

**Technical Vocational Education & Training –
reflections on the issues facing TVET and its potential
in the time of COVID-19**

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Abstract

The threat of a global health pandemic called COVID-19 has affected the health of hundreds of thousands of people, claimed lives in many parts of the world, disrupted learning and training, has threatened (and continues to do so) economies and pushing many on the brink of recession. However, it has also pushed individuals and units in the public governance, business, education and communities to think out of the box. Governments are deploying strategies and approaches that they have not implemented before to overcome the crisis. Entities are moving into uncharted waters.

In general, the approaches and solutions that we see today correspond to the preparedness of countries, business and communities to tackle the issue in different fronts.

The paper makes a reflection of the ongoing issues to throw some light upon how educational system and TVET should respond to the challenges brought by a global disruption such as COVID 19. The paper proposes actions that can be taken within an immediate, medium-term and long-term period, supported by some examples. It concludes with a set of recommendations aimed at advancing the debate.

1. Introduction

The society is facing an unprecedented crisis due to threats of a global health pandemic. At the beginning of 2020, an unprecedented blow due to COVID-19 has affected the health of hundreds of thousands of people. It continues to claim lives of people in many parts of the world. Perhaps this is the biggest crisis of the 21st century, with a high number of recorded deaths. As a result, there are widespread school closures in many countries. UNESCO reports that 89% of the global student population is affected by the closures, in about 188 countries. More learners could be impacted, according to UNESCO.

In efforts to mitigate the long-term impact of the COVID-19 pandemic, governments have deployed strategies and approaches corresponding the preparedness of countries to tackle the issue in different fronts. While this paper does not intend to evaluate the approaches to date, it is good to note how several specific or general measures are put in place to mitigate the impact of this crisis. This impact are observed on society's health, economy, work, education and public life. For example, efforts are in place to promote self-isolation of people at home, social-distancing, the closing of shared frontiers, the strict observance of sanitary measures, the restriction of some labour activities, accelerated testing, the closing of schools, universities and prevention of social gatherings. All these urgent measures are applied to prevent the worsening of the state of pandemic. However, long-term measures also need to be commenced to manage the serious consequences on the economy, society, culture and education worldwide.

Education and training systems around the globe have started to respond to the situation. Under the circumstances, TVET, an important subset of education and which takes place in secondary, post-secondary and tertiary levels, including work-based

learning, continuing training and professional development², cannot be a silent spectator. The essence of how TVET can play an important role in the time of crisis, is discussed in this paper.

2. How TVET institutions are responding to the crisis

Broadly speaking, the current and potential response of education and training systems can be set up according to their time-relevance. Three perspectives emerge, namely, Immediate response; Medium-term response and Long-term response. In the context of varied developmental structure with specific economic, social and cultural characteristics, the degree of response of institutions is a reflection of the capacity, the readiness of systems and institutional actors, and availability of resources that suit emergency situations.

2.1 Immediate response

By immediate responses, the focus is on the initiatives that are, as of this writing, carried out as temporary alternatives to an otherwise ideal scenario. Initiatives that make use of technology for continuance of learning, use of schools as production units, and make provision for supporting public information and awareness in the community fall in this category.

Firstly, countries strive to bridge the ongoing interruption to the student learning process. A number of institutions and international organisations are making efforts to reach out to learners through online delivery of education and training. Concrete examples are discussed in this paper.

² UNESCO (2015). Recommendation concerning TVET.

Secondly, TVET schools and training centres are making provisions to supply essential goods and services that are in great shortage. Worldwide, the production of medical equipment and devices has been significantly reduced. A surge in global demand for supplies such as Personal Protective Equipment (PPE) has revealed limited capacity to expand its production³. One consequence of it is that the risk of infection for medical workers and for hospital patients increases. To augment the needs, schools and institutions including in TVET have been engaged to produce and utilize their training facilities in the production of needed medical equipment such as protective gears, sanitizers, masks and repair of ventilators, in some localities. This is similar to the concept of ‘production school’ where practice-based learning in specific trades takes place while real goods and services are produced⁴.

Thirdly, some of the TVET schools take active role in helping raise awareness on public safety measures to mitigate the outbreak of the virus.

2.1.1 Mitigating learning disruption through the promotion of online education

Worldwide, the crisis is dealt with much urgency. Education and training is one of the sectors most affected by the pandemic. It can slow down learning opportunities and impact access to education and training by people that are already in vulnerable conditions and disadvantaged.

