

The Vocational Training Development Institute: An Investigation into the Utilization of Digital Learning Strategies in TVET to Facilitate Accessibility, Flexibility, Engagement and Skills Development

Authors

Jacqueline Solomon-Wallder, Ph.D.
Vice Principal for Academic Affairs

Mr. Mark McKnight
Director, Digital Education

Roxanne Hinds, Ed.D.
Instructional Designer

Vocational Training Development Institute (VTDI)

jacqueline_wallder@vtdi.edu.jm; jwallder@gmail.com; Tel. (876) 552-8554

mark_mcknight@vtdi.edu.jm; Tel. (876) 460-6996

roxanne_hinds@vtdi.edu.jm; (876) 576-8227

Abstract

Technical Vocational Education and Training (TVET) is central to human capital development and is increasingly recognised as essential for economic growth, poverty reduction, and sustainable development. Industry 4.0/5.0 developments further amplify TVET's strategic importance in preparing learners for the future of work. This study focuses on the "what" of learning, by examining VTDI's effectiveness in advancing digital learning strategies that promote access, flexibility, engagement, and skills development. Using a qualitative case study approach, data were collected through a focus group discussion with staff and analysis of institutional documents. Findings show that VTDI employs a structured digital learning framework supported by dedicated units, integrated platforms, and inclusive delivery modes such as online, blended, and synchronous learning. These strategies have improved student engagement and access, especially for remote, employed, and disabled learners. However, barriers such as limited access to devices, internet connectivity, and digital tools have negatively impacted skills development for some students. Key recommendations include: investing in simulation and assistive technologies; aligning digital learning practices with policy; improving digital literacy training; clearly communicating digital readiness requirements; and conducting strategic assessments prior to technology adoption. These actions are necessary to support inclusive, equitable, and future-ready digital learning in TVET.

Keywords: Technical Vocational Education and Training (TVET), Industry 4.0/5.0, human capital development, skills for the future of work, digital learning strategies, access, flexibility, student engagement, skills development

Introduction

TVET and Digital Learning

Technical Vocational Education and Training (TVET) is recognised globally as the cornerstone of human capital development, economic resilience, and inclusive growth (International Labour Organisation [ILO], 2020; United Nations Educational, Scientific & Cultural Organization [UNESCO], 2015); World Bank, 2019). Yet, many countries continue to grapple with issues such as poor public perception, limited funding, inadequate infrastructure, and a shortage of educators with expertise in competency-based education (Vaz, 2012; King, 2012). These challenges are amplified by rapid technological change, particularly those associated with Industry 4.0 and the emerging Industry 5.0. These industrial revolutions are driven by automation, artificial intelligence, and digital transformation, all of which demand a rethinking of how education systems develop and deliver skills (Schwab, 2016).

Digital learning has emerged as a key response strategy, not only for increasing workforce readiness but also for promoting access, equity, and flexibility in education. Digital learning strategies refer to planned and purposeful integration of digital technologies, tools, and pedagogies to deliver, enhance, or extend teaching and learning (European Commission, 2020). These strategies support personalised, learner-centred experiences and help address long-standing barriers to participation, such as distance, cost, and time. They also align with the principles outlined in the frameworks of UNESCO Institute for Information Technologies in Education (UNESCO IITE, 2020), Organization for Economic Cooperation and Development (OECD, 2023), and the Commonwealth of Learning (Mishra, 2023), which advocate for digital transformation in education.

The Vocational Training Development Institute

Jamaica, like many developing countries, has pursued a national agenda of education reform with a strong emphasis on expanding TVET. Key policy documents, including Vision 2030 Jamaica (Planning Institute of Jamaica, 2010) and the National TVET Policy (Ministry of Education, 2014) aim to increase access to workforce-aligned education. The Vocational Training Development Institute (VTDI) plays a strategic role within this policy landscape. Established in 1970 as a joint venture between the United Nations Development Programme (UNDP), the International Labour Organization (ILO) and the Government of Jamaica, the objective was to combat unemployment and unskilled labour in Jamaica and the wider English-speaking Caribbean. The VTDI transitioned from the Human Employment and Resource Training/National Service Training Agency (HEART/NSTA) Trust in 2023 and currently operates as a public higher education institution (PHEI) under the Ministry of Education and Youth (MOEY).

The VTDI is a TVET institution that advances competency-based education and training at the certificate, diploma, associate, bachelor's and postgraduate levels. The Institution's Digital Education Unit (DEU) supported by the ICT Services Department, facilitates the advancement of digital learning strategies. The Unit provides critical support in the development, delivery and assessment of web enhanced, online, and blended courses; instructional design; and use of learning technologies. A more detailed description of the VTDI and the DEU are provided in Appendices A and B respectively.

Statement of the Problem

Access to quality TVET remains unequal globally, particularly for women, youth, individuals with disabilities, and those in rural or low-income communities. According to UNESCO's 2020 Global Education Monitoring Report 2020 (UNESCO, 2020), 258 million learners were out of school, often due to intersecting disadvantages such as gender, ethnicity, and disability. In Jamaica, enrolment rates at the upper secondary and tertiary levels are lower than in comparable countries, and the education system lags in digital transformation (Jamaica Education Transformation Commission, 2021; Task Force on Educational Reform Jamaica, 2004).

