DOI: https://doi.org/10.52131/pjhss.2022.1004.0304

Pakistan Journal of Humanities and Social Sciences

Volume 10, Number 4, 2022, Pages 1461–1471

Journal Homepage:

https://journals.internationalrasd.org/index.php/pjhss

Implementation of Competency Based Education through Blended Learning approach in TVET sector of Pakistan: Critical Analysis using Literature Review

Zamir Ahmed[1], S. Khurram Khan Alwi[2], Rana Naeem Akhtar[3]

[1] Ph.D. Research Scholar of Educational Leadership & Management (ELM), Department of Education, SZABIST, Karachi Campus, Pakistan. Email: zamir.dayo@gmail.com

[2] Assistant Professor, Department of Teachers Education, Federal Urdu University of Arts, Sciences & Technology, Karachi, Pakistan. Email: drkhurramkhan@outlook.com

[3] Assistant Professor of Education, Shaheed Zulfiqar Ali Bhutto Institute of Science & Technology, Karachi, Pakistan. Email: dr.naeem@szabist.edu.pk

ARTICLE INFO

Article History:

Received: August 27, 2022
Revised: December 23, 2022
Accepted: December 25, 2022
Available Online: December 31, 2022

Keywords:

COVID – 19
Digital Platform
Blended Learning
Online Education
TLP
CBE
TVET

Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

The teaching and learning process (TLP) has been reshaped in a timely manner as per need, for better understanding. Technical and Vocational Education & Training is one of the main sectors, delivering education and training simultaneously for the socio-economic development of every nation. The sector has been facing different types of challenges in different contexts. Competency Based Training and Assessment is one of the major domains, to maintain the demand and supply ratio of the market to cover the need. The normal delivery of TLP is interrupted when COVID – 19 pandemic situation occurs. To ensure the delivery of TLP in the situation blended approach was introduced to carry on the process without any disturbance, whereas the underdeveloped countries suffered from the pandemic, due to multiple issues. This research article covers the different scenario, and find out the gaps in the proposed conceptual framework that the disbalancing of developed and underdeveloped countries would be maintained. After finding, recommendations were also made that there is an acute need for online, offline, and face-to-face approaches for teaching and learning along with the transformation of Competency-Based Education (CBE) in the TVET sector of Pakistan to live, with sustainability and also for socio-economic development.

Corresponding Author's Email: zamir.dayo@gmail.com

1. Introduction

According to United National Development Program 2018 (2019) sixty four percent of Pakistani population is below thirty years age, which makes it most top youngsters' country in South Asia. However performance of TVET sector in Pakistan is not up to the mark and young potential might occurs alarming situation in shape of unemployment bombing.3.798 TVET institutes exist, where only half of million trainees accommodate. In contrast, estimated 1.5 million youth unemployment has been increasing per year. It shows the youth have less privilege to educate TVET sector as compare to general education. To handle critical situation, war foot basis strategies might require through Competency Based Education. While in COVID situation, the process of teaching and learning laid down. To manage the situation there would be such type of modern strategies to handle the same for the future to maintain the burden of youngsters.

As per report of United Nations (2021), the ranking of Pakistan was 154thamong 189 countries as per UN's Human Development Index (HDI) 2020. It also shows the worst situation for socio-economic development of the country. Ministry of Federal Education and Professional Training launched "Skills for All" a national level strategy in year 2021, but still did achieve the

eISSN: 2415-007X

target, so fruitful results awaited. Federal government and apex body of TVET sector must focused on technological advancement and workforce development of TVET sector, and take the decisions for right path to accommodate the youth of country in the future.

TVET is second largest sector of Pakistan which delivers education and training through formal education from pre matric to degree level program. Majority of the delivery has been conducted through conventional method, but since last five years CBT & A has been introduced after implementing National Skills Strategy. National Vocational Qualification Framework (NVQF) has also introduced with help of the international donor agencies to manage demand-supply ratio of TVET graduates. Different levels have also been mapped the education system of the sector, where level 1 through level 8 have allocated to different types of programs. Up to Level 4 the TVET delivered the trainings and assessments, whereas since last year Level – 5 of CBT & A has been introduced for Diploma of Associate Engineer (DAE) program in ten different disciplines/technologies. Introducing CBT & A, industry has been involved through their Industry Advisory Group (IAG) to provide and maintain demand – supply ratio of the trained manpower. The focus of this research article is related to the different domains introduced in TVET sector worldwide, and also its needs to implement in the local context of the sector.

In this research article, it has been tried to analyze the different approaches in global perspectives, comparatively same in Pakistani VET educational context, focused during COVID – 19 pandemic, and continue TLP delivered towards the learners using blended learning. CBT & A impact also analyzed locally and globally. The role of learning through digital platforms using online and blended learning has also been reviewed. Using Content Analysis approach of International and national articles published in different research journals were reviewed related to the TVET sector with CBE (also known as CBT & A), blended learning approach, with digital platforms, were also observed.