The notion that everyone’s safety should not be compromised by the need to be physically present in schools and training institutions, demands other modes of delivery of lessons. Hundreds of students and teaching personnel worldwide are trapped in their

³ World Health Organization. Interim Guidance (March 19,2020)

⁴ David, P. The French Production Schools: a new School Form for VET? Paper presented at ECER 2019. Retrieved on 10 April 2020 via <https://eera-ecer.de/ecer-programmes/conference/24/contribution/48526/>

homes, under self-isolation measures. Hence, learning processes are not taking place the way they would in normal conditions. According to UNESCO Global monitoring of schools closures caused by COVID-19⁵, 188 countries are affected by school closures. As a result, 1.54 Billion learners are unable to attend school and learning activities. The scale of impact is also reflected in TVET sector. With a sudden halt in normal running of technical and vocational schools and training institutions, students, trainees and apprentices, are systematically unable to continue planned learning and training processes.

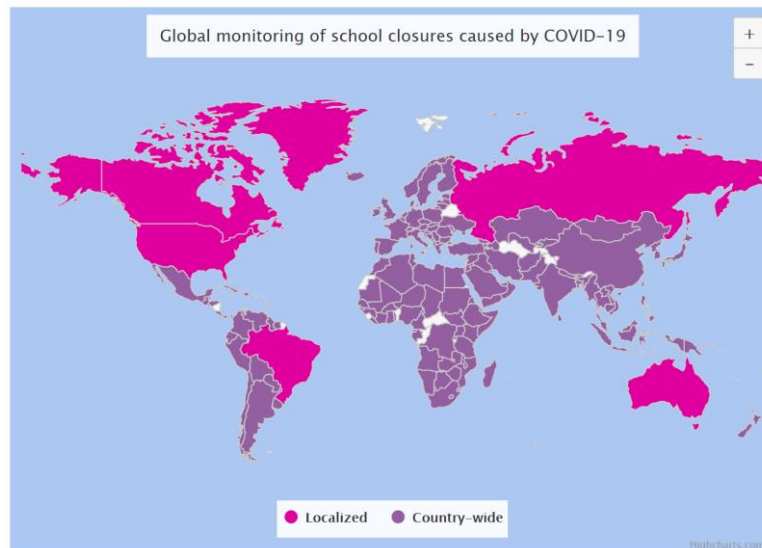


Figure 1. Global monitoring of school closures. Source: UNESCO

As an immediate response, schools are making available online learning materials and resources as a means to augment efforts and replace modes of delivering contents. This is an immediate solution to mitigate the impact that interruption of the learning process has on students. Virtual classes are replacing in person lessons and work placements⁶ of TVET students. Examination and accreditation procedures are being

⁵ Consultation as of 29th of March 2020; data is constantly updated as of this writing.

⁶ The time period in which the student works in a company as part of his or her training. The duration of the work placement can vary. It can be paid or unpaid and compulsory or not.

discussed to adapt to situation and find a way around the established procedures, without hurting protocols and systems.

The priority has been to continue with the learning process without interruption. The degree of efficacy may vary from one country to the other, and even within the same country. However, this aim is not fully achieved due to some outstanding issues that surround TVET. The process to mitigate learning disruption is hindered by access to internet and to free and quality web-based tools, poor internet performance in some countries, limited available open online resources and online teaching solutions.

Regarding learning platforms, there are a lot of platforms available for free. However, the highly practical nature of TVET makes them useful only for the theoretical type of subjects. The relevance of the practical part in TVET asks for a solution that goes further away. Use of technology-aided practice-based learning such as the use of virtual simulators is an example. Even if it is true that they cannot be a substitute for real machines and real working environments, they will help in minimising the negative effects of the crisis on TVET students.

Still there are some good examples to be drawn from across the globe. For instance, the Technical Education and Skills Development Authority, TESDA, in the Philippines, offers several free TVET online courses through their TESDA Online Programme. This provision has become highly valuable.