Although VTDI had begun offering programmes online prior to COVID-19, the pandemic accelerated the need for digital delivery. During this period, enrolment and certification declined due to disruptions in face-to-face instruction and practical components (VTDI, 2019; VTDI, 2020). The Institution pivoted by strengthening its digital learning strategies and transitioned to remote and flexible modalities. Currently, all VTDI programmes and short courses incorporate online technologies or flexible delivery. However, limited empirical research exists on the effectiveness of these digital strategies. Such evaluation is critical to understanding how digital strategies influence access, flexibility, engagement, and skills development, and will support the institution's efforts to align with national education goals and global TVET priorities.

Purpose and Significance of the Study

This study explores the digital learning strategies employed by VTDI to promote equitable, flexible access to TVET and their impact on student engagement and skills development. Using document analysis and focus group discussions, it provides insights into VTDI's digital transformation. The research fills a gap in the Jamaican TVET literature and informs institutional policy, evidence-based decision-making, and national goals

related to education and workforce development. It also contributes to the broader understanding of digital learning implementation in TVET institutions, particularly within small island developing states.

Research Questions

1. What are the key digital learning strategies used to facilitate access and flexibility at the VTDI?
2. What has been the impact of digital learning strategies employed by the VTDI on student engagement and skills development?

Literature Review

Digital Learning Strategies

As technological change accelerates, TVET institutions must deliver relevant, demand-driven skills while ensuring inclusive, flexible, and accessible learning. TVET serves non-traditional learners, including working adults, rural populations, and those with limited prior access to education. Therefore, digital strategies are essential to expanding TVET participation and improving reach (OECD, 2023; UNESCO-UNEVOC, 2022).

To accommodate diverse learners, institutions have adopted various pedagogical models. These include technology-supported, online, and blended learning (Johnson et al., 2022). Blended learning is especially well-suited to TVET, where theoretical instruction can occur online, while hands-on practice takes place in physical workshops (Guppy et al., 2022; Hashim & Hamidon, 2022). HyFlex, an emerging model, enables learners to switch between online and in-person formats (Johnson et al., 2022). Flexible models are critical for rural learners and underserved groups and improve access for women, adults, and persons with disabilities (OECD, 2023; UNESCO, 2025).

Innovative pedagogies enhance learning flexibility and engagement. Flipped learning allows students to first explore content independently, then engage in collaborative problem-solving in class (Toding & Wiyono, 2023). Microlearning, which delivers focused content in short bursts, benefits time-constrained learners (Mostrady et al., 2024). Game-based and gamified learning boost motivation and interaction (Ratinho & Martins, 2023; Schindler et al., 2017).

Digital learning depends on a robust technological infrastructure. LMS platforms like Moodle and Canvas facilitate structured content delivery, assessment, and communication (Parusheva & Bankov, 2023). Videoconferencing tools such as Zoom and Microsoft Teams enable real-time collaboration using features like breakout rooms and screen sharing to enhance participation (Schindler et al., 2017). Interactive tools like Kahoot! and Padlet further promote gamified and collaborative learning (OECD, 2023).

Immersive technologies deepen practical skills development. Simulation, virtual reality (VR), and augmented reality (AR) enable learners to gain spatial and procedural knowledge in safe, virtual environments (Abdul Hamid et al., 2024). These are critical in technical fields like welding and healthcare, where practice can be costly or risky (ILO, 2021). Artificial Intelligence (AI) further personalises learning by adapting content to learner performance, identifying skill gaps, and supporting differentiated instruction (OECD, 2023). Additionally, learning analytics allows institutions to monitor engagement and intervene early when learners struggle (Bergdahl et al., 2024). Open Educational Resources (OER) offer cost-effective, adaptable content aligned to labour market needs (UNESCO-UNEVOC, 2018).

Impact on Student Engagement

Digital technologies positively influence student engagement along four dimensions: behavioural, cognitive, emotional, and social (Bajaj, 2024; Bergdahl et al., 2024; Hu & Xiao, 2025; Metu, 2024; Schindler et al., 2017). For instance, Schindler et al. (2017) reviewed 60 studies and found that digital games and gamification enhanced students' motivation, deep learning, and values, while videoconferencing improved interaction. However, the digital divide remains a major barrier. Many learners, especially those from low-income or rural backgrounds, lack devices, stable internet, and digital literacy (European Commission, 2020; OECD, 2023). This restricts participation in synchronous classes, collaborative activities, and access to online resources (UNESCO IITE, 2020). Akpen et al. (2024), in a review of 18 studies, found that although online learning had a positive effect on performance, it negatively impacted engagement due to poor digital skills and limited device or internet access.

Impact on Skills Development

Digital learning influences the development of technical and soft skills necessary for the workforce. Virtual simulators have been found to have a positive learning effect on students in welding (Karstensen & Lier, 2020) and textiles (UNESCO-UNEVOC, 2023). These tools enabled safe, repeated practice and helped students master precision tasks typically taught in physical workshops. Similarly, Razak et al. (2022) highlighted gains in digital design skills, including computer-aided design (CAD), digital fabrication, and software use for engineering and graphics tasks, through LMS-integrated multimedia training.

Nevertheless, without access to simulations, online labs, or relevant digital tools, many students struggle to develop practical skills central to TVET and risk falling behind (Akpen et al., 2024). Additionally, UNESCO-UNEVOC (2022) noted that students with low digital literacy often struggle with basic online tasks such as navigating platforms and engaging in virtual collaboration, thereby limiting overall skills acquisition.