2. Literature Review

Here we look at CBT & A and integration of Blended Learning approach scenario in global and local context, and its issues & challenges in implementation.

2.1 Technical and Vocational Education& Training

It refers to learning pathways which aim to equip people with knowledge, skills and/or competences required in particular profession for labor market to provide employment opportunities for workers and productivity for enterprises. It can be formal, non-formal and informal, in institute, or sometimes at workplace in particular domain with practical performance to prepare everyone for workplace, might be targeted a life-long learning approach (Cedefop, 2009).

2.2 21st Century Skills & ICT Integration in TVET

Majumdar (2011) noticed that use of ICT can improve teaching/learning environment, and is fundamental for pedagogy-technology integration. Moving role of teachers from instructor to a mentor, converts the teacher-centered towards learner-centered instruction, is actually successful by pedagogy - technology integration for teacher development. Teachers need to be prepared with these basics of how to use I.C.T. tools, so the emerging trends would reflect the better training for the learners of TVET sector, and effects the positive impression on the learners for his easily job hunting in the future.

Twenty first century consisting two comprehensive skills: Soft and Hard. Only the soft skills categorized as Communication, I.T, Numeracy, Learning, Problem solving, and Team work. Auld et al. (2008) analyzed the leaners soft & hard skills were ranked at average level, further; they were not prepared enough with twenty first century skills. Serdenciuc (2013) highlight that trainers must learn the strategies for their trainees and obtain particular knowledge, skills and attitude. Reimers and Schleicher (2020) conducted survey of ninety eight countries from the world including South Asia, the areas likely to face more implementation challenges, in facing online education delivery.

Eltahir (2019) found that trainers and trainees of developing countries are facing technology barriers. Similarly, Kanwal and Rehman (2017) analyzed, in local context of

Pakistan, insufficient digital effectiveness and poor internet connectivity found as key issues to hinder in ICT adoption. Janthon, Songkram, and Koraneekij (2015) reflected Nowadays, ICT is broadly accepted and used in a daily life, including teaching and learning process in better way to understand and smart work.

2.3 Sustainable Development Goals (SGDs) and TVET Sector

As per report of UNESCO–ILO Sustainable Development Goals (SDGs – 2018) recent trends in the domain to overcome the challenges of TVET to grow the socio-economic conditions since mid of 2000, the main policy interventions areas are Development of national and regional qualifications frameworks, development of national training setup, &introduction of new Quality Assurance mechanisms to cover both public and private training, Diversification of funding for employees based on their outputs and outcomes, Managed autonomy of training for public and private sector, using decentralization from central government, across the globe. TVET has been one of major initiatives revealed in Precedence number 4 out of 7 (2015–2035), of Southeast Asian Ministers of Education Organization. Vocationalization of TVET sector implementing appropriate curricula focuses creativity & novelty for lifelong learning, personnel development of trainers, and decreasing demand – supply gap of the skilled workers (Bai & Paryono, 2019).

2.4 Electronic Learning and Blended Learning

Positive hollow of learning impacts on learners of all levels, whereas the widely and supportive role of technology using internet make it easy access for learners towards learning materials. So, effective & efficient TVET learning solutions has to apply blended learning model. Sundari and Utomo (2020) advocated that e-learning (electronic learning) has been employed in numerous institutes & Industries with computer technology and networking for distance learning, without attending classes tangibly, using Moodle – Digital Classroom, and other gadget Applications. Research study of Radha, Mahalakshmi, Kumar, and Saravanakumar (2020) showed that e-learning becomes pretty common among learners globally, in pandemic.

The technology connects learners with learning resources through distance, using an internet. An e-learning is a flexible learning media. Its features can be changed as desired by the learning needs of leaner. Justifying the importance of the statement, Ramakrisnan, Yahya, Hasrol, and Aziz (2012) argues that technology could help to enhance students' motivation in learning, whereas to stay motivated by means of e-learning is not an easy job. Multiple problems related with an individual are age, gender, geographical location, and availability of infrastructure (gadgets) which affect the learner' motivation of learning. Whereas Hofmeister and Pilz (2020) advocated in TVET sector, requires the tactics of exploring how trainers make practice of digital media & online learning as tool for their training and learning.

According to Sharjeel, Dool, and Shah (2020), most teachers in Pakistan did not even consider thee-learning potential. It is necessary that teachers have both the skills: i.e. pedagogical and ICT skills. E-learning problems lie on both ends of the spectrum; many students lack access to reliable internet and electricity facilities, especially in rural parts of the country. Elaborating the various problems faced such as load shedding, lack of better internet access and poor use of learning and teaching online applications. Concluded, significant support be provided to trainers and trainees to equip with I.C.T. and internet resources so that they can learn to adjust in any pandemic in future. Internet connectivity provision, electricity generator, computer laboratories, access to online programmes and online examination applications are some of the basic requirement to adjust in the emerging scenario of natural disaster like future pandemic.

