Advancing TVET through industry partnerships and innovation

BILT Bridging Event

19-21 May 2026, Umhlanga, KwaZulu-Natal, South Africa

Future-ready TVET systems: Digital innovation, AI and flexible learning pathways

Thursday, 21 May 2026

Moderator

Kenny Muscat

UNESCO-UNEVOC

Impulse talk

Future-ready TVET systems: Integrating digital innovation and AI

Helen Brown

Tshwane University of Technology (TUT), South Africa

Panel

Digital innovation ecosystems in TVET

Panel
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Moderator

Kenny Muscat
UNESCO-UNEVOC

Affero Ismail
Head of Digital Innovation Centre, Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia

Binaben Akoobhai
Director: Research and Innovation Swiss South African Co-operation Initiative (SSACI), South Africa

Luiz Eduardo Leão
Educational Technologies Manager, National Service for Industrial Training (SENAI), Brazil

Yang Congkun
Deputy Director of the Office of International Exchange and Cooperation, Shenzhen Polytechnic University (SZPU), China

UTHM
Universiti Tun Hussein Onn Malaysia

unesco
UNEVOC Network Member

unesco
Chair

DIGITALIZATION OF THE CONSTRUCTION SECTOR THROUGH PUBLIC-PRIVATE PARTNERSHIP DEVELOPMENT OF AN INTEGRATED DIGITAL AND GREEN FRAMEWORK

SYNTHESIS: THE QUADRUPLE HELIX COLLABORATION

Igniting holistic ecosystems, deploying interventions, and promoting foreign direct investment.

Government

Industry

Accelerating technology adoption, driving innovation, and scaling global competitiveness.

Central Insight: True global competitiveness is only achieved through complete ecosystem synchronization.

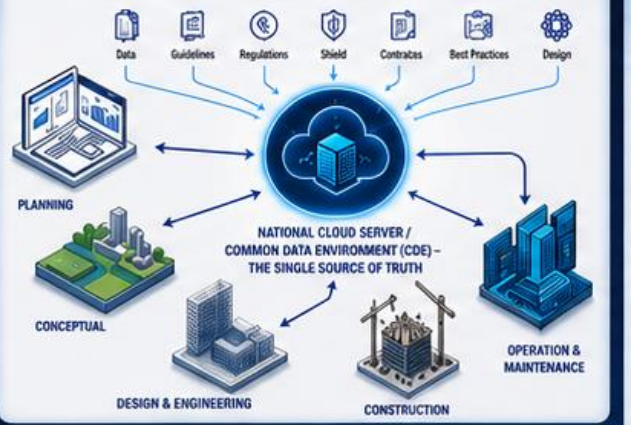
Preparing the future-ready workforce through continuous R&D and targeted skill development.

Academia & TVET

Society

Benefiting from sustainable infrastructure, reduced environmental impact, and transition to higher-income employment.

DEFINING THE TECHNOLOGICAL CORE: THE CDE



INTEGRATED DIGITAL & GREEN FRAMEWORK

1. DIGITAL CORE	2. GREEN / SUSTAINABILITY	3. INTEGRATION LAYER
BIM	Carbon Reduction	CDE
Digital Twin	Energy Efficiency	IDD Workflow
AI / Data	Lifecycle Impact	Data Integration
Automation	ESG Metrics	Interoperability

PROJECT LIFECYCLE

Planning → Design → Construction → Operation → Maintenance

ENABLED BY

Policy & Governance · Standards · Talent & TVET · Funding & Incentives · Industry Collaboration

OUTCOMES

Digitalised Construction Sector · Low Carbon Projects · Efficient Lifecycle Delivery · Globally Competitive Industry

THE BIM IMPACT MATRIX

	TRADITIONAL STATE	BIM-EMPOWERED STATE
INDIVIDUAL / TVET LEVEL	Manual drafting and fragmented task execution.	Mastery of digital modelling, higher per-capita productivity, and elevation to high-value, knowledge-based technical roles.
PROJECT LEVEL	Siloed design, manual clash detection, and costly delays.	Automated 4D simulations, precise resource allocation, reduced errors, and streamlined timelines.
TECHNOLOGY & LIFECYCLE LEVEL	Disparate, legacy software, 2D CAD, and disconnected data across phases.	Integrated digital platforms, AI-driven analytics, 4D/5D/7D BIM for whole-life asset management.

GLOBAL LEADERSHIP

Positioning Malaysia as the regional BIM hub in Southeast Asia. Capitalizing on the EPPTIP to export local expertise and seamlessly integrate with global AEC firms.

- Target exports to increase by % in 2030.
- Regional market share expected to reach %.

DIGITAL TRANSFORMATION

Implementing unified Common Data Environments (CDE), AI-assisted workflows, and Digital Twins across public and private sector infrastructure to achieve international standards.