Digital Learning Readiness

Digital readiness is a crucial determinant of success in digital learning. A strategic combination of pedagogy, technology, and support systems is essential to promote engagement and skills development. However, persistent challenges, including inadequate infrastructure, untrained faculty or students, and unclear policies, can undermine effectiveness (Means et al., 2014). The OECD (2023) stresses that well-designed governance structures and quality assurance mechanisms are key to ensuring sustainability and continuous improvement in digital learning.

Methodology

Study Design

This study adopted a qualitative case study design to examine the digital learning strategies employed at the VTDI and their impact on student engagement and skills development. This approach is appropriate for examining the VTDI as a bounded system shaped by formal strategies and lived experiences, and for investigating context-dependent phenomena that are not easily quantified (Creswell, 2013; Merriam & Tisdell, 2016; Yin, 2017).

Sampling Strategies

Purposive sampling was used to identify focus group participants and institutional documents ensuring that data sources were relevant, information-rich, and aligned with the study's objectives (Frahm & Cianca, 2021). Focus group participants were selected based on their direct involvement in digital learning strategies at the VTDI which enabled the researchers to gain insight from individuals who had knowledge, expertise or professional judgement in the area of focus (Merriam & Tisdell, 2016; Ritchie & Lewis, 2000). A total of 19 staff members participated: 14 from the Academics Department and five from the Administrative Department.

Eligible documents were official VTDI records approved or in draft between 2020 and 2025 and related to digital learning. Selection was guided by principles of authenticity, credibility, representativeness, and meaning (Flick, 2023). A total of 18 documents were selected, including policies, procedures, operational frameworks, and reports.

Data Collection

Data were collected using a focus group discussion and document analysis to support methodological triangulation and strengthen trustworthiness (Merriam & Tisdell, 2016). The focus group explored staff perspectives and experiences related to digital learning strategies (Ritchie & Lewis, 2000). Participants were invited via institutional email, provided informed consent, and attended a face-to-face session guided by a semi-structured script. The session was recorded using Microsoft Teams. Documents were retrieved from the VTDI's internal repository, departmental SharePoint folders, and administrative offices.

Data Analysis

The focus group recording was transcribed using HappyScribe and validated by two researchers. The transcripts were analysed thematically using Clarke and Braun's (2013) six-phase coding framework (familiarization, generation of codes, combining codes into themes, reviewing themes, determine significance of themes, and reporting of findings). ATLAS.ti was used to support the analysis. Document analysis followed elements of Bowen's (2009) systematic procedure.

Ethical Considerations

Study approval was granted by VTDI's leadership. Participation was voluntary and informed consent was obtained. Pseudonyms were used to maintain anonymity and confidentiality (Creswell, 2013; Merriam & Tisdell, 2016; Yin, 2017). All data were securely stored and accessed only by the researchers, who upheld integrity in data analysis and reporting. OpenAI's ChatGPT-4 was used to refine the language and word count of the paper; all outputs were reviewed, edited, and verified by the authors.

Findings and Discussion

Research Question 1: What are the key digital learning strategies used to facilitate access and flexibility at the VTDI?

The findings are organised under two themes: (1) digital pedagogy and flexible delivery, and (2) institutional infrastructure and strategic support.

Digital Pedagogy and Flexible Delivery

Findings show that flexible delivery at the VTDI is implemented primarily through blended and online learning modes using both synchronous and asynchronous methods. Alongside Moodle and Microsoft Teams, lecturers use tools such as YouTube, Padlet, Kahoot!, and Nearpod to facilitate interactivity. Social media platforms like TikTok, Facebook and YouTube are used to demonstrate practical tasks, and video submissions have replaced some in-person assessments. Participant 7 noted, “We ask students to create a video to demonstrate their competence...some persons, for example, are in MoBay and cannot make it to Kingston...”

Flexibility also extends to institutional practices. When students encounter registration barriers, some lecturers permit them to attend classes and submit assignments via Teams before full access to Moodle is granted. Participant 8 recommended institutionalising such practices: “Because we give students time to complete registration, complete payment, you can't shut them out at the beginning...the proposal that came was to give all students access to Moodle until they regularise.” While these actions promote access, participants highlighted the need for policy reform to formally accommodate such measures.

Concerns were raised about the extent to which digital tools support higher-order learning. Participant 10 expressed that too often, learning activities remain at lower cognitive levels: “We're not harnessing the true potential of the technology...Many of our questions are pitched at the lower level of Bloom's taxonomy.” Some participants, however, disagreed with the preceding as a widespread practice. For example, Participant 10 countered, “...it's not across the board. There are many of us who do incorporate the higher order skills - the synthesizing, the analysing, the evaluating.”

Institutional Infrastructure and Strategic Support

Participants acknowledged investments in core digital infrastructure, including Moodle, Microsoft Teams, improved Wi-Fi, and technical support services. They also highlighted accommodations for online students with disabilities. However, they identified key gaps, particularly the need for simulations, VR, assistive technologies and the use of AI to enhance access for students learning practical skills online. Participant 3 noted, “There are some actual experiences that students may not have ready access to at their fingertips, that simulation technologies can give them...” Participant 5 explained, “What a lab does is create an avenue for simulation where there is a possibility of high-risk/health hazard...It's easier to manage in terms of using the technology...it is cost-effective.”

