higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MALUTI TVET COLLEGE

Closing | or Widening the Divide?

Integrating AI into STEM Teaching and Assessment Across a Multi-Campus Rural TVET College

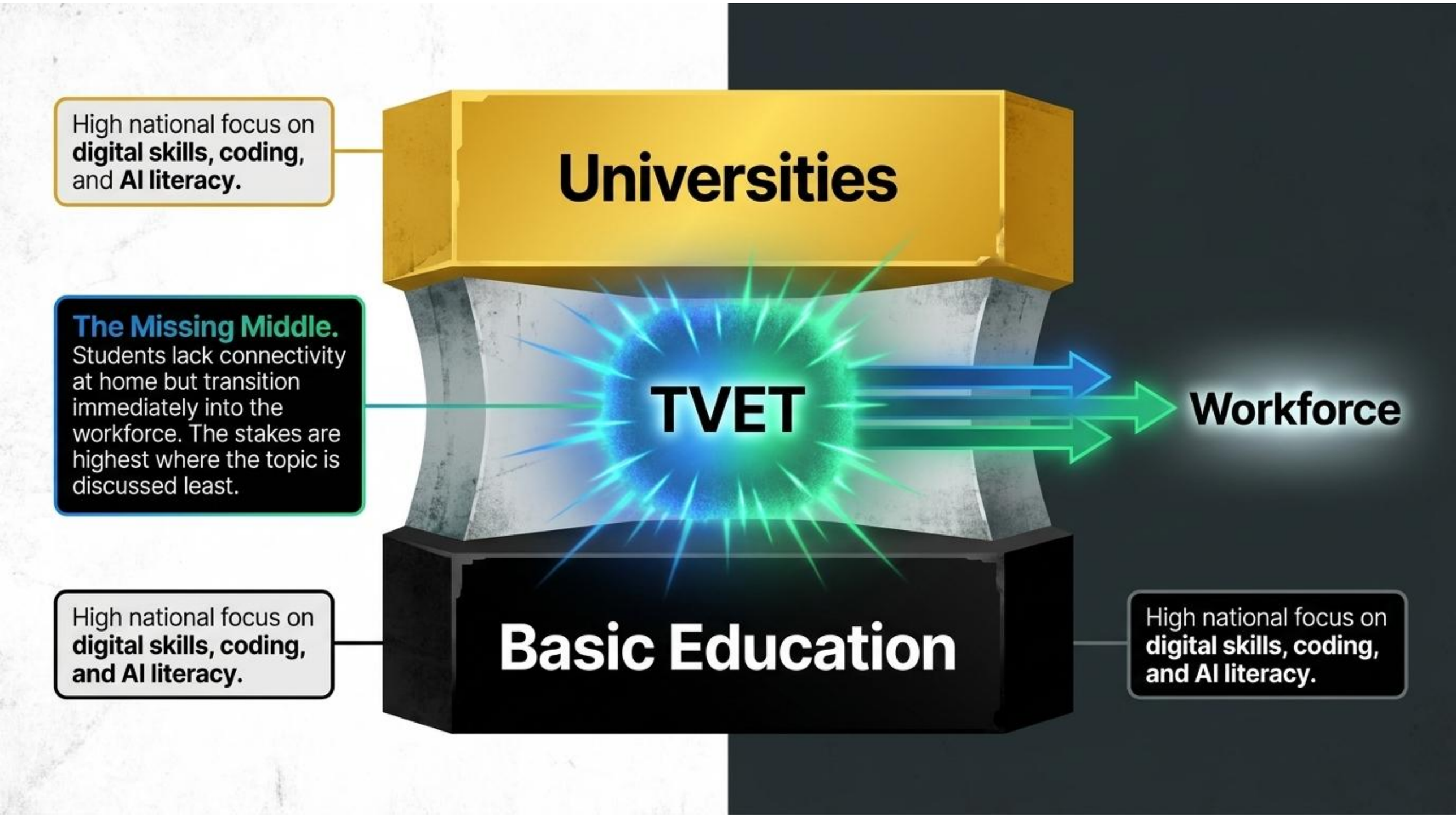
Elbé Els
Deputy Principal: Innovation & Development, Maluti TVET College
NSTF/proSET Discussion Forum

AI is arriving whether we are ready or not, leaving us with a single critical choice.

“Does adoption close the gap with better-resourced institutions — or does it quietly widen it?”



Ground truth from 8 campuses in the Thabo Mofutsanyana District.


High national focus on **digital skills, coding,** and **AI literacy.**
Universities
The Missing Middle.
Students lack connectivity at home but transition immediately into the workforce. The stakes are highest where the topic is discussed least.
TVET
Workforce
High national focus on **digital skills, coding, and AI literacy.**
Basic Education
High national focus on **digital skills, coding, and AI literacy.**

Low-cost is not a preference; it is the entry condition for anything to be real.

Patchy Connectivity



Solutions assuming stable, high-speed access exclude students by design.

Shared Devices



Students lack reliable personal devices or off-campus data.

Lecturer Preparedness



Tools placed in unprepared hands become abandoned assets.