- CDE adoption in public projects to reach %.
- Digital Twin implementation target is % for new infrastructure.

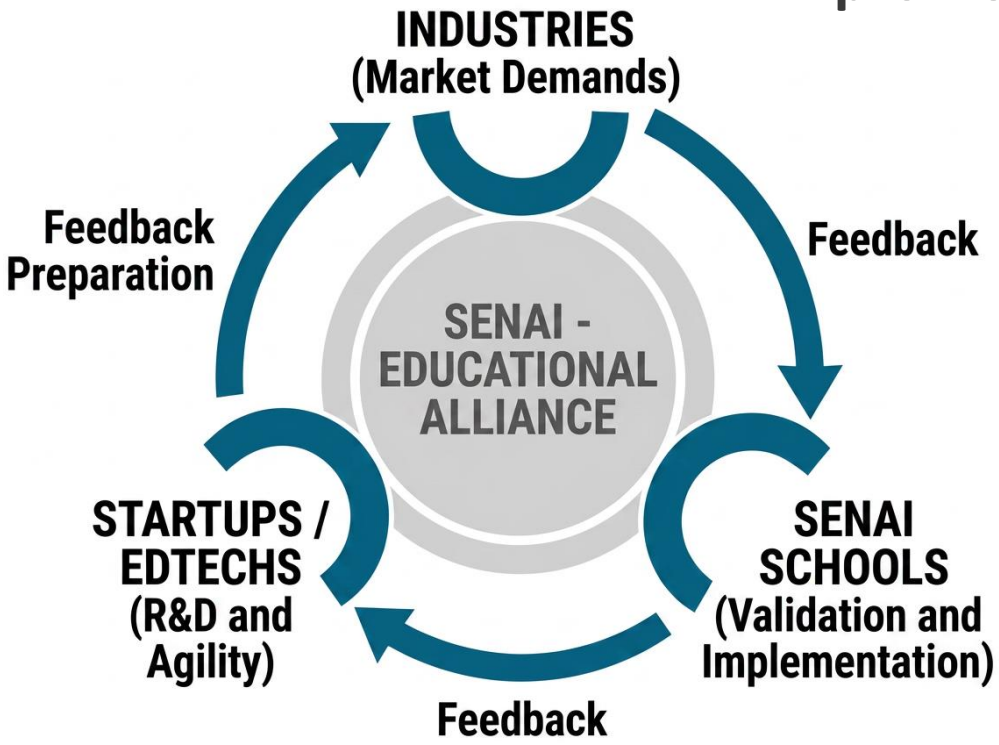
HUMAN CAPITAL (TVET)

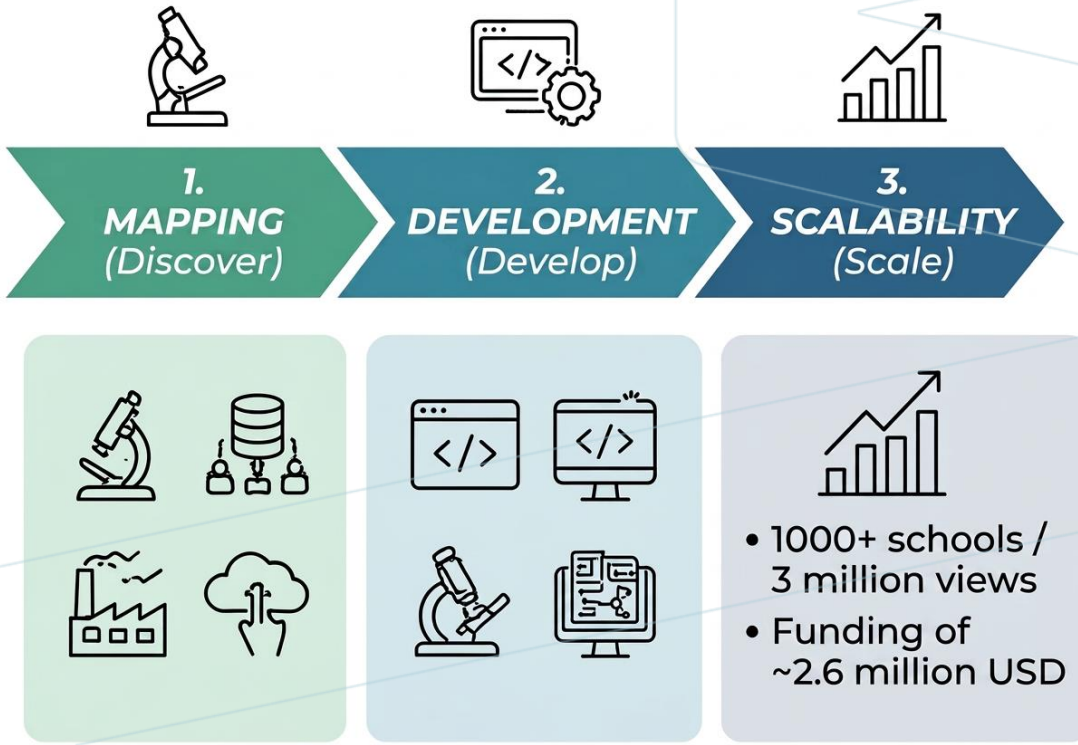
Executing a structural shift to a knowledge-based economy through robust upskilling, TVET Centers of Excellence, and Quadruple Helix public-private capability building.