Participants also highlighted the need to enhance cultural relevance and peer learning by providing a collaborative platform to store and share student-generated content. Participant 8 stated, “When these videos are created, they're created to be marked...Do we have a platform that these videos are uploaded to so that future students, current students, staff, can look at them and learn?”

Capacity building was identified as a priority. Participants called for more structured training in digital literacy and the use of platforms like Moodle and Teams for both lecturers and students. Participant 11 said, “There needs to be a short course... a tutorial that exposes students to the various platforms that we use here, and it is mandatory for them to do.”

Participants highlighted the need to communicate digital readiness requirements before enrolment. These include device specifications and bandwidth expectations, especially for resource-intensive programmes. Participant 11 said, “...what are certain requirements that we as an institution have for our students? The specs of their laptop...What are the different things that they need to have?” Participants further emphasised the need for strategic assessment before adopting new technologies as new adoptions sometimes disrupt or are incompatible with existing institutional systems.

The focus group findings align with VTDI's formal digital learning documents, which describe an established digital learning ecosystem. This includes technologies and platforms that support teaching and learning; the Digital Education Unit for guidance and technical support; the ICT Services Department for network, software infrastructure and technical support, the Academic Department for teaching and learning; academic and non-academic support services provided by other departments, all supported by a governance framework that guides the operation of digital learning. This system enables access for marginalised students, including those with disabilities, those in rural areas, and those facing financial hardship, through blended and online learning using synchronous and asynchronous methods (VTDI, 2020b, 2020c, 2022).

However, gaps persist. Some resource needs identified by participants already exist or are addressed through institutional documents that are in draft or approved. For example, a self-paced digital literacy course and Moodle orientation course for students already exist (VTDI, 2025). Additionally, technical requirements for digital learning are available via the DEU website and have been updated in the draft Student Orientation Handbook (VTDI, 2025). This lack of awareness is indicative of communication and access issues. Resources that guide digital learning not only need to be developed and approved, but stakeholders need to be informed and have ready access to them if they are expected to employ them. The DEU is preparing to launch its communications hub, an internal website for all things digital learning (VTDI, 2024a).

The accommodation of students with disabilities in the digital space reflects VTDI's Assessment Policy (VTDI, 2024b) and Programme Development Policy (VTDI, 2024c), aligned with inclusive education principles supported by global frameworks (ILO, 2021; Miller, 1999; United Nations, 2015; UNESCO, 2025). Accommodations are currently made on an as-needed basis. Nevertheless, further investment is required to enhance inclusion. Participants highlighted the need for collaborative platforms to store culturally relevant, student-generated content. Such e-learning environments foster engagement and knowledge construction through shared interactions and critical thinking (Mohammed et al., 2020).

The findings also reveal inconsistencies in policy implementation. Some lecturers allow unregistered students access to synchronous sessions and assignment submission via Microsoft Teams, creating tension among stakeholders. Similar challenges in policy-practice alignment have been noted in other jurisdictions, prompting the development of structured policy frameworks (Boeskens & Meyer, 2025). Recognising the need for policy to be informed by practice, the Institution is in the process of formalising flexible access while ensuring fee collection before final assessment.

Another critical gap lies in the absence of key digital tools, such as simulations, virtual labs, and assistive technologies. These tools are essential for supporting TVET skills development and inclusive learning (Abdul Hamid et al., 2024; ILO, 2021; OECD, 2023). Abdul Hamid et al. (2024) underscore the value of immersive tools in developing spatial and procedural knowledge in technical domains.

Further, strategic technology adoption is another area of weakness. Strategic technology assessments ensure new tools align with organisational goals and existing infrastructure and should, therefore, be conducted prior to adoption of new technologies (Kumar et al., 2019; Volberda et al., 2021). Finally, the need for additional capacity building to strengthen digital skills including effective digital learning pedagogy, is evident. Whitelock et al. (2024) note that sustained digital skills development is crucial for educational relevance and institutional resilience.

Research Question 2: What has been the impact of digital learning strategies employed by the VTDI on student engagement and skills development?

Two themes emerged: 1) technology-driven engagement and flexible participation and (2) unequal access and digital readiness affecting skills development.

Technology-Driven Engagement and Flexible Participation

Participants reported that VTDI's digital learning strategies positively impacted student engagement. The integration of interactive platforms, such as Moodle and Microsoft Teams, alongside flexible delivery formats, enabled increased participation, particularly among students in remote areas, those overseas, and working professionals. Students increasingly expect digital integration and are motivated by the convenience of asynchronous learning and online assessments. Participant 2 noted, "The learning style of students is changing. They are now driven by technology. If we don't become technologically savvy and show how technology is integrated into learning, we will find ourselves losing that kind of attention." As a result, strategies like online exams and video-based assessments were used to enhance engagement by enabling students to demonstrate skills at a distance.

Unequal Access and Digital Readiness Affecting Skills Development

While digital strategies have increased access and exposure to essential digital tools, participants also highlighted equity concerns that impact skills development. Many students lack access to appropriate devices, software, or stable internet connections. In reference to use of Safe Exam Browser to facilitate online testing via Moodle, Participant 10 noted, "Many students...don't have laptops, so a lot of them are using their cell phones, and that software is not compatible with Android." Similarly, Participant 13 highlighted, "Some courses require high-spec computers...without those or sufficient bandwidth, it becomes a challenge." These challenges were compounded in rural areas with poor infrastructure. Participant 6 shared that after Hurricane Beryl in 2024, "I had students who were living in Mavis Bank...there was hardly any access to internet and so that impacted their ability to complete the programme." Although students are gaining digital skills such as LMS navigation, virtual collaboration, and content creation, these gains are unequally experienced. Participants called for targeted institutional strategies to bridge the digital divide and ensure that all students can develop relevant skills for the workforce.