Graham (2006) defined that Blended Learning (B.L) is the learning approach, which is combination of face-to-face (f2f) instruction & computer facilitated instruction, while according to Rogers (2001) negotiation need in traditional drilling sessions and e-learning online provisions led to a novel approach that is known as hybrid or B.L. As defined by Amita (2020) expressed through Singh the blending offers several benefits over using solo learning delivery medium, because learning is continuous process. Nazarenko (2014) reflected that it enhance efficacy of learning, because it contributes to transformation of learning, blend of two formats namely, traditional and e-leaning, impacts learners' new style of learning. It is actually composition of physical plus online learning (Liu et al., 2016; Mohamed-Amin, Norazah, &

Ebrahim, 2014), so TLP approach mixes web based learning and f2f connections. The report of Cardet (2019) for B.L mentioned that it is a hybrid technique of learning encompasses an alliance of f2f and online instruction that influence to develop from various hi-tech developments.

Lage, Platt, and Treglia (2000) advocated that B.L is dissimilar from learning, joint with online activities, collective learning design, basic reform of TLP dynamics, and quality of experience. Kintu, Zhu, and Kagambe (2017) analyzed that it is an effective atmosphere of state-of-the-art pedagogical tactics through use of technology involve using f2& online setup. Khlaisang and Likhitdamrongkiat (2015) supports that Environment of Blended Learning enhance cognitive skills for learners. Zhang and Zhu (2017) explored that B.L is getting popular nowadays and hopefully in the future as well. The trainers with technology facility have a greater influence on learners learning as compared to the direct provision to the learners.

2.5 Blended Learning Types

Reviewing the literature, Horn and Staker (2014) found different B.L models: Rotation, Flex, A La Carte, and Enriched Virtual. Jalinus (2021) found that there are four B.L models: rotation, flex, self-blend, and enriched-virtual. Further they argue that it is an approach consisting f2f and online learning. Before executing BL approach in TVET sector, things that need to be considered first for the development of its model, topology application, and characteristics of context like infrastructure, technology, pedagogical principles, activity assessment, culture, management, ethics, etc.

Soler, Soler, and Araya (2017) advocated that Moodle platform has been used as virtual learning environment, with free access and as open resource. Advantages of blended education including flexibility of time management, own pace of students learning, resources management, writing skills, personal and social skills. Ilyashenko, Gladkova, Kutepov, Vaganova, and Smirnova (2019) conclude that thanks to Moodle resources, communicative competences development through wiki, blog, chat, forum, and webinar are more rigorous.

2.6 Issues and Challenges

The challenges identified by Meyer and Gent (2016) that teachers are in need of pedagogic assistance related to 21stcentury skills for assessing educational outcomes objectively like online group of people for practice and content to make learning more learner-focused. Lim and Wang (2016) designed a framework under UNESCO, present complete view of B.L for professional development. International Labor Organization (ILO-UNESCO, 2020) conduced Survey during COVID-19 pandemic and found TVET issues in the shape of lack of distance learning infrastructure, less capacities of teachers to deliver through online applications, lack of motivation of students and teachers, examinations and assessments, especially in South Asian countries.

Henaku (2020) found that the issues with the learners of under developed countries facing internet connectivity, financial difficulty, challenges with devices and disruption. Owan, Asuquo Ekpenyong, and Asuquo (2020) highlighted in research that during COVID–19 situation that online learning cannot produce desired results in underdeveloped countries including Pakistan, because due to monetary issues, majority of learners were not able to access internet. The learners faced a number of difficulties with online learning mode. Poor internet connectivity, non-availability and un-affordability for e-learning resources, lack of skills, load shedding of electricity are the issues, as compiled by Amita (2020). In contrast of the benefits world-wide, Beteille, Tognatta, Riboud, and Nomura (2020)found number of challenges hindered in Pakistan to develop a robust teaching profession including teacher absence, lack of pedagogical training, low knowledge & skills, and political influence during their recruitments that lead less up-to-the-mark learning outcomes.

2.7 Blended Learning in TVET

Web based e-learning might complicated and tough for TVET, trainers and learners. Jalinus (2021) argue as it is a learning process consisting f2f and online learning. Before deploying it in TVET sector, considerable points are B.L model development, application of physical network behavior, and also knowing features of institute. Apandi and Raman (2020)

reflected that it is debatable whether technology acceptance models developed previously can be used to scrutinize acceptance of B.L by trainers in sector. Further they pointed out that unfortunately, inadequate number of research has done to investigate in TVET sector.

Şahin (2010) advocated that it can play vibrant role in different workplaces and production units of TVET sector. Amita (2020) in her research found pros and cons of online learning during the pandemic situation. Numerous tools for online education are in practice. Creating WhatsApp/ mailing groups of students, preparing and making available study material/learning resources in various forms through pdf/word/power point presentation files, developing video lectures, utilizing online education platform like MOOC, and are engaging online classes via platforms like Zoom/Hangout/Cisco WebEx.

