Practical skills online – how far can you go?

Terry Neal, COL
Dr (Engr) Ibraheem Adedotun Abdul, Yaba College of Technology, Nigeria
Phyllis Kasonkomona, TEVETA, Zambia
To help Commonwealth governments and institutions use distance and open learning for sustainable livelihoods
Distance learning: Increase access through flexibility and affordability
Open TVET?
Pre COVID 19
Post COVID 19

**GLOBAL LABOUR MARKET CHALLENGES**

- **People WITHOUT WORK**: 495 million FTE jobs lost.
- **Skills MISMATCH**: TVET institutions closed, workplace learning affected, practical skills development a challenge.
- **Work keeps CHANGING**: Rapid upskilling for service sector workers, 1.44 billion by 2030, 400-800 million people could be displaced.

**Identify and respond to new skill needs**

- **Disproportionate impact on women workers**
- **Employment and entrepreneurial skills**
- **Online foundation for improved training systems**
- **Beyond access, relevance & quality**
- **Lifelong learning**
Open TVET

Open Polytechnic

KURATINI TUWHERA

TAFE NSW

oten

BCITO
buildingpeople
COL’s Skills in Demand model: Pathway of change
<table>
<thead>
<tr>
<th>Country</th>
<th>Partners - TVET and industry</th>
<th>Skill in demand</th>
<th>From pilot to scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>Yaba College of Technology</td>
<td>Computer and mobile phone repair, business skills</td>
<td>Pilot 80MCs + 500 apprentices</td>
</tr>
<tr>
<td></td>
<td>Computer and Telecommunication Engineers Association of Nigeria (COMTEAN)</td>
<td>Projected demand for ICT skills</td>
<td>Scale 2022 – 1,200 + 12,000 2023 – 3,000 + 30,000 pa</td>
</tr>
<tr>
<td>Zambia</td>
<td>Luanshya Technical Business College</td>
<td>Carpenter and upholstery, business skills</td>
<td>Pilot: 11 MCs, 50 apprentices</td>
</tr>
<tr>
<td></td>
<td>Nakadoli - informal furniture co-operative</td>
<td>Furniture making industry - one of nine ‘quick wins’ for job creation</td>
<td>Scale: &gt; 1,000 co-operatives, 100,000 trained</td>
</tr>
<tr>
<td></td>
<td>Kubu Crafts - formal furniture making company</td>
<td></td>
<td></td>
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<tr>
<td>Tuvalu</td>
<td>Tuvalu Atoll Science, Technology and Training Institute (NZ Building and Construction Industry Training Organisation)</td>
<td>Construction</td>
<td>Pilot: 60 unskilled construction workers Now extended to schools</td>
</tr>
<tr>
<td></td>
<td>Public Works Department</td>
<td>Build and maintain Tuvalu infrastructure, including post cyclone, emigration choices</td>
<td>Scale: Higher level construction skills, other skills, other countries</td>
</tr>
</tbody>
</table>
Co-design – workplace plus online learning

- Genuine partnership based on trust, developed over time
- Project design workshop
- Collaborative design and development of
  - High level design
  - Assessment process
  - Learning activities
  - Digital resources
- Agree support process and roles
Cocapacity building — COL, TVET, industry

- COL capacity building
  - Industry plus educator teams
  - Develop templates – SARA, storyboarding
  - Workplace plus online learning
    - How to videos
    - Virtual mentoring
    - Demonstrate, practice, ongoing feedback until competent
    - Moodle implementation course
    - Online courses in development
  - Technology support
    - Moodle development space
    - Moodle instance

- Workplace supervisor training
Practical skills pedagogy

- Move from difficult and conscious to innate
- Build muscle memory (cf sports training)
- Blend with
  - How to think – theory, experience, problem solving
  - How to be – attitude, craftsmanship
- Observation and imitation
- Practice – ‘feel the wood’ ‘read the dough’
- Importance of feedback
How far can you go online?

- Observation – videos
- Part imitation through simulations/VR with automated feedback
  - Step wise introduction to complex processes
  - Gamification
  - Options for diverse experiences
  - Require equipment as for workshops
- Online support resources
  - Checklists, processes, templates, manuals
- Online portfolio of evidence of competence
  - Videos, conversations, job sheets etc
- Only real materials offer the practice to
  - ‘feel the wood’ ‘read the dough’
  - Experience and problem solving, craftsmanship
  - Online works when the ‘real materials’ are digital

https://awo.aws.org/2016/04/virtual-reality-is-revolutionizing-welding-education/
No simulations, VR or AR?

