offering more scope for creativity and satisfaction at work. This calls for to find certain strategies that address in turn the why, what, and how of equipping the workforce with the skills required for strong, sustainable, and balanced growth. All these if one possibly changes the mind-set towards the importance of VET in our education system, which is largely missing. It has often been realised that choice for vocational education is the last in the educational aspiration of our youth. Unfortunately, the misnomer is that the vocational education attracts the professionals who need to use only their hand, not mind, though it is a great fallacy that any activity requires both brain and hands. This mind-set of masses has to change if vocational education segment to grow. For this, one needs to develop selected drivers of longer-term change that challenge national skills development systems and provide the motivation for a commitment to improving them. Secondly, it also calls for generating a conceptual framework for a skills development strategy concerning national policy objectives relevant to the diverse realities and needs of the country as whole and different stakeholders in particular. Thirdly, examples of successful ventures of the countries like Germany, South Korea, Australia, China etc. who have built their economy with strong vocational education system. Since larger group of students did not have access to required technology such as- smart-phones, dedicated internet facilities, separate rooms for learners at home and facilitation for learning, especially from the low socio-economic strata, also added the underpinning effect to the importance of vocational education and training programmes.

Economic Issues

Vocational Education and Training (VET) has been perceived as major game changer for economic productivity and growth in developing nations, especially in India. It has greater implication on poverty alleviation from the societal point of view. It has often been argued that appropriate knowledge and skills enhances the productivity of the workforce and thereby enhances the economic growth. Therefore, educational institutions should provide

appropriate knowledge and skills to enhance their skills and make an effective contribution to economic growth. Many research in this area have found that there is absolutely no synchronisation of vocational education in terms of its equivalency for the vertical mobility of students, robust competency standards and accreditation system, shortage of trained teaching force, inadequate linkages with the industry and lack of convergence between agencies for social recognition (Mathur, 2018).

Even though, one feels proud for 'demographic dividend' for its population in the country, but the socio-economic inequality and growing unemployment have major concern for the growing economic, including accessibility of appropriate technology to the large segment of population in India. Due to their disadvantaged economic status a significant segment learners associated with the vocational training programmes could not join the technology supported instructional process. Even the teachers also had similar kind of experience to share, especially during the COVID-19 times.

Conclusion

No doubt, the COVID-19 has posed a greater challenge to the VET sector, like all other sectors in a growing economy like India. However, indiscrimination use of technology for training youths during the COVID times, without ascertaining availability of the adequate infrastructure has also brought an impediment to the entire system. The gap that exists between urban-rural contexts in terms of accessibility to the technology has accumulated challenges for implementation of VET education system. Further, landscape of VET system suffers from issues and challenges like public perception that views skilling as the last option, robust assessment and certification systems, paucity of trainers, inability to attract practitioners from industry as faculty, very low coverage of apprenticeship training, narrow and often obsolete skill curricula, non- inclusion of entrepreneurship in formal education system and lack of assured wage premium for skilled people (MSDE, 2022). Of course, these issues and challenges are not only limited to the digital infrastructure, but also about its operation and accessibility. However, these does not deter to appreciate the potentiality of technology for education and training in a growing economy like India.

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