Severe Budget Constraints

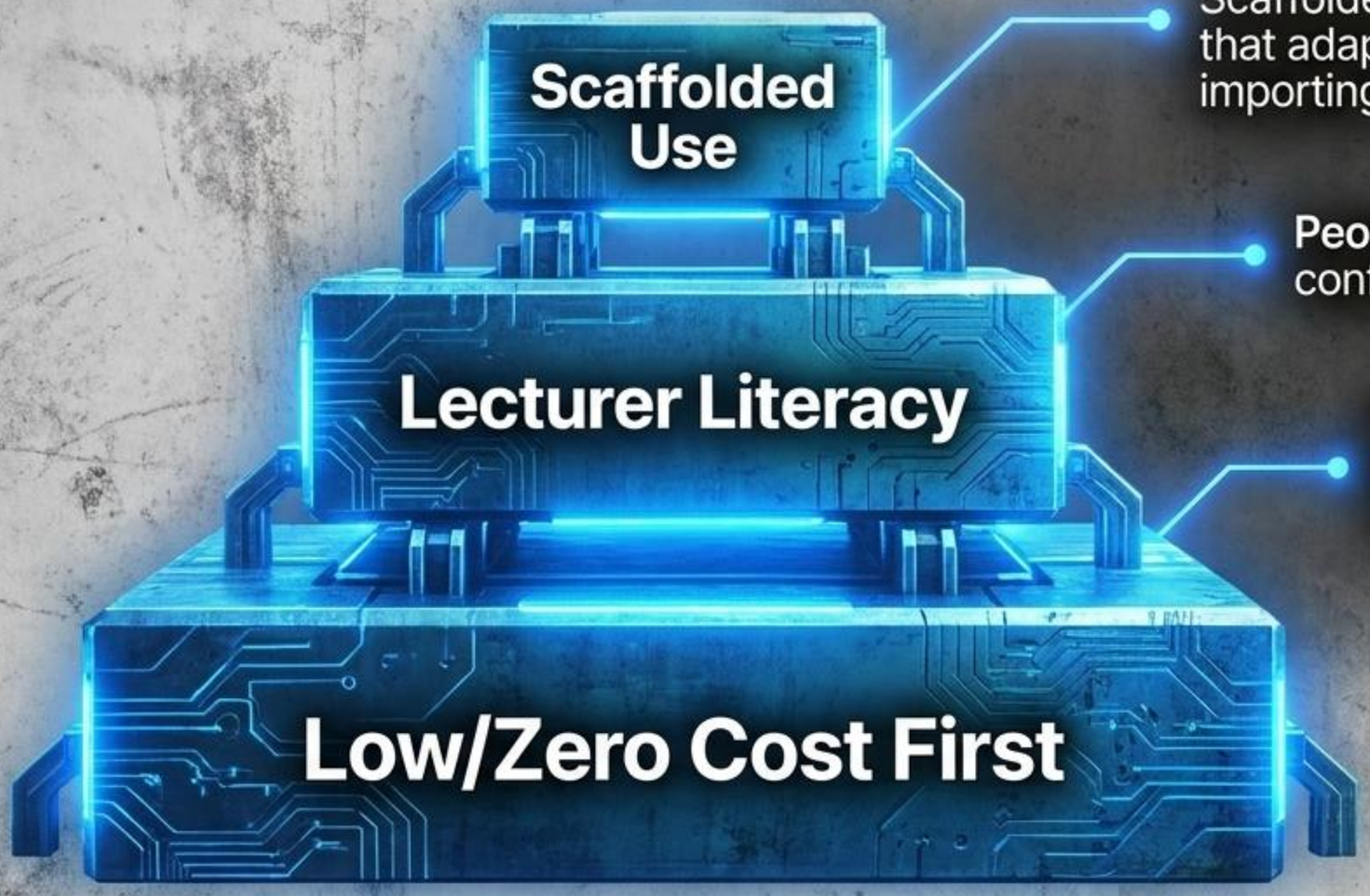


Digitalisation in the TVET sector remains chronically under-funded.

Navigating the AI challenge requires distinct strategies for two operational fronts.



Thoughtful, constraint-aware integration narrows the divide.



Scaffolded, context-appropriate adoption that adapts to student realities, rather than importing university models.

People before platforms. Build educator confidence before student rollout.

Work within existing licenses (e.g., Microsoft 365). Resource-heavy platforms assume infrastructure students do not possess.

Takeaway: Uncritical adoption of resource-heavy tools widens the gap. The technology is the same; the design choices differ.

TVET's practical assessment model is structurally impervious to AI outsourcing.



The AI Vulnerability
(Essay-Based Systems)

- Evidence of learning is produced out of sight
- Structurally exposed to AI generation
- Hard to verify human capability



The TVET Advantage
(Competence-Based Systems)

- Work-integrated learning (WPBL)
- Applied, occupational assessments
- Students perform tasks in real/simulated settings

You cannot outsource a practical welding assessment or live client interaction to a chatbot. TVET has something to teach the entire education sector.

Uncritical adoption actively widens institutional inequality.



Closing the divide requires deliberate, systemic policy choices.



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MALUTI TVET COLLEGE

The technology is exactly the same. The difference is entirely in our design choices.

The divide narrows only if integration is deliberate, equity-led, and adequately supported. It is our choice to make.

- Measuring Impact
- Microsoft 365 Scaffolding
- Transferring TVET Assessment Models
- POPIA & Governance Frameworks