- Only take you so far, still imperfect
- Cost to license or develop, limited openly licensed options
- Cost to use – equipment, devices and data
- Workplace context enables affordable practice
- Long term - could be a wonderful supplement to COL’s model

https://pxhere.com/en/photo/1523905
Develop digital resources – Zambia, Nigeria

- Practical skills development
  - Online video demonstration, resources, instructions, some support
  - Workplace imitation, practice, feedback, support

- Practical assessment of workplace activities
  - Portfolio of digital evidence of competence, naturally occurring where possible

- Theory
  - Online resources and support
  - Assessed online, professional conversations

- Openly licensed to achieve scale
<table>
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<tr>
<th>Standard</th>
<th>Assessment</th>
<th>Resources</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>(occupational-knowledge, skills, attitudes and values)</td>
<td>(learner meeting the standard based on assessment or naturally occurring evidence at the workplace)</td>
<td>(resources needed for the learner to work with and learn)</td>
<td>(description of learning activity(s) learner is engaged in including learning hours)</td>
</tr>
<tr>
<td>LO3: Replace new or fairly used GSM and mobile phone spare parts</td>
<td>PC3.1 &amp; 3.2: Learners demonstrate in-person or record video of self, removing at least 7 different damaged parts and replacing them with new or fairly used GSM and mobile phone spare parts in accordance with industry procedures, component's specification &amp; installation procedures and health &amp; safety procedures.</td>
<td>Component's installation guide or manual.</td>
<td>Learners study Health &amp; Safety procedure and checklist, component installation guide and mobile phone manuals and then check their knowledge taking an online quiz. L: 1.5hrs, T: 0, MC: 0, I</td>
</tr>
<tr>
<td>Range: GSM and mobile phone--button and touch screen, all parts</td>
<td>PC3.3: Demonstrate in-person or record video of self, matching at least 7 correct GSM and mobile phone parts in accordance with industry procedures, component's specification &amp; installation procedures and health &amp; safety procedures.</td>
<td>Health and Safety procedures checklist.</td>
<td>Learners study provided step-by-step checklist of process and techniques of removing and replacing damaged parts. L: 1.5hrs, M: 0, I.</td>
</tr>
<tr>
<td></td>
<td>PC3.1, 3.3.2, 3.3: Complete Online quiz of identifying and matching step by step processes and procedures and H&amp;S requirements. To be completed first.</td>
<td>Mobile phones manuals.</td>
<td>Learners watch MC in-person (as a group) or recorded videos (individually) of MC removing damaged parts and replacing with new or fairly used GSM and mobile phone spare parts. L: 1hrs, M: 1hr, G: 1hr, G/I</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Checklist of step-by-step process and techniques of removing and replacing damaged parts safely.</td>
<td>Learners practise removing damaged parts/components and replacing with good new or fairly used GSM and mobile phone spare parts, referring to the relevant mobile phones manuals, under supervision at the workplace. L: 1hr, MC: 1hr, I/G</td>
</tr>
</tbody>
</table>
5. To troubleshoot a failing SATA cable in a desktop PC, select the tools needed to fix the problem from the set of tools listed below.

Correct: Screwdriver, Multimeter, Static-strip watch, Cable tester

Feedback: Correct!
Feedback: Try again.
Replacing faulty mobile phone spare parts with new or fairly used

How to match the correct GSM and mobile phone parts
Level 3 Unit Standards

Welcome to Level 3 BCATS!

Until 2017, the only building and construction-related unit standards and qualifications designed for secondary schools have been at Levels 1 and 2, with some Level 3 unit standards (intended for those undertaking apprenticeships) available for those doing Gateway.

