



## **SADC TVET Symposium**

### **Building effective national TVET policy framework in the SADC Member States**

#### **Note 4: Innovation in TVET and responsiveness to green and digital transformation**

#### **1.0 Background**

The Southern African Development Community (SADC), in cooperation with ACQF-II project implemented by the European Training Foundation (ETF), and with the ILO and UNESCO is convening a technical vocational education and training (TVET) symposium with the SADC Member States on 8-9 May 2023 contributing to strengthen TVET policies and systems. The decision was approved at the annual Joint Meeting of ESTI Ministers of SADC (14-17/June 2022).

The symposium will deepen the findings and conclusions of the 'Situational analysis of TVET in SADC' study and propose pertinent measures towards strengthening TVET in the Member States.

#### **2.0 Preamble**

Education, training and skills development are important for socio-economic development. Technical and vocational skills development, through among others – quality TVET. The definition of TVET used is adapted from the "UNESCO Recommendation concerning TVET" (2015): 'TVET, as part of lifelong learning, can take place at secondary, post-secondary, tertiary levels and working life, and includes work-based learning and continuing training and professional development which may or may not lead to qualifications. It also encompasses the wide range of skills development opportunities that an individual benefits from during his/her working life, to acquiring learning to learn skills, the development of literacy and numeracy skills, transversal skills and citizenship skills'.

The following four themes have been identified as contributing to the development of, will contribute to the discussion at the symposium;

- Policy framework;
- Labour market responsiveness;
- Articulation; and
- Innovation in TVET and responsiveness to green and digital transition.

#### **3.0 Methodology**

This concept note on 'Innovation in TVET and responsiveness to green and digital transition' is based on a rapid scoping and evidence literature review and is intended to stimulate discussions at the symposium.

It borrows from the sub-themes that have been suggested by SADC to be considered under ‘Innovation in TVET and responsiveness to green and digital transition’, at the TVET symposium. Section 4.0 summarises the main findings of the SADC TVET Situational Analysis, followed by a short description of ‘articulation in section 5.0. Section 6.0 presents the various sub-themes, their respective case studies and associated questions for discussion.

#### 4.0 SADC TVET situational analysis

- **TVET monitoring and evaluation (M&E) systems in SADC member states are at different stages of development**, with varying levels of capacity to manage the M&E functions. Participation of the industry in the M&E process should be more widespread with the publication of frequent performance monitoring reports are produced in some countries like South Africa, Mauritius, Namibia, Zimbabwe, Zambia and Botswana with the reports being shared with all the relevant stakeholders.
- **TVET research in Sub-Saharan Africa is not systematic** and not of high enough quality to provide systematic labour market feedback to ensure that policy-making is evidenced based and that the sector responds to market demand for skilled workers.
- Most SADC member states have a National Qualification Framework, but they are still **facing issues with the articulation pathways**, whereby it is challenging for a TVET graduate to effortlessly and systematically join a Higher Education Institution (HEI). There are working platforms that have been established in some member states whereby TVET and Higher Education Authorities (HEA) are addressing challenges related to articulation arrangements and pathways.
- Despite having national gender inclusive education policies and the implementation of specific affirmative strategies in certain member states, the **enrolment rates of girls and special needs individuals are generally low**.
- Member states have formulated policies to improve the performance of national TVET systems. Reforms have been taking place, but have not been mainstreamed and sustained due mainly to a **lack of financial and capital investment**.
- The situational analysis found that most Member states’ systems are supply-driven. Such **systems are inadequately responsive to labour demand**, resulting in persistent skills mismatches. Most countries have bifurcated labour markers wherein high employment, especially youth unemployment exists alongside high demand for semi- and high-skilled labour. The major problem is that TVET systems have not explored non-traditional learning modalities, alternative credentialing and new technologies that can expand access, increase relevance and speed upskilling and re-skilling.
- TVET systems have **timidly embraced the use of digital-pedagogical technologies**. Many reasons underpin this low uptake, including resistance of trainers and learners to change, limited digital skills of trainers, lack of financial resources to invest in digital learning technologies, challenges in accessing and using existing learning platforms, inadequate digital skills development capabilities as well as the realities of TVET requiring physical contact between trainers and learners.
- TVET generally has a **poor public image** amongst youths and parents. The perception that TVET is a segment of education that is designed for drop-outs and the academically poor is engrained in the psyche of both prospective learner and parents. Innovative and marketing advocacy work needs to be generalized in the member states.