The European Commission launched a survey on the 18th of March 2020 and by the 25th of March 21 European Member States and 6 countries from outside Europe answered the survey.⁷ Aware of the difficulty to find free materials online for TVET, the

⁷ https://ec.europa.eu/social/vocational-skills-week/fight-against-covid-19_en

Commission is asking European national public authorities to create a free database of existing materials to be shared. There are already some European countries that established such platforms. In Croatia, for example, the Agency for VET and Adult Education has opened a portal and has asked all TVET stakeholders to create and share TVET materials there.⁸

UNESCO and the European Commission are two entities that are responding fast to make available information that can address the need for TVET-oriented materials. Various useful resource databases are shared on their websites^{9,10}.

UNESCO-UNEVOC, which is coordinating a global TVET network, has recently opened an online discussion thread¹¹ which encourages TVET providers and stakeholders share experiences on how they are coping with COVID-19. Similarly, the discussion is open to share contents, to share knowledge, to assist each other and, in the end, to help all the TVET community to give the best possible answer in their specific contexts. Such type of partnership offered through the forum is very timely as it provides a platform to connect information and responses.

The World Federation of Colleges and Polytechnics, a worldwide TVET network, with the same goals as the previous institutions, has also engaged in consolidating and showcasing examples of how colleges are dealing with the crisis through home-grown initiatives.¹²

⁸ We are aware of the fact that there are more examples through Europe and we are not intending to say that Croatia is the only country who did something. It is just an illustration of the point, not a detailed list of all European countries who did something similar.

⁹ <https://en.unesco.org/covid19/educationresponse/solutions>

¹⁰ <https://ec.europa.eu/social/vocational-skills-week/sites/evsw/files/annex1.pdf>

¹¹ UNEVOC TVET Forum thread entitled, "Moving to online: TVET learning in response to the COVID-19 outbreak. Challenges and experiences"

¹² <https://mailchi.mp/e2dbe4e84fe9/wfcp-dispatch-march-april-issue-3924866>

The World Bank has several blogs in its webpage to give data based advise on different aspects of online learning. Apart from that, on March 23rd a call for proposals has been launched through the Strategic Impact Evaluation Fund (SIEF) on the topic “Can technology accelerate learning and skills?”. Although the call is not TVET specific, it will definitely be an asset to fight the effects of COVID-19 on education.¹³

In light of these initiatives, governments, international organisations, TVET providers and individuals alike are in solidarity to create, share, find, communicate and try online learning tools as positive actions. The current situation is also pushing for the creation of more TVET-oriented free and digital education content and resources that can be shared and disseminated widely, to boost self-paced learning.

2.1.2 Making provision to supply medical equipment and devices on-demand

Worldwide there is a general shortage of Personal Protective Equipment. One consequence of this is the spread of infection that put medical workers and hospital patients in great risk. To solve this, TVET institutions are actively engaged in producing protective equipments and other supplies such as sanitizers and masks, which is a timely application of a production school concept within community. In some communities, repair and maintenance of some equipment that can be used in health facilities are also supported by these schools, in association with industry. The current crisis has pointed to a new opportunity for TVET system and it is the learners of TVET. TVET could be an important partner that can bridge education and business to support product and service design, development and distribution. The value proposition that TVET can offer is that

¹³ <https://www.worldbank.org/en/programs/sief-trust-fund/brief/call-for-proposals-can-technology-accelerate-learning-and-skills>

it does not only develop students' knowledge, skills and competencies for future work and employment. TVET could also be an effective partner for supporting the production, supply and delivery of goods and services that are normally capital intensive for the business sector. Moreover it can also facilitate practical training. In this mode, TVET can connect business, **community** and students who seek for continuance of training, through involvement in business process solutions and innovating their role in the value chain of product and service development and design. Several inspiring interventions linked to this are being led VET Schools and technical training institutions.

- In Spain, in the Basque Country, apart from the general health risk, the COVID-19 crisis has provoked a worrying shortage of critical medical equipment, such as protective facial screens for doctors and nurses. Aware of the need of contributing by all means to the fight against the new virus, the Vice Ministry of Vocational Education and Training of the Department of Education of the Basque Government started to use the technical knowledge and technology of the Basque TVET centres to start producing protective gear for the Basque Healthcare system. 46 Basque TVET colleges are producing two different types of facial screens making use of their knowledge and technology in the fields of paperwork, different materials and 3D printers. Through the initiative, shortages in the supply of medical equipment could be abated and more focus could be given to managing the treatment of patients. On the other hand, the initiative is a perfect example of how, once more, TVET has shown to be a key element of social wellbeing in a country. Furthermore, the initiative could be a source of inspiration to those who are facing similar situations.¹⁴