The findings support existing literature, affirming that flexible digital environments enhance student engagement by increasing motivation, autonomy, and satisfaction (Bajaj, 2024; OECD, 2023). Strategies such as video-based assessment, use of learning management systems, and the integration of communication platforms have enhanced the accessibility and immediacy of learning. This is especially beneficial for students constrained by time and distance (OECD, 2023). However, the digital divide continues to hinder equitable skills development. Students without adequate devices, internet, or digital literacy are at a disadvantage. This aligns with concerns raised by JETC (2021), the ILO (2021), and UNESCO (2025), who emphasise that students in

low-income or rural settings are often excluded from fully benefiting from digital education. Blundell et al. (2016) and Mpungose (2020) also stress that online learning readiness remains a challenge in developing countries. Mpungose recommends providing campus-based and remote access to computers and Wi-Fi to help mitigate this issue.

Moreover, the findings indicated that while exposure to digital tools has increased, the lack of simulation labs and virtual environments hampers the development of hands-on skills which are essential to TVET. Abdul Hamid et al. (2024) argue that immersive technologies play an important role in TVET. Without these supports, the transformative potential of digital learning for skills development may remain unfulfilled.

Conclusion

This qualitative study examined the VTDI's digital learning strategies and their impact on access, flexibility, student engagement, and skills development. The findings highlight a well-established digital learning structure, supported by a Digital Education Unit, ICT Services Department, and integrated systems such as iSIMS, Moodle, and Microsoft Teams. Delivery modes include face-to-face, online, and blended learning, with policies and procedures in place to support inclusive practices.

Digital strategies have improved engagement by increasing flexibility and accessibility, benefiting rural, overseas, employed students, and those with disabilities. However, without systematic support for institutional, faculty, and student readiness, these strategies risk reinforcing existing inequalities. Challenges such as limited device access, insufficient internet bandwidth, and the absence of virtual simulation tools hinder full participation and development of practical and soft skills.

To address identified challenges and maximise the impact of digital learning, several recommendations are proposed: (1) develop a collaborative platform for culturally relevant, student-generated content; (2) align practice with policy through effective monitoring mechanisms; (3) acquire simulation, virtual, and assistive technologies; (4) strengthen communication of digital readiness requirements; (5) conduct strategic assessments before adopting new technologies; (6) deliver ongoing mandatory and optional digital skills training for staff and students; (7) implement a laptop loan or grant scheme; and (8) provide students with remote access to specialised software via institutional licensing.

This study has implications for policy and practice regionally and nationally; and particularly at the VTDI in relation to monitoring and evaluation of digital learning strategies to ensure intended outcomes and impact. Additionally, the study will contribute to the growing body of knowledge on digital learning. However, the study was limited to staff perspectives at a single institution. Future research should include student voices and evaluate the long-term impact of digital learning strategies on employability and TVET outcomes.