## 5.0 Innovation in TVET and responsiveness to green and digital transition - a working definition

The TVET sector globally, has been impacted by climate change and the COVID-19 pandemic, with developing and developed countries facing varying challenges. Disruption caused, has had varying impacts and responses across countries, thus exacerbating existing inequalities.

While stronger economies have been relatively more resilient to the effects of the pandemic, transitioning faster to new digital modes of working, providing support to companies affected by the crisis, and supporting upskilling and reskilling of workers, less developed economies have been affected by deeper recession, more poverty, and higher unemployment rates, including among youth and women. The COVID-19 pandemic has amplified structural problems in economies and labour markets, making it more difficult for vulnerable groups of people to find decent job opportunities.

Climate change and digitalization are more topical than ever, and responses need to be broad-based, including through the TVET system, given its wide-ranging reach as an important contributor to recovery and development.

## 6.0 Sub-themes & pointers for discussion

1. Pan African Initiative for digital transformation of TVET and skills development systems in Africa
2. Greening of curriculum
3. Training of Trainers in digital skills
4. Using augmented reality / virtual reality for TVET
5. STEM approach in TVET
6. VET for the circular economy
7. Digital skills and competencies for TVET

### 6.1 Pan African Initiative for digital transformation of TVET and skills development systems in Africa<sup>1</sup>

Digitization and the gradual integration of automation and technologies represents one of the main challenges facing TVET systems globally, more so in SSA. The need for an effective digital transition, which has been exacerbated by the Covid pandemic, would allow skills development systems to better meet the ever-evolving demands of labour markets. The Pan African Initiative for Digital Transformation of TVET and Skills Development Systems in Africa aims to ensure the digital transformation of TVET and skills development systems so that individuals are empowered to adapt to the new realities of digitalization and disruption. It is implemented by UNESCO, The African Union and the African Union Development Agency (AUDA-NEPAD), the African Institute for Economic Development and Planning (IDEP) of the United Nations Economic Commission for Africa, and the African Development Bank (AfDB). The ecosystem is articulated around 5 key components, namely:

- The Pan African training programme;

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<sup>1</sup> <https://www.unesco.org/en/articles/pan-african-initiative-digital-transformation-tvet-and-skills-development-systems-africa#:~:text=employability%20of%20workers,-,The%20Pan%20African%20Initiative%20for%20Digital%20Transformation%20of%20TVET%20and,adapt%20to%20this%20new%20reality.>

- A National Network for Digital Transformation;
- ICT's and Digital in TVET Day established in African countries.
- Regional Centre of Excellence on Digital transformation in each Regional Economic Communities (RECs);
- Knowledge sharing and monitoring mechanism on the state of advancement of the Digital Transformation of TVET in Africa.

A first cohort of training for managers and policy makers, has been completed. The recipients would be tasked with advocating for the digital transformation of TVET and strengthening the use of ICT and digital in the TVET sector. Following their training, they would also be able to coordinate policy and strategy work to integrate ICT and digital education and learning in the TVET sector at both national and regional levels. Other initiatives include the establishment of a roster of nearly 1,000 experts/master trainers able to meet the technical support needs of African countries in the field the training and the training of one million young people outside school and in the informal sector by 2030.