2.8 Blended Learning for TVET Trainers in Pakistan

TVET–Reform Support Program implemented Pedagogical Training through In-service Training program for TVET trainers in all the provinces Pakistan including Islamabad, Gilgit Baltistan, and Azad Jammu Kashmir. One hundred Lead Trainers LTs), after complete the training, started to deliver training through Staff Training Institutes under the supervision of provincial TEVTAs and trained about the target often thousand TVET trainers, who were working in different public and private institutes of education and TVET sector, through cascading model for better TLP. In next five years phase of TVET RSP (2015–2019) program funded by GIZ, and coordinated by the national apex body (NAVTTC), the same was implemented to train 80 Chief Master Trainers of Pakistani TVET through component of the same training, to ensure the delivery of the same up to gross root to train the TVET trainers at context level. The component comprises by f2f sessions and online sessions, using Moodle.

3. During the COVID-19 Pandemic Situation

At the starting of 2019 pandemic alarming situation not only destroyed the economy of whole globe, but also enlighten the negative impressions on the teaching and learning activities world-wide, so policy makers, owners and top management of the institutes, must rethink their post – pandemic pedagogy delivery with its alternatives. The disaster like situation has challenge education system across world has been shifted from traditional mode towards online mode for TLP and its related activities. Educators have change their traditional approach using online environment (Singh & Thurman, 2019).

Saxena, Kaur, and Saxena (2020) expressed and analyzed that during the pandemic situation, education has been moved towards home-schooling method through the Technology, whereas E-learning platform is the best solution to handle the situation, accessed through laptop, Mobiles, Tablets, and Smart TVs. It is time to transform innovation on Technological platforms for delivering education even in under developed countries, globally.

Ghavifekr and Yulin (2021) observed through four dimensional chart of Strengthens, Weaknesses, Opportunities and Threats (SWOT) analysis the use of ICT in TVET sector. , it was found to enhance self – paced learning ability of trainees, to develop learners' ICT skills, their unrestricted learning environment, to promote trainer-trainee relationship, to make full use of teaching resources, to improve quality of TLP, trainers and trainees safety, and to promote unity and collaboration were the core strengths. Unstable network, trainers refuse or can't use ICT, lack of trainer monitoring, unable to replay the meeting, unable to take closed book assessment, some experiments cannot be performed, increase the learning burden of trainers and trainees using ICT gadgets, learners distracted during class, and equipment restrictions were main weaknesses.

Main Opportunities found were develop towards complete online education system, provision of learning opportunities for overseas students, rising of institutes' visibility, to improve education quality, to remove obstacles to the unfairness of educational resources in urban and rural areas, and to improve residents' living standards. The important threats were increasing financial burden, excessive waste of ICT resources, decreased teaching quality due to lack of supervision, teacher's mind cannot be changed, corruption in ICT investment, reduced employee satisfaction, and the lack of management leads to undisciplined trainers and learners. Reflecting the findings during the pandemic situation in Pakistani context, Abid, Zahid, Shahid, and Bukhari (2021) that teaching staff prioritized to focus on immediate online

instructional matters with lack to emphasis the global practices for online learning inequalities & unusual balance between pedagogy and technology to handle B.L approach.

Nasir and Hameed (2021) observed that majority of Pakistani teachers in institutes are providing traditional way teaching through f2f, whereas online teaching challenging obstacle for them. Pakistan is among one of the most countries, where situation is unsuitable to prepare for sudden shift from learning migration through technology and its gadgets.

Anwar, Khan, and Bakhsh (2021) found out that in underdeveloped countries, like Pakistan, the worries emphasized by students about online education were lack of f2fcommunications with their trainers and with pears socialization, multimedia educational resources and tools. They suggested that government in collaboration with various stakeholders must explore possibility of online education by hosting several digital technologies to handle pandemic crisis to prioritize for youngsters in Pakistan. Iqbal, Ashiq, Rehman, Rashid, and Tayyab (2022) also explored the perceived influencing factor using online education both positive and negative. The learners have concerns over the lack of institutional support, inappropriate study environment, and electricity and internet issues. The social and cultural factors vary geographically, ICT infrastructure is un-comparable in between under developed and developing countries.

UNESCO-UNEVOC consultation team (2021) found that during COVID-19 lockdowns in many countries badly effects on TVET sector were less access to practical learning at their workplace. Underdeveloped countries are worried by inadequate digitalization of content, the few trainers have had online and B.L training, and poor and/or expensive connectivity are challenges. Majority of TVET learners facing poverty, major concern during pandemic is inequality globally.

Chun, Comyn, and Moreno da Fonseca (2021) mention through the recommended through ILO platform that to ensure the accessibility of all trainees, it is important to develop high-tech and low-tech distance learning platforms in times of pandemic crisis and beyond, particularly for practical skills development, by distance learning. TVET policymakers and providers, in collaboration with other public and private stakeholders should transform and find out alternatives to overcome these types of challenges in future.