- Aiming for advanced digital skills of % by 2030.
- Number of TVET Centers of Excellence to increase by %.

DRIVING GLOBAL COMPETITIVENESS THROUGH DIGITAL TWIN, SMART CONSTRUCTION AND HUMAN CAPITAL TRANSFORMATION.

We are a collaborative environment with the goal of promoting innovation in TVET





Educational Alliance Program

An Open Innovation Ecosystem

• The program connects the **needs of the industry** with the **agility of EdTechs,** and **SENAI's TVET knowledge**, operating within a clear innovation journey.

For more information, access:

SENAI Serviço Nacional de Aprendizagem Industrial

INSTITUTO SESI SENAI DE TECNOLOGIAS EDUCACIONAIS

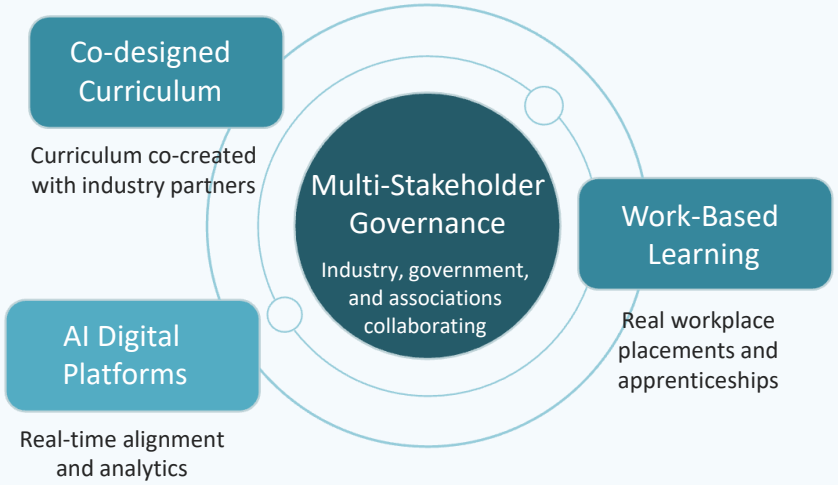
Integrating digital innovation, scalability, and sustainability in TVET–Industry collaboration

Building Sustainable TVET–Industry Collaboration in the AI Era: Insights from Shenzhen Polytechnic University

Dr. YANG Congkun

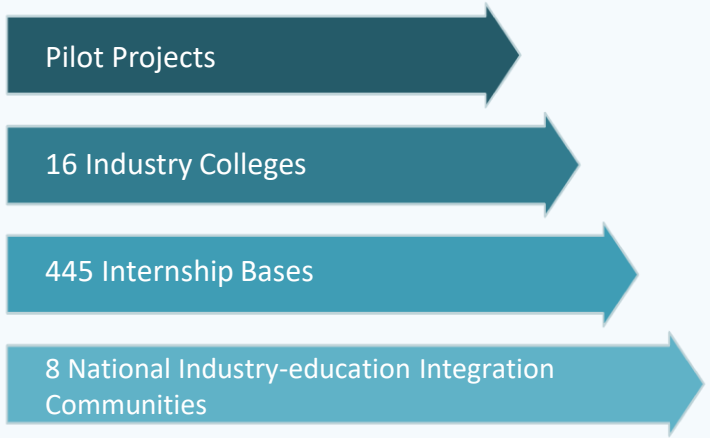
Coordinator, UNESCO Chair on Digitalization in TVET
Executive Director, UNEVOC Centre
Shenzhen Polytechnic University, China

What SZPU Built (Ecosystem)