#### **6.1.1 Pointers for discussion**

- What are the pre-conditions for a relevant and gradual digital transformation of TVET in SSA?
- Is the presence of a digital culture in the country, a driver for the digital transformation of TVET?
- Should policies and strategies prioritise digital human skills development or digital infrastructure and access?
- Should a mobile-first programme design be considered as a digital medium?
- How to tackle the heterogeneity in each member state, and address digital transition from a regional perspective?
- How to establish/upgrade the digital infrastructure available for TVET (including poor internet coverage, connectivity in training centres, connectivity of trainers and connectivity of learners)?
- Is there need for new institutional mechanisms (apart from conventional means that are already in use to promote private sector involvement in TVET, especially as far as digital skills development is concerned)?
- Can some training-for-trainers and digital content for learners be contextualised and developed for the region?
- Are there approaches (regional) that could be adopted to introduce /accelerate the digital transformation of the TVET ecosystem, (bearing in mind the different contexts of member states)?

#### **6.2 Greening of curriculum**

To ensure that member states benefit from the transition to a greener economy, a set of sufficient education and training offerings need to be developed and efficiently offered. This is particular true for TVET. Firstly, it is important to assess present and future needs for green skills as well as greening existing skills and occupations. Secondly, it is essential to appraise existing programmes to identify gaps and adapt them to make them greener and economy-compliant. Finally, new TVET programmes need to be developed and delivered.

##### **6.2.1 Case from Mauritius: Greening courses at the Mauritius Institute of Training and Development**

In line with UNESCO's sustainable goals, the Mauritius Institute of Training and Development (MITD) has adopted a broad strategy of greening of TVET. One of the facets was to green existing programmes as well as proposing new ones in light with the needs of the country. Technical assistance was sought and a study on green skills has been carried out by a consultancy firm. Its main recommendations were that:

- All the training courses offered by the MITD will incorporate green competencies;
- The methodology comprised a comparison of the National Standard Classification of Occupations 2008 (NASCO) to an existing comprehensive nomenclature of green jobs to apply/contextualise the current/future green jobs in Mauritius. Based on the identified jobs, MITD programmes were identified and prioritized for 'greening'. Then ensued a significant amount of ground-truthing involving several steps, including desk research and interviews with local stakeholders. 47 programmes were prioritized as 'potential for greening' with a training-of-trainers plan.
- Two new training programmes, namely Electricity technician program with elective specialisations in either renewable energy or energy efficiency and Solar Energy Technician are being introduced.

The ensuing work entailed a significant amount of work, including developing teaching materials, train the trainer, pilot the programme and launch it. As an enabler to the greening strategy, trainers followed capacity development programmes on "Training of Trainers on Green TVET" under the Indian Technical and Economic Cooperation Programme (Special Commonwealth Assistance for Africa Programme) ITEC-SCAAP Scheme.

*Source: MITD, Annual Report<sup>2</sup> 2018-2019*

### **6.2.1 Pointers for discussion**

- Do TVET institutions adopt a green-responsiveness philosophy?
- What process should be adopted to green existing TVET programmes?
- How to prioritise the greening of programmes?
- Are there significant skills shortage and gaps in green skills in your country?
- Is a lack of knowledge and awareness about sustainability and the green economy at enterprise level, a deterrent to demand for such skills?
- Given your own national context, what new competencies and courses should be developed in priority? Should they be developed through the existing teaching and training contents, or different one?
- How to improve sensitisation and advocacy to greening TVET practices?

### **6.3 Training of trainers in digital skills**

With the current and forthcoming digital skills gap, there is need for trainers with a good knowledge of and aptitude for digital technology, to subsequently equip VTET learners with the skills needed in today's and tomorrow's world-of-work. Trainers do not only need to bolster their technical digital skills, but also their confidence to using them in learning settings.

#### **6.3.1 Case from the United Kingdom: Online training of trainers in digital skills**

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<sup>2</sup> [https://www.mitd.mu/display/annual\\_report\\_2018-19.pdf](https://www.mitd.mu/display/annual_report_2018-19.pdf)

The 'Enhance<sup>3</sup>' platform stemmed from the ETF's realization that training for teachers on education technologies (EdTech) and digital skills was needed. Training providers urgently needed training on how to use digital and other technologies for teaching and learning. The Enhance Digital Teaching Platform was designed to help develop teaching and training practice through use of technology. It supports innovation in teaching and aims to equip learners with the skills needed for the dynamic and changing world-of-work. The platform currently hosts fully-subsidized training offers, to support teachers and trainers in using EdTech and developing their digital skills through:

- The EdTech in Teaching and Training Continuous Professional Development (CPD) programme. This is designed to help teachers and trainers develop and refine their practice using technology, and comprises 175 microlearning modules of 5 minutes each;
- The Essential Digital Skills (EDS) programme aims to support staff who already are or who will be delivering qualifications relating to the UK's Essential Digital Skills Qualifications (EDSQs) and the Digital Functional Skills Qualifications (DFSQs). The EDS CPD programme consists of 20 training modules of 20 minutes each.

Key features of the initiative include:

- Free, certified, online self-learning and self-paced training modules;
- A user-centred, mobile-first design accessible anywhere and anytime on any device;
- An achievements badge system to reward participation in and application of training;
- Facilities to build a community of practice by awarding special badges to teachers/trainers who actively participates;
- The platform's design overcomes some of the key barriers to teachers'/trainers' participation in digital skills training and application of training received (e.g. adopting 5 minutes micro-learning modules, adopting a pedagogical approach to tackle technophobia, built-in gamification into the platform to uphold motivation of learners).
- Management dashboard enabling TVET institutions to utilize the modules to support staff development.

### 6.3.2 Pointers for discussion

- How to augment the generally insufficient skills of trainers in relation to technological and digital methods?
- What type of assistance and support is required? How to manage change?
- The digital skills of trainers are a requisite. How to assess the *current status quo* in terms of digital competencies, and how to integrate the acquisition of such competencies into initial and continuing training and career plans?
- How can trainers take part in relevant continuing professional development?

### 6.4 Using augmented reality/virtual reality for TVET

The principal objective of TVET is to prepare learners for the world-of-work. Whatever learners acquire should relate and be transferable to their forthcoming work life. This can be achieved through asking learners to accomplish tasks that relate to work life situations. With the advent of various technologies and different wearable technology, the work-life situation can be accomplished in a practice-oriented

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<sup>3</sup> <https://enhance.etfoundation.co.uk/> . The website also provides a range of EdTech modules.

manner by simulating in a Virtual Reality/Augmented Reality setting. This is also more aligned with the continuous digital transformation of work life and can make TVET programmes more attractive to youths.

#### **6.4.1 Case from Germany: Online training of trainers in digital skills**

The use of AR/VR offer entirely new approaches to teaching and learning. The development of technology-enhanced learning (TEL) applications requires specialized expertise, and TEL can only generate benefits for learners, if digital learning applications are embedded in an appropriate pedagogical concept. To offer support and inspiration to TVET personnel, BIBB<sup>4</sup> has worked with experts and partners from around the world to produce practical guidelines that showcase possible learning scenarios for AR/VR-enhanced learning in TVET. This guide<sup>5</sup> provides an introduction to the characteristics of immersive technologies and their opportunities for teaching and learning in TVET. It offers:

- a systematic overview about technical and organizational prerequisites for using AR/VR in TVET;
- a step-by-step approach for defining suitable learning objectives and didactic methods;
- a checklist on content-related, technical, organizational and legal aspects that need to be taken into account for planning and implementation of AR/VR in TVET;
- an overview of typical learning scenarios for AR-/VR-based learning with examples from VET practice.

#### **6.4.2 Case from Hong Kong: Virtual and Augmented Reality (VAR) Learning - Transforming Training in Lift Repair and Maintenance<sup>6</sup>**

Hong Kong has witnessed manpower shortage in various industry sectors, especially in traditional “dirty, dangerous and demanding jobs”. The VR Training Simulator for lift repair and maintenance makes use of immersive technologies to make learning fun and interesting, and to promote a new approach to training through technology in vocational and professional education (VPET) in Hong Kong. The application raises trainee’s and employee’s safety awareness and improve their ability in responding to emergency and accidents in the lift maintenance sector. The VR Training Simulator is recognised as an official Continuing Professional Development (CPD) training unit for registered workers in the lift maintenance industries.