¹⁴ <https://www.youtube.com/watch?v=fxHIWrrvccQ&feature=youtu.be>

- In the US, a team from MIT is engaged in developing an open-source, low-cost ventilator design which is aimed to be shared for free to those who can copy and manufacture these highly critical equipment. This work builds on an earlier work by a team of medical device design students of MIT, which consulted medical professionals in the process of designing and testing low-cost solution for use in the medical field. The lack of ventilators, and over-reliance to supply of big pharmaceutical industries, currently swamped with unmet demands and limited production, is a pressing issue in many parts of the world. The shortage of these equipment has rendered incapacity for medical facilities to provide the proper care needed by an unprecedented number of populations.¹⁵
- In the Philippines, the country's national technical education and skills development centre, TESDA which is responsible for skill training, certification and establishing training regulations, has mobilized local technical training institutions to help support local needs. As a result, vocational schools and training centres all over the country have been helping in the production of ready-to-use medical masks and hand sanitizers, which are now helping augment the massive shortage of supply of these important products, and ensuring safety of the medical practitioners and society at large. In addition, several vocational schools in other regions mobilize food and pastry students in supplying food and other basic needs for frontliners in different social units/areas. The proximity of these institutions within areas where local demand is high, makes it possible to easily deliver the

¹⁵ <https://e-vent.mit.edu/>

devices to points of emergencies, without having to rely on other services that have also been stalled by the nationwide lockdown.¹⁶

- In Brazil, SENAI, the country's National Service for Industrial Training – a network of not-for-profit secondary level professional school, has teamed up with key industries to establish a coordinated network of service that help maintain unused mechanical respirators or pulmonary ventilators and make them available to treat Covid-19 patients nationwide. This voluntary and free action called 'Respirator Maintenance +Initiative', has been established in 16 states. It was possible to organize this through strong institution- industry mobilization network in Brazil. This Network is working together to ensure that the shortage in medical equipment is addressed. As an approach, the Network is engaged in sharing of technical resources for repair of devices that can be used without having to rely fully on the production of new units, which is affected by disruption in global supply chain. In addition, the SENAI Innovation and Technology network, a national reference point in Brazil, works round the clock to address the lack of equipment and devices through innovative production.¹⁷
- In India, considering the rising concern of COVID-19 spread in the country, the Indian Institute of Technology, Delhi is committing a total of INR 1 crore worth of High Performance Computing (HPC) Resource for COVID-19 research to merit based proposals selected from a nationwide call. According to the experts, in these difficult times, sharing of resources is important in order to address the infrastructure requirements of researchers working on the Corona epidemic. IIT

¹⁶ <https://www.tesda.gov.ph/News>

¹⁷ <https://noticias.portaldaindustria.com.br/especiais/industria-contracoronavirus/>

Delhi has taken a principled stand and wishes to set an example for this. It is important for scientists to collaborate with each other given the urgency of the situation." There are many TVET schools in India that are also engaged in developing protective gears. ¹⁸

- In Canada, Camosun College makes it possible for trainees to work on campus facility to aid in the manufacture of washable masks for healthcare workers, using own tools and equipment available at the College. The initiative is in collaboration with industry partner supplying raw materials, and is managed through the College's applied innovation and research centre in support of the health sector.

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2.1.3 Public awareness campaign on safety

Many TVET schools around the world are undertaking a massive awareness campaign. COVID-19 is a newly identified virus. This means that, particularly when it started, only a limited information was available about it. Health organisations, at all levels, have been researching without a break and the world has been gaining more and more understanding about the threat. These awareness campaigns are, and should be, coordinated by relevant authorities from the health sector, but then it is the responsibility of all of us, TVET systems included, to spread their knowledge and contribute to the awareness raising campaigns as much as possible.

Some ideas for TVET institutions are to put posters and infographics in their buildings, to share convenient measures and protocols in their webpages and social media, and to

¹⁸ <http://www.iitd.ac.in/content/call-proposal-covid-19-research-iit-delhi-supercomputer>

¹⁹ <https://www.timescolonist.com/news/local/camosun-team-ramping-up-thousands-of-face-shields-for-health-care-workers-1.24111001>

get in touch with students, parents and companies to make them aware of the situation and to share with them the contents created by the relevant health organisations.