3.1 Competency Based Training (CBT)

The history of CBT begins in early 1970s when Competence Based Education materialized first time in USA (Rogers, 2001). It is an organized approach to training with assessment attaining toward specific outcomes. It assist individuals to obtain skills and knowledge to perform task to a specified standard under certain conditions (Hodge & Harris, 2012), and emphasis on performing rather than just knowing, therefore CBT is equal to DIY, it stands Do It Yourself (Kuh, Jankowski, Ikenberry, & Kinzie, 2014). The concept later on introduced in 80s at Australia as part of broader industry restructuring (Goozee, 2001).

Okolocha (2012) advocated that TVET education systems experienced massive alteration recently, because new policies has been imposed under-developed countries to change their traditional TVET rules and practices on CBE.

3.2 Effectiveness of Conventional & Competency Based Curricula in Pakistani context

Siddique, Lodhi, Anwer, and Zubair (2020) found that the conventional approach of TVET concentrating on the processes of learning, through rote memorization for achieving grade, that produce TVET graduates who does not have skills, resulting industry mismatch, become burden over the nation. To meet rapid technological changes, TVET sector must shift from conventional to CBT oriented programs. Research results found registered in CBT courses are skilled as compared to traditional, and employers also more confident. It reflects the research of (Van Griethuijsen, Kunst, van Woerkom, Wesselink, & Poell, 2020), they found the execution of CBT positively related to trainees and trainers satisfaction.

3.3 Challenges to achieve Target

Being a second largest educational sector, TVET always has least significance. After 18thamendment execution, it has been facing multiple challenges. Infrastructure, Human

Resource, Management, and funding are major hurdles to achieve the target of Vision 2025. Through traditional delivery of the trainings towards TVET graduates, it is just producing quantity, but not quality. Unbalanced demand–supply, less skills approach, and online Learning System during pandemic situation, challenging issues has been faced by trainers, trainees and management of the sector.

3.4 Need of the strong TVET sector

Shakir (2020) argued that Pakistan human resources rich and second youngest state among South Asian countries. Justifying the same, he noticed the fast technological advancements, skills mismatch in supply–demand ratio of professional worker is main issue to stable the economy of the country. Further focusing negative perception of the sector might coped by necessary restructuring, to introduce trainings like CBT. Federal Government of Pakistan has approved National Policy for TVET sector in year 2018, hopefully it provides job-oriented skills for young generation of nation.

3.5 Advantages of CBT&A

As the focus of CBT & A (also called Competency Based Education) is on Knowledge, Skills and Attitude (KSA) approach, to obtain competencies, and is recognized by industry under National Vocational Qualification Framework of the country, and involved the local industry as per requirement, including training, assessment and placement. Gouharet.al (2020) highlighted that institutions and faculty both have a key role to promote twenty first century TVET skills in local context through Communication, Critical thinking, Creativity, and Collaboration (4Cs). Lived experiences from TVET trainers collected and find out that there is need of effective and ongoing teachers' capacity building through Continuous Professional Development.

Oviawe, Uwameiye, and Uddin (2017) mentioned some key points during the research, including on-job-training (OJT), technological progression, and digitization materialized as successful implementing the 21stcentury TVET skills in the institutions concerned. (World Bank, 2019) mentioned that GOP (2017) also report significance of TVET for socio-economic development of Pakistan, it also reflects Vision 2025. 1,627 public and 2,113 private institutes with enrolment of academic year 2017–18 was around 433,000, that is 0.9 percent of total student population of country. Major issues and challenges are Governance, Quality, relevance, and Access.

4. Conclusion & Recommendations

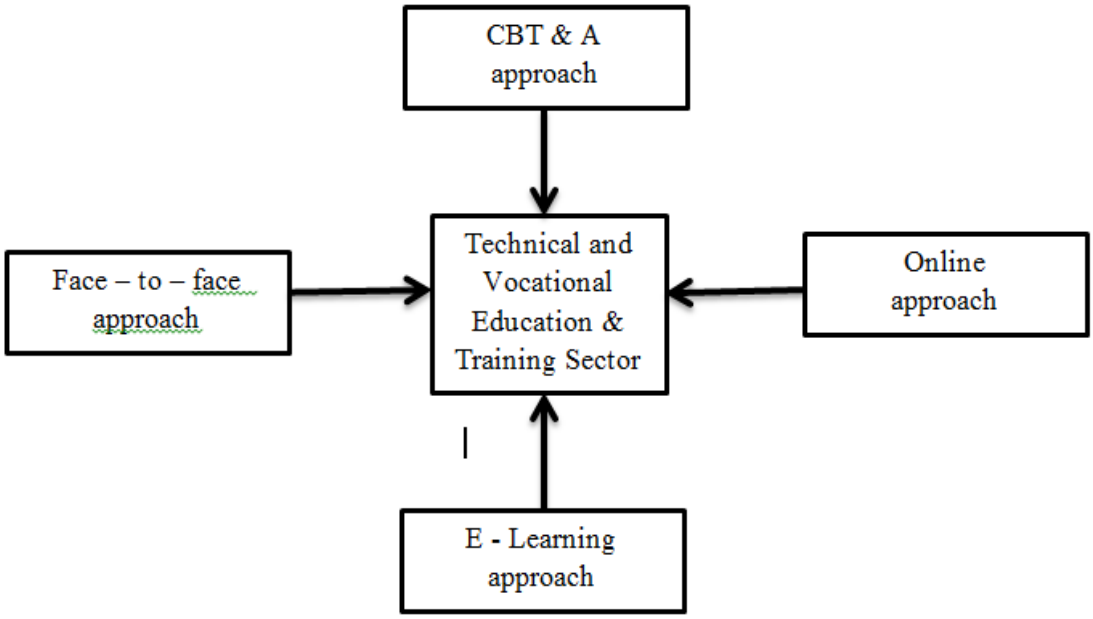
After critical analysis, the following were the findings with recommendations related to the TVET sector of Pakistan.