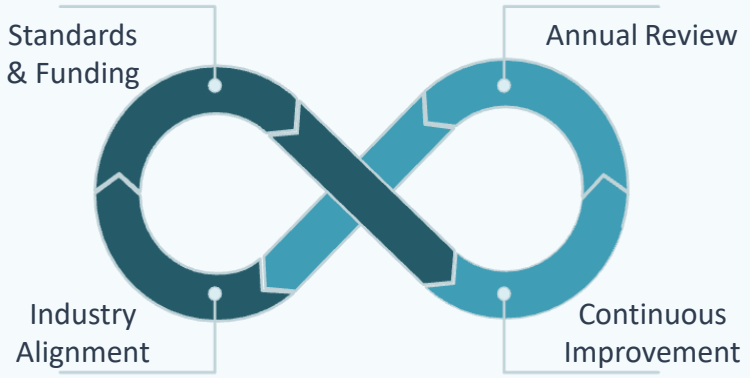
- Multi-stakeholder governance with industry, government, and associations
- Co-designed curricula and work-based learning
- AI-enabled digital platforms for real-time industry alignment

How It Is Scalable



- Institutionalized mechanisms and modular learning structures
- Pilot with Huawei expanded to 16 industry colleges and 445 internship bases
- Digital tools enable replication across sectors and regions

How It Is Sustainable



- Rigorous standards, annual funding, and digital monitoring
- Continuous feedback loops and industry alignment
- Transparent reporting and adaptive processes

PROJECT POWER UP

EMPOWERING YOUTH FOR SOUTH AFRICA'S NEW ENERGY VEHICLE (NEV) FUTURE

Developing the next generation of skilled technicians for the New Energy Vehicle (NEV) economy.

TECHNICAL TRAINING

Hands-on training in EV & HEV systems, diagnostics, repair & maintenance

WORK READINESS

Training in workplace behaviour, communication, teamwork, problem solving & professionalism

ONLINE ENTREPRENEURSHIP

Online training to build business skills for self-employment & opportunities in the green economy

WORKPLACE EXPERIENCE

Real workplace experience with industry partners

OUR TRAINEES

Youth from 4 TVET Colleges

- ✔ NCV Level 4 Learners
- ✔ N6 Engineering Students
- ✔ Electrical & Automotive Graduates

4 TVET COLLEGES

- Tshwane North TVET College
- Ekurhuleni West TVET College
- West Coast TVET College
- Buffalo City TVET College

INDUSTRY PARTNERS

- AIDC
- Stroom
- Golden Arrow Bus Services
- McCarthy Automotive Group
- Other Dealerships & Workshops

OUR TRAINING JOURNEY

2 MONTHS THEORETICAL TRAINING AT COLLEGE
Classroom learning on EV & HEV systems, theory & diagnostics

3 MONTHS SIMULATOR TRAINING
Hands-on practice using advanced EV/HEV simulators

4 MONTHS WORK PLACEMENT
Real workplace experience with industry partners

JOB READY
Equipped with skills for the NEV workforce

OUR IMPACT

- SKILLED NEW TECHNICIANS
- INCREASED EMPLOYABILITY & PLACEMENTS
- STRONGER TVET COLLEGE CAPACITY
- SUPPORTING SOUTH AFRICA'S JUST ENERGY TRANSITION

PROJECT DURATION
2025 – 2026

Swiss South African Cooperation Initiative
www.ssaci.org.za

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SIFA
Skills Initiative for Africa

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Feedback form

Event photos
on UNEVOC’s flickr album

Tea and networking break

11:45 – 12:00 SAST

Panel

Micro-credentials for digital and flexible learning pathways

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Micro-credentials for digital and flexible learning pathways

Moderator: James Keevy, JET Education Servies

Kirti Menon
Associate Professor, University of Johannesburg, South Africa

Maggy Beukes-Amiss
Senior Lecturer, University of Namibia, Namibia

Maili Vilson
Acting Head: Johan Skytte Institute of Political Studies, University of Tartu, Estonia

Moeketsi Letele
Chief Executive, Council on Higher Education (CHE), Lesotho

Noshmee Baguant
Acting Head: Regulatory Affairs and Accreditation Division, Higher Education Commission (HEC), Mauritius

Nuala McGuinn
Director, Centre for Adult Learning and Professional Development, University of Galway, Ireland

Event photos
on UNEVOC's flickr album

Closing

Moderator

Sello Mokoena

UNEVOC Centre Coordinator, UNISA, South Africa

Closing remarks

Matsheliso Molapo

Acting Vice-Principal, Strategy, Risk and Advisory Services, University of South Africa (UNISA), South Africa

Closing remarks

Vaola Sambo
UNEVOC Centre Manager, UNISA, South Africa

Closing remarks

Pinkie Ntola

UNEVOC Centre Coordinator, DUT,
South Africa

Closing remarks

James Keevy

Chief Executive Officer, JET Education Services, South Africa

Closing remarks

Friedrich Huebler

Head of UNESCO-UNEVOC

Feedback to Event "Advancing TVET through industry partners hips and innovation"

Lunch time

Goodbye…

…and a safe trip home!