References

- Abdul Hamid, R., Ismail, I. M., & Wan Yahaya, W. A. J. (2024). Augmented reality for skill training from TVET instructors' perspective. *Interactive Learning Environments*, 32(4), 1291–1299. <https://doi.org/10.1080/10494820.2022.2118788>
- Akpen, C. N., Asaolu, S., Atobatele, S., Okagbue, H., & Sampson, S. (2024). Impact of online learning on student's performance and engagement: A systematic review. *Discover Education*, 3(205). <https://doi.org/10.1007/s44217-024-00253-0>
- Baig, M. I., & Yadegaridehkordi, E. (2023). Flipped classroom in higher education: a systematic literature review and research challenges. *International Journal of Educational Technology in Higher Education*, 20(61). <https://doi.org/10.1186/s41239-023-00430-5>
- Bajaj, M. (2024). The role of digital learning platforms in enhancing student engagement. *Unified Visions*, 1, 1-12. <https://doi.org/10.25215/819818984X.01>
- Bergdahl, N., Bond, M., Sjöberg, J., Dougherty, M., & Oxley, E. (2024). Unpacking student engagement in higher education learning analytics: A systematic review. *International Journal of Educational Technology in Higher Education*, 21, 63. <https://doi.org/10.1186/s41239-024-00493-y>
- Blundell, C., Lee, K-T., & Nykvist, S. (2016). Digital learning in schools: conceptualising the challenges and influences on teacher practice. *Journal of Information Technology Education: Research*, 15, 535–560. <https://doi.org/10.28945/3578>
- Boeskens, L. & Meyer, K. (2025). *Policies for the digital transformation of school education: Evidence from the policy survey on school education in the digital age*. (OECD Education Working Papers No. 328). <https://doi.org/10.1787/464dab4d-en>
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27-40. <https://doi.org/10.3316/QRJ0902027>
- Clarke, V. & Braun, V. (2013) Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, 26(2), 120-123.
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choose among five approaches* (3rd ed.). Sage.
- European Commission. (2020). *Digital education action plan 2021-2027: Resetting education and training for the digital age*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0624>
- Flick, U. (2023). *An introduction to qualitative research* (7th ed.). Sage.
- Frahm, M., & Cianca, M. (2021). Will they stay or will they go? Leadership behaviors that increase teacher retention in rural schools. *The Rural Educator*, 42(3), 1. <https://files.eric.ed.gov/fulltext/EJ1335408.pdf>
- Guppy, L., O'Connor, S., Roberts, L., & Kumar, S. (2022). Blended learning in post-pandemic education: Lessons from higher education. *Education and Information Technologies*, 27(3), 3799–3819. <https://doi.org/10.1007/s10639-021-10740-4>
- Hashim, N., & Hamidon, Z. (2022). Blended learning in technical and vocational education and training (TVET) training institute. *International Journal of Academic Research in Progressive Education and Development*, 11(1), 837–860. <https://doi.org/10.6007/IJARPED/v11-i1/12343>
- Hu, J., & Xiao, W. (2025). What are the influencing factors of online learning engagement? A systematic literature review. *Frontiers in Psychology*, 16, 1-14. <https://doi.org/10.3389/fpsyg.2025.1542652>
- International Labour Organization. (2020). *Guide on making TVET and skills development inclusive for all*. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40ed_emp/%40emp_ent/documents/publication/wcms_755869.pdf
- International Labour Organization. (2021). *Digitalization of national TVET and skills systems: Harnessing technology to support LLL*. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40ed_emp/%40emp_ent/documents/publication/wcms_826682.pdf
- Jamaica Education Transformation Commission. (2021). *The reform of education in Jamaica, 2021 report: Abridged version*. <https://opm.gov.jm/wp-content/uploads/flipbook/jetc-reform-of-education-in-jamaica-2021-abridged/PDF.pdf>
- Johnson, N., Seaman, J., Poulin, R. (2022). Defining different modes of learning: Resolving confusion and contention through consensus. *Online Learning*, 26(3), 91-110. <https://doi.org/10.24059/olj.v26i3.3565>
- Karstensen, S. & Lier, A. R. (2020). Virtual welding: A didactic perspective. *Nordic Journal of Vocational Education and Training*, 10(1), 95-107. <https://doi.org/10.3384/njvet.2242-458X.2010195>
- King, K. (2012). *Eight proposals for a strengthened focus on technical and vocational education and training (TVET) in the Education for All (EFA) agenda*. <https://unesdoc.unesco.org/ark:/48223/pf0000217862http://unesdoc.unesco.org/images/0021/002178/217862e.pdf>
- Kumar, K.; Zindani, D.; & Davim, J.P. (2019). *Process planning in era 4.0*. Springer.

- Means, B., Toyama, Y., Murphy, R., & Baki, M. (2013). The effectiveness of online and blended learning: A meta-analysis of the empirical literature. *Teachers College Record*, 115(3), 1-47.
<https://doi.org/10.1177/016146811311500307>
- Metu, A. (2024). *A literature review of student engagement in learning experiences*.
<https://doi.org/10.13140/RG.2.2.17426.98243>
- Miller, E. (1999). *Educational reform in independent Jamaica*. <https://errolmiller.com/wp-content/uploads/2018/01/Education-Reform-in-Independent-Jamaica.pdf?544e84&544e84>
- Ministry of Education. (2014). *National policy for technical vocational education and training (TVET)*.
<https://moey.gov.jm/wp-content/uploads/2023/07/TVET-Policy-Final-2014.pdf>
- Mishra, S. (2023, April 4-5). *Supporting digital transformation to build resilience: COL experience* [Conference presentation]. UNESCO Global SIDS Dialogue Series, UNESCO, Paris.
<https://oasis.col.org/server/api/core/bitstreams/96f78902-7c80-49ad-9d4c-2371775f158b/content>
- Mohammed, Q. A., Naidu, V. R., Harthi, M. S., Babiker, S., Balushi, Q. A., Rawahi, M., Y., Riyami, N. H. (2020). Role of online collaborative platform in higher education context. *International E-Journal of Advances in Education*, 1(17). <http://ijaedu.ocerintjournals.org/en/download/article-file/1270170>
- Mostrady, A., Sanchez-Lopez, E., & Gonzalez-Sanchez, A. F. (2024). Microlearning and its effectiveness in modern education: A mini review. *Acta Pedagogica Asiana*, 4(1), 33–42.
<https://doi.org/10.53623/apga.v4i1.496>
- Mpungose, C. B. (2020). Emergent transition from face-to-face to online learning in a South University in the context of the coronavirus pandemic. *Humanities and Social Sciences Communications* 7 (1): 1–9.
<https://doi.org/10.1057/s41599-020-00603-x>
- OECD. (2023). *OECD digital education outlook 2023: Towards an effective digital education ecosystem*.
https://www.oecd.org/en/publications/2023/12/oecd-digital-education-outlook-2023_c827b81a.html
- Planning Institute of Jamaica. (2010). *Vision 2030 Jamaica: National development plan*.
https://www.vision2030.gov.jm/wp-content/uploads/sites/2/2020/04/vision2030_popular_version.pdf
- Ratinho, E. & Martins, C. (2023). The role of gamified learning strategies in student's motivation in high school and higher education: A systematic review. *Heliyon*, 9(8).
<https://doi.org/10.1016/j.heliyon.2023.e19033>
- Ritchie, J. & Lewis, J. (2000). *Qualitative research practice: a guide for social science students and researchers*. Sage Publications.
- Schindler, L. A., Burkholder, G. J., Morad, O. A., & Marsh, C. (2017). Computer-based technology and student engagement: A critical review of the literature. *International Journal of Educational Technology in Higher Education*, 14(25). <https://doi.org/10.1186/s41239-017-0063-0>
- Schwab, K. (2016). *The fourth industrial revolution*. World Economic Forum.
- Task Force on Educational Reform Jamaica. (2004). *A transformed education system*. <https://www.psoj.org/wp-content/uploads/2017/05/RS-2004-09-Dr.-Rae-Davis-Chairman-Task-Force-on-Educational-Reform-Jamaica-A-Transform-Education-System-updated.pdf>
- Toding, Y., & Wiyono, B. B. (2023). Computer-Assisted Instruction (CAI) integrated case method–flipped classroom innovative instructional model to improve problem-solving skill and learning outcome of TVET students. *Journal of Technical Education and Training*, 15(4). 100-113.
<https://doi.org/10.30880/jtet.2023.15.04.009>
- UNESCO IITE. (2020). *AI in education: Change at the speed of learning*. UNESCO IITE Policy Brief.
https://iite.unesco.org/wp-content/uploads/2021/05/Steven_Duggan_AI-in-Education_2020-2.pdf
- UNESCO. (2015). *Education 2030: Incheon declaration and framework for action for the implementation of Sustainable Development Goal 4*. https://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf
- UNESCO. (2020). *Global education monitoring report, 2020: Inclusion and education: All means all*.
<https://doi.org/10.54676/JJNK6989>
- UNESCO. (2025). *Inclusion in TVET: A practical guide for formal, non-formal and informal TVET institutions*.
<https://doi.org/10.54675/BUZO8428>
- UNESCO-UNEVOC. (2018). *OER in TVET: Open educational resources for skills development*.
<https://unevoc.unesco.org/up/OER-in-TVET.pdf>
- UNESCO-UNEVOC. (2022). *Trends mapping study: Digital skills development in TVET teacher training*.
<https://unesdoc.unesco.org/ark:/48223/pf0000380899>
- UNESCO-UNEVOC. (2023). *Enhancing TVET through digital transformation in developing countries*.
<https://unesdoc.unesco.org/ark:/48223/pf0000385988>
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*.
<https://docs.un.org/en/A/RES/70/1>