- There is acute need of blended learning implementation to handle the post pandemic situation and to handle such type of natural disaster.
- Government with the help of International donor agencies must take the initiatives of blended learning and trained teaching faculty and supportive staff to manage the same in normal situation.
- Availability of high – tech labs, with different platforms must be designed by the policy makers and employers of TVET sector.
- Stability of Internet connections must be provided to the institutes for better teaching and learning process.
- Competency Based Education must be extended towards multiple disciplines for job hunting of the TVET graduates.
- TVET sector of Pakistan needs not only the single approach for teaching and learning strategy, but emerging different flavors of approaches like CBT & A / CBE, online, and electronic learning approach to promote the effective and efficient delivery towards learners.
- Hindrances like, internet issue, electricity issue, infrastructure (including smart and high-tech labs) supporting ICT tools and digital learning platforms, trained human resource with supporting staff.
- Training and re-training of the faculty and supportive staff must be conducted for betterment of the teaching and learning and its sustainability.
- Afterwards the same would be shifted to Education – 4 and onwards, which is an international need and demand of the market.

- To handle natural disaster like COVID – 19 pandemic situation, it would be better to ensure, to transform and to implement blended approach for teaching and learning process, without any wait. The same can be implemented with the help of International donor agencies to boost up the TVET sector, which impacts positively over the socio-economic development, its sustainability, and to manage the local, national, and international competition.

The proposed conceptual framework for TVET sector, in the view of the findings and recommendations is given below.

Figure 1: Proposed Conceptual framework for TVET sector



References

Abid, T., Zahid, G., Shahid, N., & Bukhari, M. (2021). Online Teaching Experience During the COVID-19 in Pakistan: Pedagogy–Technology Balance and Student Engagement. *Fudan Journal of the Humanities and Social Sciences, 14*, 367-391. doi:10.1007/s40647-021-00325-7

Amita. (2020). E-Learning Experience of Students in Higher Education Institutions during the COVID 19 Pandemic: A Primary Survey in Raj Pal Singh, India. Anupama Singh and Rakesh Kumar, COVID-19 Pandemic: A Global Challenge. 115-131.

Anwar, M., Khan, M., & Bakhsh, F. (2021). Impact of COVID-19 on Legal Education Sector of Pakistan. *Global Legal Studies Review, 6*(3), 7-16. doi:10.31703/glsr.2021(VI-III).02

Apandi, A. M., & Raman, A. (2020). Factors Affecting Successful Implementation of Blended Learning at Higher Education. *International Journal of Instruction, Technology, and Social Sciences, 1*(1), 13-23.

Auld, G., Holkner, B., Fernando, A., Henderson, M., Romeo, G., Russell, G., . . . Edwards, S. (2008). *Exemplar Schools Using Innovative Learning Technologies.* Paper presented at the Australian Computers in Education Conference.

Bai, B., & Paryono, P. (2019). *Vocational Education and Training in ASEAN Member States* (1 ed.): Springer.

Beteille, T., Tognatta, N., Riboud, M., & Nomura, S. (2020). *Ready to Learn: Before School, In School, and Beyond School in South Asia*: World Bank Publications.

Cardet. (2019). *Blended Learning ERUSMUS – Blended Learning, Curriculum Design for the Blended Learning, IO1: Transnational Needs Analysis Report, Literature Review and Survey Data, ERUSMUS+, Centre for the Advancement of Research & Development in Educational Technology (CARDET)*. Retrieved from

Cedefop. (2009). European Centre for the Development of Vocational Training, European Training Thesaurus Retrieved from http://www.cedefop.europa.eu/EN/publications/20031.aspx