Figure 2. An infographic material for public safety - Reduce your risk of COVID-19. Source: World Health Organisation

All countries have carried out awareness campaigns. All of them have published some recommendations, have been speaking about it on the media, and have been continuously informing people of the development of the crisis.

International organisations have also launched awareness campaigns. Some examples of institutions who worked on awareness raising could be the United Nations, the European Commission, the OECD or the World Bank to name a few.

In the TVET sector, UNESCO-UNEVOC is also trying to raise awareness. The network of UNESCO-UNEVOC is composed by over 250 UNEVOC centres in more than 160 countries. Its global presence help raise awareness to targetted groups. The World Federation of Colleges and Polytechnics, through its members, is also raising awareness.

What we, in the end, want to emphasize is that TVET sector is comprising of different stakeholders that have a potential access to students, teachers, networks, families and companies and, therefore, should be taken into account for improving the efficacy of awareness raising campaigns at local, regional, national and international levels.

2.2. Mid Term response

By mid-term response, the focus is on measures that could be taken in TVET institutions to be effectively prepared for any future similar situation and to gradually prepare for any post-pandemic disturbances or opportunities that arise.

The current crisis has rendered interruption not only in school-based education, but also in employment, apprenticeship and other forms of work-integrated learning. The threat of job displacement brought by industry 4.0 and job automation has now been overtaken by fear of massive job displacement in industries affected by the pandemic, or even worse, business closures.

Many trainees/students and workforce are forced out of job, whether it is temporary or full-term, in economies that are unable to buffer the cost of the pandemic to business.

Some of these students/trainees/workers are under reduced work hours, with less pay, disrupted learning opportunities and some, with uncertain immigration status in the case of international TVET students or migrant workers. For example, in Australia, the TAFE Directors Australia has advanced measures to mobilize assistance for students including those in TVET. It has called upon the federal government to safeguard student fees under the Tuition Protection Scheme.²⁰ It has also called for the removal of delivery and

²⁰ <https://tda.edu.au/statement-from-tafe-directors-australia/>

assessment requirements in VET qualifications and access to post-study work given limited possibilities to meet requirements. Some of the innovative measures may be:

2.2.1. Re-positioning to support workforce re-training

Many migrant workforce sending countries are also bracing for mass return of migrant skilled workers. Looming job displacements will see huge numbers of workforce that need to be absorbed in other jobs or requiring to be re-skilled or re-trained. ILO data (2018) shows that 32% of the world's current 164M migrant workforce are in Europe, followed by North America and Arab States²¹.

Depending on how the pandemic could cause long-term impact to business, TVET institutions will have an important role in addressing unemployment and help in the skilling of local displaced workforce as well as returning migrant workers to seize the next wave of employment opportunity. A serious effort needs to be initiated in the mid-term projections of jobs and guidance and counselling.

2.2.2. Supporting community-based solutions and strengthening of local industries

The COVID-19 outbreak has evidenced that access to medical and other service-oriented facilities is not always easy in an environment where there is controlled mobility, limited flow of services and high reliance on local-based services. Unfortunately, this pattern is establishing a new norm in places where resources are lacking. In some cases, the establishment of local centres might just be the only solution to cut down costs and reduce reliance to non-domestic service providers, which is not plausible in a crisis situation. These are solutions that require medium-term policy strategy.

²¹ <https://migrationdataportal.org/themes/labour-migration>

- [Community/ or Medical Kiosks, also called “telemedicine kiosk”](#), is an immediate solution that requires medium-term strategy. The availability of these kind of kiosks can augment the number of service centers that cater to the community during crisis. TVET institutions can be very helpful in expansion of this concept in different localities, in tandem with local community health service providers, to collect community-oriented data and information that can be analysed as a basis for local policy actions and developmental project priorities. TVET expertise could be helpful in deploying technology-enabled applications for managing and maintaining community health databases that are lacking in local health units. TVET can support the development of specific competencies of the local youth to meet the needs of local jobs around the setting up and running, and the delivery of basic medical and non-medical services such as early diagnostics, sample analysis, database recording, equipment repair, maintenance and community-government-business coordination. These kiosks have the potential to be managed either as a small-scale income-generating enterprise by the community or a philanthropic/civic/public initiative co-managed with private individuals and local government units.
- [Expansion of facilities that use renewable energy](#), such as solar energy, is an important initiative that can help in the electrification and better management of remote communities not reached by regular power supply. In times of crisis, the supply of medicines and equipment is scarce. Food supply is heavily disrupted, which create high demand for local produce and challenges in storage and distribution. TVET can support the training of youth and

community to build internal capacities for installation, operation and maintenance of solar-based off-grid devices which are useful in running of temporary health-care units, local laboratories, food dispatch and other service areas for the community that needs electricity supply.