- Vaz, G. (2012). *Integrating vocational education with academic education in commonwealth open schools*. Vancouver, Canada: Commonwealth of Learning.
<https://oasis.col.org/server/api/core/bitstreams/a741c76a-b96a-4ed2-9d70-b6a0ddfc761/content>
- Vocational Training Development Institute. (2019). *Annual report 2019*. Unpublished internal document.
- Vocational Training Development Institute. (2020a). *Annual report 2020*. Unpublished internal document.
- Vocational Training Development Institute. (2020b). *Approach to distance/online education at the VTDI*. Unpublished internal document.
- Vocational Training Development Institute. (2020c). *Standards for offering online courses at the VTDI*. Unpublished internal document.
- Vocational Training Development Institute. (2022). *Web supported course implementation protocol*. Unpublished internal document.
- Vocational Training Development Institute. (2024a). *DEU strategic plan 2024-2026*. Unpublished internal document.
- Vocational Training Development Institute. (2024b). *Assessment policy*. Unpublished internal document.
- Vocational Training Development Institute. (2024c). *Programme development policy*. Unpublished internal document.
- Vocational Training Development Institute. (2025). *DEU student orientation handbook*. Unpublished internal document.
- Volberda, H.W., Khanagha, S., Baden-Fuller, C., Mihalache, O.R., & Birkinshaw, J. (2021). Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms. *Long Range Plan*, 54(5), <https://doi.org/10.1016/j.lrp.2021.102110>
- Whitelock, D., Goshtasbpour, F., Pitt, B., Ferguson, R., & Cross, S. (2024). Capacity building for digital education. *Open Learning: The Journal of Open, Distance and e-Learning*, 39(2), 105–111.
<https://doi.org/10.1080/02680513.2024.2317894>
- World Bank. (2019). *World development report 2019: The changing nature of work*.
<https://documents1.worldbank.org/curated/en/816281518818814423/pdf/2019-WDR-Report.pdf>
- Yin, R. K. (2017). *Case study research and applications: Design and methods*. Sage Publications.

Appendix A

Background Information - The Vocational Training Development Institute

As is documented in the Institution's Strategic Plan (2024-2027), the Vocational Training Development Institute (VTDI) was established in 1970 as a joint venture between the United Nations Development Programme (UNDP), the International Labour Organization (ILO) and the Government of Jamaica. The objective was to combat the two-fold problem of unemployment and unskilled labour in Jamaica and the wider English-speaking Caribbean. The Government of Jamaica assumed full responsibility for the Institution on January 1, 1976.