Chun, H.-K., Comyn, P., & Moreno da Fonseca, P. (2021). Skills Development in the Time of COVID-19: Taking Stock of the Initial Responses in Technical and Vocational Education and Training. *Geneva: International Labour Office, 7*, 67.
Eltahir, M. E. (2019). E-learning in Developing Countries: Is it a Panacea? A Case Study of Sudan. *IEEE Access, 7*, 97784-97792. doi:10.1109/ACCESS.2019.2930411
Ghavifekr, S., & Yulin, S. (2021). Role of ICT in TVET education: Teaching & learning amid COVID-19 pandemic. *International Journal of Advanced Research in Education and Society, 3*(1), 119-131.
Goozee, G. (2001). *The Development of TAFE in Australia*: National Centre for Vocational Education Research.
GOP. (2017). National Education Policy 2017–2025. In: Ministry of Federal Education and Professional Training, Government of Pakistan.
Graham, C. R. (2006). Blended Learning Systems. *The handbook of blended learning: Global perspectives, local designs, 1*, 3-21.
Henaku, E. A. (2020). COVID-19 Online Learning Experience of College Students: The Case of Ghana. *International Journal of Multidisciplinary Sciences and Advanced Technology, 1*(2), 54-62.
Hodge, S., & Harris, R. (2012). Discipline, Governmentality and 25 Years of Competency-based Training. *Studies in the Education of Adults, 44*(2), 155-170. doi:10.1080/02660830.2012.11661630
Hofmeister, C., & Pilz, M. (2020). Using E-Learning to Deliver in-service Teacher Training in the Vocational Education Sector: Perception and Acceptance in Poland, Italy and Germany. *Education Sciences, 10*(7), 182. doi:10.3390/educsci10070182
Horn, M., & Staker, H. (2014). Blended: Using Descriptive Innovation to Improve Schools. San Francisco. CA: John Wiley & sons.
ILO-UNESCO. (2020). *WBG Joint Survey on Technical and Vocational Education and Training (TVET) and Skills Development during the time of COVID-19*. Retrieved from www.ilo.org
Ilyashenko, L. K., Gladkova, M. N., Kutepov, M. M., Vaganova, O. I., & Smirnova, Z. V. (2019). Development of Communicative Competencies of Students in the Context of Blended Learning. *Amazonia investiga, 8*(18), 313-322.
Iqbal, S. A., Ashiq, M., Rehman, S. U., Rashid, S., & Tayyab, N. (2022). Students' Perceptions and Experiences of Online Education in Pakistani Universities and Higher Education Institutes During COVID-19. *Education Sciences, 12*(3), 166. doi:10.3390/educsci12030166
Jalinus, N. (2021). Developing Blended Learning Model in Vocational Education based on 21st Century Integrated Learning and Industrial Revolution 4.0. *Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12*(8), 1239-1254.
Janthon, U.-a., Songkram, N., & Koraneekij, P. (2015). Work-Based Blended Learning and Technological Scaffolding System to Enhance Communication Skills for Caregivers Under Local Administrative Organization, Ministry of Interior, Thailand (Part I). *Procedia-social and behavioral sciences, 174*, 984-991. doi:10.1016/j.sbspro.2015.01.722
Kanwal, F., & Rehman, M. (2017). Factors Affecting E-learning Adoption in Developing Countries–Empirical Evidence from Pakistan's Higher Education Sector. *IEEE Access, 5*, 10968-10978. doi:10.1109/ACCESS.2017.2714379
Khlaisang, J., & Likhitdamrongkiat, M. (2015). E-learning System in Blended Learning Environment to Enhance Cognitive Skills for Learners in Higher Education. *Procedia-social and behavioral sciences, 174*, 759-767. doi:10.1016/j.sbspro.2015.01.612
Kintu, M. J., Zhu, C., & Kagambe, E. (2017). Blended Learning Effectiveness: The Relationship between Student Characteristics, Design Features and Outcomes. *International Journal of Educational Technology in Higher Education, 14*(1), 1-20. doi:10.1186/s41239-017-0043-4
Kuh, G. D., Jankowski, N., Ikenberry, S. O., & Kinzie, J. L. (2014). *Knowing What Students Know and Can Do: The Current State of Student Learning Outcomes Assessment in US Colleges and Universities*: National Institute for Learning Outcomes Assessment Champaign, IL.
Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the Classroom: A Gateway to Creating an Inclusive Learning Environment. *The journal of economic education, 31*(1), 30-43. doi:10.1080/00220480009596759