This VR Simulator features 9 scenarios that replicate the working environment of general lift maintenance works and simulate lift incidents that are difficult to replicate in real life. The VR scenarios help to achieve the following learning goals:

- raising trainees’ safety awareness,
- improving trainees’ ability in responding to emergency, and
- accidents in the lift maintenance sector.

Required hardware include:

- few sets of VR devices, each including 1 head-mounted display, 2 controllers, 1 desktop computer, and external motion tracking sensors installed on the ceiling of the VR lab.

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<sup>4</sup> Federal Institute for Vocational Education and Training

<sup>5</sup> <https://sea-vet.net/initiatives/1045-online-toolbox-ar-vr-enhanced-learning-in-tvet>

<sup>6</sup> [https://www.bibb.de/dokumente/media/XR-Use-Cases-in-TVET\\_VTC-Lift-maintenance-final.pdf](https://www.bibb.de/dokumente/media/XR-Use-Cases-in-TVET_VTC-Lift-maintenance-final.pdf)

- Motion tracking and interaction, where the VR Training Simulator allows trainees to walk freely within the defined virtual training area, using 360 ° tracking of hand and head movements and to move around in the VR environment with minimal effort. Trainees use the controllers to interact with 3 -D objects inside the virtual environment (e.g. manipulate tools...etc).

The benefits of AR/VR use in TVET include:

- Situation-based education with virtual reality can serve to connect or merge the school-based education of vocational students with the work life for which they are trained
- VR is an affordable solution to provide practical training for difficult and dangerous situations
- For industry, the ability to practise the use of technology and understand specific tasks ahead of time is very positive
- A realistic 3D environment helps to achieve the intended learning outcomes, complementing traditional teaching methods.

#### **6.4.3 Pointers for discussion**

- How far virtual demonstrations can complement work-based learning and deepen learners' practical understanding?
- Can immersive and interactive simulation-based training augment and enhance offering by traditional TVET training centres?
- How to build AR/VR capabilities of trainers in SADC?
- Who would provide the technical expertise to conceptualise the specific needs of the TVET institution/TVET programme, with a corresponding budget?
- How to secure the technical expertise in digital technology to realise the content design process (generic and specific) with the development of the 3D environments?
- How to integrate the role of content experts and industry partners in the project?
- How to secure regional funding for prioritized/selected AR/VR TVET courses?

#### **6.5 STEM approach in TVET**

The digital transition is occurring in member states and competencies and skills are required in software systems, network security, IoT, emerging technologies, interactive media, information systems, robotics, automation, data mining and analysis among others. TVET has an important contributory role to play in preparing learners to acquiring such skills and competencies, through programmes that are oriented around a Science, Technology, Engineering and Mathematics (STEM) philosophy and approach. STEM competencies comprise:

- stem knowledge (e.g. disciplinal subject specific knowledge),
- thinking skills (e.g. creative thinking, critical thinking, problem solving, systems thinking, computational thinking),
- multi-literacies (numeracy, literacy), and
- socio-emotional intelligence (collaboration, communication, life-long learning).

A workforce that is endowed in STEM competencies, generally exhibit more critical thinking, problem solving, complexity apprehension and innovation capabilities, and are generally more employable.



### **6.5.1 Case from ILO and Technical Education and Skills Development Authority, Philippines<sup>7</sup>: online STEM in TVET curriculum guide**

The Technical Education and Skills Development Authority (TESDA) developed the STEM in TVET Learning Design Framework, which synthesized salient international perspectives and strategies on STEM in TVET and generated one that is relevant to the Philippine context. It identified priority STEM competencies and pedagogical approaches suitable for TVET, with emphasis on the role of teacher professional development, innovation and intelligence, resources, ecosystem, the education continuum, and cultural context as critical levers in making STEM in TVET a success. Using the learning design framework as a basis, the ILO assisted in the development of a STEM in TVET curriculum guide that translates the framework into usable information for curriculum developers, planners and trainers. This curriculum guide maps the STEM competencies in the STEM in TVET Learning Design Framework to the existing basic, common, and core competencies of TESDA qualifications.