2.2.3. Preparing for flexible learning solutions

Learning disruption has an impact on students' interest with regard to their preferred field of studies. Thus, there is merit in creating solutions to avoid learning disruption and ensure continuance of engagement. Flexible work based learning arrangements deserves a special attention in this regard.

- **Flexible work-based learning.** It is very common for TVET curricula to have a compulsory part of work placement in the company and there are very different schemes to do that. There has been wide-ranging disruption in TVET student learning within work-based setting. Most countries have had to stop the company training of their students. It is true, however, that there are countries in which, although the schools are closed, students can continue their work placement if the company is open. A dual type of training with a very strong company component and the work placement carried out all around the year is harder to apply flexible approach, especially, in field areas where tasks are simply not possible to be carried out from home. Companies engaging in temporary shifts in production of in-demand products are surely able to cope in a crisis situation, such as what we are learning is happening in France and China. Factory production is shifted to manufacturing of in-demand goods based on similar production chain, and where the available infrastructures are possible to produce them.

- **Creating online platforms and virtual simulator training content.** As the European Commission and many others have realised, there is a need for TVET specific materials

and platforms to be shared and opened to more countries. TVET is particularly vulnerable in a situation where in person training needs to be stopped. TVET students need to practice their skills with real machines and equipment and it is impossible to have them at home. However, the impact of this could be minimised to some extent with the use of free and open source lessons and modules that use virtual simulation. Even in undisrupted learning condition, this option has always been an important aspect that schools are encouraged to invest in, especially in case where there is limited work placements in the company. The crisis has magnified the lack of open and virtual learning simulation materials that can be used by students off-work.

2.2.4. Include pandemic risk in planning

The outbreak of COVID-19 has made it evident that TVET systems were not prepared to handle a pandemic situation. They have been, in different degrees and with more or less consequences for students, teachers unable to face the challenges of the current situation.

If we were to ask why it has been like this, the answer will lie in the lack of awareness about pandemic outbreak. In other words, TVET systems have not included pandemics or other similar risks scenarios with global impact that could oblige them to set up new or alternative strategies for delivering education. The Global Preparedness Monitoring Board, *World at Risk Annual Report on Global preparedness for health emergencies*, has a good explanation how to prepare for health emergencies in future.

3. Long Term response

In the long term, COVID-19 has raised fundamental concern regarding the way people live, work, consume and enable development. It has raised serious questions about the

understanding of developmental models and basic beliefs about people's relation with nature. The way these challenges and their implications to society is eventually addressed is a reflection of the society's vision of the world it seeks to live in.

- [Social justice, environment and local development as core principles of TVET learning](#). By now we are all aware that COVID-19 has originated from the lack of understanding of fundamental issues that society is facing. Globalization has caused interdependence and imbalance in the production and supply of global food, medicine and other essential supplies. People's habits and often disregard of others, and other living organisms have highlighted the serious implications and complexities of ecological co-existence. To address this, education and training will need to reinforce training approaches and contents that do not only focus on the technological future, but also help embrace the fundamentals of living in an environment with respect for biodiversity, social justice and cohesion and inclusive development. In this approach, communities and small units of society are enabled to be strong and resilient in any given crisis. Embarking into the path of sustainable development will require a profound transformation in the ways we think, we work, we live and we act; it requires adequate knowledge, skills and attitudes to contribute successfully in the long term. Education and Skills will be the most crucial for transforming the changes to promote the kind of development that people want to see around them

- [SDGs as overarching principles of future TVET development](#)

In 2015 all the members of the United Nations Member States adopted the 17 Sustainable Development Goals and agreed on an ambitious action plan to be achieved by 2030. As the United Nations Organisation point out in their webpage "the Sustainable

Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice. The 17 Goals are all interconnected, and in order to leave no one behind, it is important that we achieve them all by 2030. People, planet, and prosperity all rely on inclusive societies, a healthy environment and jobs that preserve these aspirations. This is underpinned in the [UN 2030 Agenda for Sustainable Development](#)⁷. As countries accelerate their efforts towards achieving the [17 Sustainable Development Goals](#)⁷, there is an urgent need to develop the knowledge, skills and competencies to meet the professional and societal demands, whilst seizing the employment and lifelong learning opportunities offered in the transition to a more sustainable economy and society. TVET institutions in the long run have to play an important role in steering the transition to a low-carbon economy and climate-resilient society. To facilitate this transformation in a systematic and practical manner, UNESCO-UNEVOC offers a guidance framework for Greening TVET²². The framework sets the scene to undertake TVET reforms in conformity with the SDGs and Education for sustainable development through whole institutional approach. This approach highlights five dimensions of green transformation in TVET, including Greening the Campus, Greening of Curriculum and training, Greening community and workplace, Greening research and Greening Culture.

- [Global citizenship and peace education as central pillars of individual growth](#)

The crisis reminds us that regardless of skin colour, country, culture or size of economy, anyone could be affected by a sudden global pandemic such as what is happening now with COVID-19. We all live in the same world, sharing the same risks. While the world

²² UNESCO-UNEVOC published the Greening TVET: a practical guide for institutions in 2017.

may be increasingly interconnected, human rights violations, inequality and poverty still threaten peace and sustainability. Global Citizenship Education (GCED) is UNESCO's response to these challenges. It works by empowering learners of all ages to understand the global impact of today's issues and that everyone must be on the path to become active promoters of more peaceful, tolerant, inclusive, secure and sustainable societies. Similarly, it is built on the principle of Peace and Human Rights Education. It aims to instil in learners the values, attitudes and behaviours that support responsible global citizenship: creativity, innovation, and commitment to peace, human rights and sustainable development. Schools can act as human resource development centres with values, ethics and traditional culture of peace instead of places of 'congregation' for some defined learning inputs. One example of that is the Basque Country in Spain, where the TVET Vice ministry through their Research Centre, TKNIKA, has launched a programme called 4.0 values.

4 Stirring institutions to innovate and link with community actors

However, the range of responses to COVID-19, as discussed in this paper, represents some solutions that only a limited number of innovative institutions can pull off, many of them have close ties with federal or national interventions, or simply run by committed individuals who are willing to be part of solution tapping the available institutional resources. These types of institutions are however under-represented, or reflect only a miniscule sample of institutions that can systematically play a role if they are supported through top-down governance, and are cut out to initiate innovation amidst crisis situation.

Nevertheless, this limitation is also a strong reflection of the untapped areas that can be further developed into new opportunities. The purpose is to enhance the role of TVET institutions through the following:

- i. systematic policy development and its enforcement;
- ii. diversification of the learning areas that TVET can support to be able to provide a rapid response to crisis, and
- iii. enhanced role in the skills ecosystem comprising of public education and business, and its role in supporting innovation to benefit the local community.

5 Conclusion and recommendations

Governments will need to prepare education and training system and its governance to accommodate opportunities for TVET Institutions to be flexible, to recognize their intrinsic role to the society and economy, as well as allow them to be recognized in the whole skill ecosystem as partners in developing solutions.

All the countries and international organizations should learn from this situation and prepare contingency plans at local, regional, national and international levels to face the challenges of the next pandemic. Partnership and networking will be the key to share and learn from each other.

Education systems should prepare themselves for the long term consequences and take this opportunities to change and reposition education and training for sustainable development.

This paper has offered some points to ponder when planning and governing TVET:

- Pandemic situation and their impact should be included in planning TVET approach and risk management studies,
- Capacity development of TVET teachers need to be strengthened on handling pandemic situation
- Transforming TVET for sustainable development should be the central agenda for future TVET work
- Massive awareness raising is needed to emphasize hygiene measures and the healthy practices among all stakeholders
- Teachers capacity on developing online education, ethical and moral values, global citizenship be strengthened.
- Students should be provided with the learner centered self-autonomous tools to learn on their own,
- As opportunity dictates, TVET institutions can be leading examples to implement greening approaches

TVET systems are also in strategic position to think on different time spans when planning their actions and consider short-term (immediate), medium-term and long-term actions.

On the short term, TVET systems should become aware of the fact that they have a huge technical knowledge and, in some cases, well equipped facilities that could be used to help those who are suffering. It is a moral necessity that they start to analyse what they can do and start doing it as fast as possible.