There are eight Level 3 BCATS unit standards, which are:

- Flexible enough so that teachers/students can select their own projects in any of BCITO’s 15 sectors providing they meet the Stage 3 BCATS project criteria.
- Able to be achieved by undertaking projects in any of BCITO’s trades.
- Able to be achieved in school workshops, training establishments, outdoor areas, and/or in the workplace during industry placements (work experience).
- Explicit that attaining commercial competence is not a requirement.
- Suitable for students to take as a subject as well as for those participating in 3+2, Gateway, or Youth Guarantee programmes.
- Responsive to the reality that some students will likely be enrolled for a full school year, whereas others may be able to

Select Unit

Assessment Guidelines
Stage 3 BCATS Guide
L3 BCATS poster
Student Work Diary
26677 - Safety
26678 - Materials
26679 - Documentation
29660 - Communicate
29661 - Measure & calc
29662 - Tools, machinery
26663 - Other trades
29664 - Stage 3 project
Online/offline design

Aptus

This mini-PC requires only battery power and can host up to 128GB of educational content and facilitate interactive, virtual learning anywhere.

Watch on YouTube
Working within national TVET systems

Quality assurance processes
- Registration of workplaces to meet standards
- Assessor training
- Assessment of competency

- Practical skills - competency important, not how it was achieved
  - High stakes examination (Nigeria, Zambia)
  - Validated online portfolio (NZ)
  - Moves to online portfolios increase flexibility and affordability
Influencing policies for TVET

- Initial government support
- Government agency involvement in advisory groups
- Events
  - Webinars
  - Launch events
- Monitoring and and evaluation
Conclusions

Online development of practical skills is not yet possible (except for digital skills)

Online assessment of practical skills developed at a distance is possible through online portfolios of digital evidence

Distance TVET is possible using online for theory, learner support and as a repository for resources (learning and evidence of competence), and workplace infrastructure and people to practice and assess practical skills

Workplace plus online learning models require significant up-front investment in capacity building and resources development, but offer the promise of increasing access through affordability and flexibility, while maintaining quality and relevance when embedded in national TVET systems

For disadvantaged learners, openly licensed simulations and VR could support online development of the first steps towards practical skills
Thank you

tneal@col.org
YABA COLLEGE OF TECHNOLOGY
SKILLS IN DEMAND
PROJECT

A project for Teaching Practical Skills in Nigeria ICT Industry based on demand-driven, competency-based, workplace plus online learning

PARTNERS:
Brief About Yaba College of Technology

- Nigeria's first Technical Institute established in October 1947
- Currently the nation's premier higher institution with 8 schools, 34 academic departments & 70 accredited programmes, across ND, HND and Post-HND levels.
- One of ten institutions chosen by UNESCO-UNEVOC as innovation Hub based on her proven experience and commitment to innovation in particular in the fields of entrepreneurship, digitalization and/or greening

- Established Flexible Skills Development Centre in 2016 in line with its partnership with COL
The Flexible Skills Development Centre delivers skills training using a blended mode (Online plus face to face teaching). A Learning Management System is usually combined with social media platform for effective engagement of learners.
A snapshot from training provided during COVID-19 Lockdown in Nigeria
SKILLS IN DEMAND MODEL

- FORMAL TVET TRAINING
  - Workplace and distance learning
  - Competency based certification
  - Beyond training to livelihoods
  - Educational organisation
  - Industry or Community
  - Invest in relationships, not infrastructure

- Lifelong learning

- IMPROVED LIVELIHOODS
  - Individuals
    - Employment
    - Educational mobility
    - Earnings
    - Empowerment
  - Companies
    - Productivity
    - Environmental awareness
    - Safety
    - Profit
  - Communities
    - Entrepreneurial activity
    - Social cohesion
  - Educational Institutions
    - Capability to use technology
    - Accessible TVSD
    - Relevant TVSD
    - Competency-based TVSD