Lim, C. P., & Wang, L. (2016). *Blended Learning for Quality Higher Education: Selected Case Studies on Implementation from Asia-Pacific*. Bangkok: UNESCO Bangkok Office.
Liu, Q., Peng, W., Zhang, F., Hu, R., Li, Y., & Yan, W. (2016). The Effectiveness of Blended Learning in Health Professions: Systematic Review and Meta-analysis. *Journal of medical Internet research, 18*(1), e2. doi:10.2196/jmir.4807
Majumdar, S. (2011). *Emerging Challenges and Trends in TVET in the Asia-Pacific Region*. Taipei: Sense Publishers.
Meyer, I., & Gent, P. (2016). The Status of ICT in Education in South Africa and the Way Forward. *National Education Collaboration Trust*.
Mohamed-Amin, E., Norazah, M., & Ebrahim, P. (2014). Overview of Blended Learning. *Blended & flipped learning: Case studies in Malaysian HEIs*, 1.
Nasir, S., & Hameed, M. (2021). Impact of COVID-19 on the Learning Processes of Typically Developing and Special Needs Students in Pakistan. *Asian Journal of University Education, 17*(3), 67-75.
Nazarenko, A. L. (2014). Information Technologies in Education: Blended Learning (An Attempt of a Research Approach). *Procedia-social and behavioral sciences, 154*, 53-56. doi:10.1016/j.sbspro.2014.10.111
Okolocha, C. C. (2012). Vocational Technical Education in Nigeria: Challenges and the Way Forward. *Business Management Dynamics, 2*(6), 1.
Oviawe, J. I., Uwameiye, R., & Uddin, P. S. (2017). Best Practices in Technical Education Programme for Students' Capacity Building and Sustainable Development in the 21st Century. *Journal of Technical Education and Training, 9*(2).
Owan, V. J., Asuquo Ekpenyong, J., & Asuquo, M. E. (2020). A Structural Equation Model of Principals' Communication Patterns, Funds Management and School-Community Relationship. *Owan, VJ, Ekpenyong, JA, & Asuquo, ME (2020). A structural equation model of principals' communication patterns, funds management and school-community relationship. Journal of Pedagogical Sociology and Psychology, 3*(1), 1-18. doi:10.33902/JPSP.2020364435
Radha, R., Mahalakshmi, K., Kumar, V. S., & Saravanakumar, A. (2020). E-Learning During Lockdown of Covid-19 Pandemic: A Global Perspective. *International journal of control and automation, 13*(4), 1088-1099.
Ramakrisnan, P., Yahya, Y. B., Hasrol, M. N. H., & Aziz, A. A. (2012). Blended Learning: A Suitable Framework for E-Learning in Higher Education. *Procedia-social and behavioral sciences, 67*, 513-526. doi:10.1016/j.sbspro.2012.11.356
Reimers, F. M., & Schleicher, A. (2020). *A Framework to Guide An Education Response to the COVID-19 Pandemic of 2020* (Vol. 14): Oecd Paris.
Rogers, P. L. (2001). Traditions to Transformations: The Forced Evolution of Higher Education. *AACE Review (formerly AACE Journal), 9*(1), 47-60.
Şahin, M. (2010). Blended Learning in Vocational Education: An Experimental Study. *International Journal of Vocational and Technical Education, 2*(6), 95-101.
Saxena, R., Kaur, P., & Saxena, A. (2020). Role of Information Technology in Education during COVID-19. *International Journal of Advance Science and Technology, 29*(8), 4071-4078.
Serdenciuc, N. L. (2013). Competency-Based Education–Implications on Teachers' Training. *Procedia-social and behavioral sciences, 76*, 754-758. doi:10.1016/j.sbspro.2013.04.200
Shakir, A. R. (2020). Need for robust the TVET sector of Pakistan. Retrieved from https://tribune.com.pk/story/2202026/need-robust-tvet-sector
Sharjeel, M. Y., Dool, M. A., & Shah, S. T. A. (2020). Analysis of Pedagogic Concerns About COVID-19 in Educational Institutions in Pakistan. *Pakistan Social Sciences Review, 4*, 839-853. doi:10.35484/pssr.2020(4-iii)59
Siddique, G. K., Lodhi, H., Anwer, M., & Zubair, M. K. (2020). Effectiveness of Traditional and Competency Based Curricula: Perspective of Graduates, Trainers and Employers. *Review of Education, Administration & Law, 3*(2), 307-314. doi:10.47067/real.v3i2.68
Singh, V., & Thurman, A. (2019). How Many Ways can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018). *American Journal of Distance Education, 33*(4), 289-306. doi:10.1080/08923647.2019.1663082
Soler, R., Soler, J. R., & Araya, I. (2017). Subjects in The Blended Learning Model Design. Theoretical-Methodological Elements. *Procedia-social and behavioral sciences, 237*, 771-777. doi:10.1016/j.sbspro.2017.02.120

Sundari, H. D., & Utomo, P. (2020). *Five E-Learning for Education in Indonesia.* Paper presented at the International Conference on Online and Blended Learning 2019 (ICOBL 2019).

United National Development Program 2018. (2019). *UNDP National Human Development Report on Pakistan,* . Retrieved from www.undp.org/nhdr/2018/pakistan.pdf

United Nations. (2021). *United Nation report on Human Development Index* Retrieved from www.undp.org/unhdi.asp/3457832

Van Griethuijsen, R. A., Kunst, E. M., van Woerkom, M., Wesselink, R., & Poell, R. F. (2020). Does Implementation of Competence-based Education Mediate the Impact of Team Learning on Student Satisfaction? *Journal of Vocational Education & Training, 72*(4), 516-535. doi:10.1080/13636820.2019.1644364

World Bank. (2019). *Skills Assessment for Economic Growth (2019). Education Global Practice South Asia,* . Retrieved from Washington D.C.: www.worldbank.org

Zhang, W., & Zhu, C. (2017). Review on Blended Learning: Identifying the Key Themes and Categories. *International Journal of Information and Education Technology, 7*(9), 673-678.