The exercise aimed to demonstrate the extent to which STEM competencies are already included in TVET programmes, and also attempts at augmenting past curriculum design by offering comprehensive reference documents for STEM competencies. The reference documents outline two essential component, namely relevant knowledge and specific indicators of STEM competencies and instructional activities that can translate them into practice. A range of STEM pedagogies/pedagogical approaches are also proposed<sup>8</sup>. Some of them include: experiential learning, contextual learning, problem-centered learning, project-based learning, design-based learning, collaborative learning, technology-supported learning amongst others. The guide also assists in the assessment of STEM-oriented outputs. Overall, the goal of the STEM in TVET curriculum guide is to reinforce existing STEM competencies in TESDA qualifications through STEM-oriented learning activities and assessments.

#### **6.5.1 Pointers for discussion**

- How important is a STEM approach to TVET relevant in a world of increased digitalization and automation?
- How can TVET contribute to prepare learners in acquiring STEM-based competencies? What are the most important STEM competencies?
- How to assess existing STEM competencies in current programme and how to augment them if required?
- What process should be adopted to translate required STEM competencies into information input/reference documents for curriculum development? Is there a requirement for a specialized competency to do so?
- According to you what would be the most appropriate STEM pedagogical approaches?
- Are TVET trainers equipped to adopt such STEM pedagogical approaches?
- How can SADC assist in the development of such pedagogical approaches?

### **6.6 VET for the circular economy**

A circular economy is a tool to bridge the status quo, climate mitigation and adaptation. This will have a significant impact on the types of future jobs, skills and competencies. Skills would include transversal skills such as digital and green literacy and problem solving, as well as technical skills that relate to specific

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<sup>7</sup> [https://www.ilo.org/manila/public/pr/WCMS\\_761946/lang--en/index.htm](https://www.ilo.org/manila/public/pr/WCMS_761946/lang--en/index.htm)

<sup>8</sup> See Table 1 on page 9 in guide.

functionalities or disciplines, as well as skills in repairing and maintaining. Such a skills set would be a prerequisite for circular economy jobs. These skills should be acquired through a STEM approach.

TVET has an important role to play in skills development to further the establishment of the circular economy. It must meet the demand for related higher technical skills and provide crucial support for lifelong learning and continuous and in-work upskilling and learning.

### **6.6.1 Case from Netherlands: Dutch Circular Construction Economy**

The Dutch Circular Construction Economy Transition Agenda describes the strategy for achieving a circular construction economy in the Netherlands by 2050. The Transition Agenda acknowledges that educational institutions will need to develop and share new knowledge and skills to deliver on targets set for the construction sector.

The Circular Skills Programme was first created by the sustainable education cooperative *Leren voor Morgen* in collaboration with the Ministry of Infrastructure and Water Management and the Goldschmeding Foundation. The Circular Skills Programme works to bridge the gap between the vocational education and professional practice in the circular economy, such as in construction. It does this by identifying skills gaps in industries adopting circular economy strategies and puts in place regional projects-while encouraging educational reform on a national level to close the gaps.

A partner of the Circular Skills Programme is TIP Circulair, run by Rotterdam University of Applied Sciences. TIP Circulair is a learning community for students and professionals that looks at how the adoption of circular economy strategies is changing occupational requirements and how best to translate this into occupational profiles.

To support the retention of young people coming into the industry and maximise the potential for innovation through knowledge exchange, leading professionals and engineers from the TIP community are paired with young interns and apprentices working within construction and installation companies. They meet once a week to discuss successes and challenges in order to jointly develop their circular knowledge. The TIP Community also comes together for ten half-days spread over 20 weeks to exchange knowledge and receive master classes on emerging approaches from the circular construction and installation field.

TIP Circulair is an example of how to facilitate mutual learning between professionals and interns or apprentices, as well as how co-creation and action-based learning can be used to overcome concrete challenges in the workplace in a timely way.