- Monitoring and evaluation
  - Accessible
  - Quality
  - Relevant

Policy
<table>
<thead>
<tr>
<th>Qualification in focus</th>
<th>Phase 1:</th>
<th>Phase 2:</th>
<th>Phase 3:</th>
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<tbody>
<tr>
<td>Formalising informal apprenticeships to meet <strong>Level 2 of National Occupation Standards</strong> in either of i. Mobile Phone Repairs and Maintenance ii. Computer Hardware Repairs and Maintenance</td>
<td>Develop and test the Skills in Demand model with <strong>80</strong> Master Craftsperson training a total of <strong>500</strong> apprentices to achieve Level 2 of the National Occupational Standards (NOS) Certificate in either Mobile phone Repair or Computer Hardware Repair</td>
<td>Prove the model through the existing partnership with <strong>1200</strong> Master Craftsperson each training two batches of 5 apprentices (i.e. <strong>12,000</strong> in one year).</td>
<td>Roll out the programme nationally, with <strong>3000</strong> Master Craftsperson each training two batches of 5 apprentices. Making a total of <strong>30,000</strong> learners per annum</td>
</tr>
</tbody>
</table>
• ADVOCACY FOR IMPROVED PARTICIPATION OF ALL STAKEHOLDERS AND NATIONWIDE ADOPTION OF THE MODEL THROUGH WEBINAR SERIES
YABA COLLEGE OF TECHNOLOGY
FLEXIBLE SKILLS DEVELOPMENT CENTRE

in collaboration with
COMMONWEALTH OF LEARNING AND
COMPUTER TELECOMMUNICATION ENGINEERING ASSOCIATION OF NIGERIA (COMTEAN)

PRESENTS
FORMALISING INFORMAL APPRENTICESHIP IN NIGERIA
(F.I.A.N) WEBINAR SERIES (1.0)

10TH, SEPTEMBER 2020
3.30PM

Webinar ID: 818 7811 3526
Register at https://yctfsdc.org/webinar-registration/
https://m.facebook.com/fsdcyabatech/

THEME:
FORMALISING INFORMAL APPRENTICESHIP IN NIGERIA’S ICT SECTOR:
STAKEHOLDERS ON CALL

RSVP:
+234 8023212275, +234 8056709389

For YCT FSDC by:
infone Solutions
Call/WhatsApp: +2348068648339
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Benefits of the SID Project so far

• IMPROVED CAPACITY TO DELIVER SKILLS TRAINING THROUGH DIVERSE METHODS

• COLLABORATION WITH INDUSTRY IN:
  – CURRICULUM DEVELOPMENT
  – RESOURCE DEVELOPMENT
  – IMPLEMENTATION

• SCALING UP TO INCLUDE OTHER WORKPLACES AND SKILL AREAS
THANK YOU
TEVETA’s Perspective on The Workplace plus Online Training Model

By PHYLLIS C L KASONKOMONA
Director - Development
TEVETA
13 April 2021
Established in 1998, TEVETA is the statutory body overseeing Technical and Vocational Education Training (TVET) implementation in Zambia.

Core Functions of TEVETA include:

- Quality Assurance of TEVET
- Curriculum and Training Systems Development
- Examinations, Assessment and Certification
Through its Development Division, TEVETA oversees four training models namely:
- Institutional-based training;
- Workplace-based training
- TVET Learnership scheme
- Open, Distance and Flexible Training
The Dominant mode of providing TVET in Zambia is still through traditional face-to-face which is institutional based training.
Challenges in using other existing training models

The Challenges brought by COVID-19 have provided an opportunity for the entire TEVET to enhance provision of TVET through other models that include e-learning.

However, some of the challenges associated with implementing TEVET through the other training models include:

- Practical nature of TVET programmes
- Lack of online facilitation skills for most TEVET trainers
- Lack of suitable interactive learning materials for practical courses
- Lack of ICT infrastructure including e-learning platforms
- Industry linkages
- Only 7.5% of institutions have adopted to ODFL with only 7.8% learners (2019, TEVETA Annual Report)
The Workplace plus Online Training Model

- Started before the COVID–19 Pandemic through a Pilot Project at LTBC, a TEVETA registered institution, in Zambia.
- Programme of training is in Joinery Skills
Achievements Recorded

- Partnership with Industry
  - Capacity building of college staff in learning and media design key for OER development.
  - Materials developed will be shared on the recently centralized Moodle Platform for TEVETA
  - The capacitated staff will contribute significantly to the development of OERs across other practical TVET programmes
  - Moodle Implementation Course offered to staff.
Practical skills – How far can we go?

The Workplace plus Online Training Model could be a Game Changer to address challenges of teaching practical skills online:

- Teach theory online
- Video demonstrations for practical skills
- Workplace mentors connected online to the TVET institution
- Collect evidence of practical skills online
- Existing formal assessment from TEVETA – change in the future?
The End

Thank you for Listening!