The decision the TVET institutions, people and government take will shape the world for future. It will not only change the health care system but also our future for sustainable

economy, social cohesion and environmental integration, the way to think, act and socialize.

References

- European Commission (2020). European Vocational Skills Week. Fight against COVID-19 (2020, April 8). Retrieved from https://ec.europa.eu/social/vocational-skills-week/fight-against-covid-19_en
- European Commission (2020). How VET stakeholders are facing COVID-19 emergency. List of initiatives. (2020). Retrieved from <https://ec.europa.eu/social/vocational-skills-week/sites/evsw/files/annex1.pdf>
- WHO. Global Preparedness Monitoring Board (2019, September), *World at Risk Annual Report on Global preparedness for health emergencies*, https://apps.who.int/gpmb/assets/annual_report/GPMB_Annual_Report_English.pdf
- Indian Institute of Technology Delhi. Call for Proposal for COVID-19 Research at IIT Delhi Supercomputer (2020, April 7). Retrieved from <http://www.iitd.ac.in/content/call-proposal-covid-19-research-iit-delhi-supercomputer>
- TKNIKA. Learning and high performance (2020, March 29). Retrieved from <https://tknika.eus/en/areas-2/learning-and-high-performance/>
- MIT Emergency Ventilator (E-Vent) Project (2020, April 7) Retrieved from <https://e-vent.mit.edu/>
- SENAI. e grandes indústrias se unem para fazer manutenção de respiradores mecânicos (2020, April 9). Retrieved from

<https://noticias.portaldaindustria.com.br/noticias/saude-e-qualidade-de-vida/senai-e-grandes-empresas-farao-manutencao-de-respiradores-mecanicos/>

- TDA. TAFE Directors Australia. Media Release (2020, April 1). Retrieved from <https://tda.edu.au/wp-content/uploads/2020/04/Urgent-assistance-needed-for-international-students-1-April-2020.pdf>
- TESDA. News article TESDA's nationwide face mask production reaches 36k (2020, April 8). Retrieved from <https://www.tesda.gov.ph/Gallery/Details/10351>
- TESDA. News article TESDA extends help to COVID-19 frontliners nationwide (2020, April 8). Retrieved from <https://www.tesda.gov.ph/Gallery/Details/10349>
- TESDA. News article TESDA produces 17k face masks for COVID-19 frontliners (2020, April 8). Retrieved from <https://www.tesda.gov.ph/Gallery/Details/10348>
- World Bank. Call for proposals 5: Can technology accelerate learning and skills? (2020, April 9). Retrieved from <https://www.worldbank.org/en/programs/sief-trust-fund/brief/call-for-proposals-can-technology-accelerate-learning-and-skills>
- UNESCO. COVID-19 Educational Disruption and Response (2020, April 9). Retrieved from <https://en.unesco.org/covid19/educationresponse>
- UNESCO. Distance learning solutions. (2020, March 29). Retrieved from <https://en.unesco.org/covid19/educationresponse/solutions>
- UNESCO-UNEVOC (2017). *Greening Technical and Vocational Education and Training. A practical guide for institutions.* <https://unevoc.unesco.org/up/gtg.pdf>

- United Nations. Sustainable development goals (2020, March 27). Retrieved from <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>
- World Federation of Colleges and Polytechnics. March/ April 2020 Dispatch. (2020, April 9). Retrieved from <https://mailchi.mp/e2dbe4e84fe9/wfcp-dispatch-march-april-issue-3924866>
- World Health Organization Interim Guidance (March 2020) Retrieved from https://apps.who.int/iris/bitstream/handle/10665/331494/WHO-2019-nCoV-Community_Actions-2020.2-eng.pdf?sequence=5&isAllowed=y

Web resources:

- <https://www.weforum.org/agenda/2020/03/ventilator-mit-design-free-health-engineering-covid19-pandemic>
- <https://www.youtube.com/watch?v=fxHIWrrvccQ&=&feature=youtu.be>

Figures

Figure 1. Global monitoring of school closures. Source: UNESCO

<https://en.unesco.org/covid19/educationresponse>

Figure 2. Reduce your risk of COVID-19. World Health Organisation

<https://www.who.int/westernpacific/news/multimedia/infographics/covid-19>

Figure 3: Sustainable Development Goals. Source United Nations

<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>