*(Source: Circular Skills Programme and TIP Circulair | Knowledge Hub | Circle Lab (circle-lab.com)  
<https://knowledge-hub.circle-lab.com/article/8824?n=Circular-Skills-Programme-and-TIP-Ciculair>)*

### **6.6.1 Pointers for discussion**

- How to reduce the gap between skills needed to transition to a green economy and the existing learning and training content in TVET?
- What are the green competencies that are important at TVET level?
- What innovative approaches should be adopted to integrate green competencies in curricula?
- How far virtual demonstrations can embed STEM competencies in classroom-based and work-based learning, to deepen learners' practical understanding?

- How to identify future occupational changes and skills gaps as a result of green transition, and their implications for vocational training?

## **6.7 Digital skills and competencies for TVET**

Digital competence is defined as the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life (UNESCO, 2018).

There are nowadays multiple needs for digital skills in TVET and they are going to be more prominent. These include:

- The need for digital training for students (youths and employees)
- The need for digital training for trainers, and
- The integration of digital tools in TVET curricula and practice.

These needs are compounded in the TVET arena, given the varied complex needs requirement across the multitude skill-based programmes on offer at TVET training providers. Therefore the proficiency levels of the various stakeholders to provide and reap the benefits of digitalization in TVET is an important consideration. A crucial foundation for the above is the use of competence framework that define digital knowledge, skills, competence and aptitude of trainers and learners for their usage. Multiple digital framework resources<sup>9</sup> are available online that can assist trainers and learners.

### **6.7.1 Case from UNESCO and Centre for Higher Education Research at Sunway University in Malaysia: Digital competencies and skills**

Realising the difficulties that emanate from the increasing digitalisation of TVET and the need to digitalise TVET, the UNESCO-UNEVOC commissioned a study aiming to position the International Centre as the global reference point in the TVET space for digital skills and competency. The project team from the Centre for Higher Education Research at Sunway University in Malaysia has creating a repository for references and relevant information on digital skills and competency. These if used appropriately can respond to the multitude needs of stakeholders, specially TVET educators who can better identify the frameworks or part of different framework that can best reflect their realities and address their needs. The full set of resources<sup>10</sup> are already live.

### **6.7.2 Case from Australia: TAFE: The Certificate IV in Information Technology**

#### **TAFE: The Certificate IV in Information Technology (specialising in Programming and Database Development)**

This course provides with a solid base of knowledge and skills to be job ready and competent in a wide range of information and communications technology (ICT) roles. The trainee will apply a broad range of

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<sup>9</sup> <https://tvetjournal.com/tvet-tools/tvet-digital-skills-frameworks/> gives an apercu of the various categories of digital competence framework

<sup>10</sup> They can be accessed at <https://www.unesco.org/en/digital-competencies-skills#:~:text=Digital%20competency%20development%20initiatives%20on,policy%20advise%20and%20capacity%20development.>

skills in varied work contexts, programming with Java and Python, designing databases, configuring database management systems, using problem solving skills and effective communication with others.

The skills required for programmer, database developer or software developer roles may include, but are not restricted to:

- Programming - Object Oriented Programming, Software development
- Database Developer - Designing and Building Databases
- Data Analytics

During the course, the trainee will also learn how to communicate with business clients; configure and maintain databases; apply intermediate programming skills; develop a user interface and ensure a safe workplace.

*Source: IT and Cyber Security Courses | Chisholm TAFE*

<https://www.chisholm.edu.au/career-fields/it-and-cybersecurity>

#### **6.7.1 Pointers for discussion**

- How to embed digital skills into existing qualifications and what would be the implications on qualification frameworks?
- Can digitalization (e.g. augmented reality, virtual reality, online simulators,..etc) be used to plug the infrastructure and equipment gap at TVET institutions?
- How to augment the generally insufficient skills of learners in relation to technological and digital methods? What type of assistance and support is required?
- Given the dynamics in the world-of-work, what methodology should be adopted to evaluate and upgrade current digital skills development programmes?
- Are digital competence frameworks used in the integration of digitalisation in TVET in your country? Do you make use of a locally-developed framework?
- How could SADC assist in training curriculum developers in using competence frameworks in course development?