Since 1976, the VTDI has operated under the ambit of the Government of Jamaica through the Ministry of Labour and the Ministry of Education. In 1992, the Institution was transferred to the Human Employment and Resource Training (HEART) Trust, National Training Agency (NTA) (now HEART/National Service Training Agency [NSTA]) Trust. In 2018, a directive was given by the Prime Minister of Jamaica, the Most Honourable Andrew Holness, that the VTDI is to be re-assigned to the Ministry of Education (MOE). In keeping with the directive, the VTDI transitioned to the MOE as a Public Higher Education Institution (PHEI) on August 2, 2023. Consistent with its strategic focus, VTDI's mission is to produce highly competent technical vocational educators and professionals for the 21st century and beyond. Consequently, the VTDI has a mandate to offer TVET programmes that contribute to the Government of Jamaica's strategic thrust towards workforce development and economic competitiveness, particularly in relation to the development of human capital, and being responsive to labour market needs. Therefore, the Institution strategically positions its programmes to ensure they are accessible, affordable and flexible. The niche areas for the VTDI emphasize training for:

1. TVET Teachers for the education system and TVET Trainers for industry/business organizations.
2. Existing and aspiring professionals/industry experts – skills development/upgrading (skills include ICT, Construction, Plumbing, Electrical, etc.).
3. Customized training and micro credentials for the TVET system/national and regional workforce.

Guided by the constructivist educational philosophy and competency-based education and training (CBET) principles, the VTDI seeks to ensure students are competent and adequately prepared for employment upon successful completion of their programmes of study. Experiential learning opportunities provided through practicum engagements (e.g., industrial attachment) ensure an appropriate balance and integration of theory and practice.

In advancing access to programme offerings, the VTDI includes as one of its core strategic priorities, distance, online and flexible learning strategies. This is to ensure core operations include strategies and plans to recruit students from the width and breadth of Jamaica, as well as the wider Caribbean region, including those from vulnerable communities and those who may have financial challenges. Digital and flexible learning strategies utilised by the VTDI to deliver programmes include face-to-face, fully online or blended (mix of face-to-face and online). The foregoing strategies are also grounded in key institutional policies such as the Programme Development Policy and Procedural Manual, Assessment Policy, Prior Learning and Recognition Policy, and a Pre-College programme (which seeks to facilitate multiple pathways for programme access).

Standard Programme Offerings

Programmes	Minimum Entry Requirement	Programme Duration	Delivery Modality
School of Education & Business			
<p>Post-Graduate Diploma in Education & Training</p> <p>Programme learning outcomes include:</p> <ul style="list-style-type: none"> • Design and facilitate effective learning experiences for adolescents and adults. • Use effective and innovative approaches, strategies and instructional methodologies in different teaching/training contexts. • Develop appropriate instructional materials to support teaching/training intervention(s) in educational institutions/organizations. • Utilize current instructional technology to enhance the teaching/training and learning experience. • Apply the principles that underpin educational philosophies to enrich learning experiences. <p>Specializations:</p> <ul style="list-style-type: none"> • General Science (including persons trained in Allied Health Care, Heating, Ventillation & Air Conditioning, Construction, Food Preparation, Renewable Energy) • Business Education (including persons trained in Entrepreneurship) • Information Communication Technology (including persons trained in Digital Animation) • Workforce Development (including persons trained in Law, Divinity, Counselling) 	A Bachelor's Degree in an area related to Business, Science, ICT or Workforce Development	18 Months (Part Time)	Fully online (Part-time)
<p>Post Graduate Diploma in Career Counselling</p> <p>Programme learning outcomes include:</p> <ul style="list-style-type: none"> • Conduct interventions for individuals and groups through the application of appropriate career counselling theories. • Utilize career assessment tools to inform the career decision-making process. • Create career development programmes for identified populations. • Evaluate research to inform career development practice. • Analyze labour market information, and relevant economic and social issues to effectively participate in career counselling relationships. 	A Bachelor's degree from an accredited institution	16 Months	Fully Online (Part-time)
<p>Post Graduate Diploma in Learning Technologies</p> <p>Programme learning outcomes include:</p>	A Bachelor's degree in Teaching/Instruction from an accredited institution	15 Months	Fully Online (Part-time)

Programmes	Minimum Entry Requirement	Programme Duration	Delivery Modality
<ul style="list-style-type: none"> Adapt to the changing roles and functions of a 21st century classroom facilitator. Discover different types of models and best practices in the use of learning technologies that will meet the diverse needs of the students. Develop digital instructional and assessment resources to support face to face and online learning. (e.g. videos). Manage a virtual learning platform (e.g. utilizing scripting and security). Utilize assistive technologies to support students with special needs. 	<p>Or A Bachelor's degree from an accredited institution with Teaching/Training experience</p> <p>Or NVQJ Level 5 in TVET Instructor Training</p>		
<p>Bachelor of Science in Career Development</p> <p>Programme learning outcomes include:</p> <ul style="list-style-type: none"> Apply career development theories to career related client issues. Demonstrate the competencies required to function as effective career development professionals in different sectors of society. Use labour market information to guide clients as they make career related choices. Apply career development interventions such as programme planning and implementation to facilitate problem solving in learning institutions, communities, and other organizations that may be experiencing challenges with the career development processes. 	<p>Five CSEC or GCE O'Level subjects, including Mathematics & English A</p> <p>Or Mature entry qualification/non-traditional entry requirement</p>	4 Years	Blended Part-Time
<p>Bachelor of Education in Applied Technology</p> <p>Specialisation Areas:</p> <ul style="list-style-type: none"> Construction Technology Electrical Technology Beauty Services Automotive Technology <p>Programme learning outcomes include:</p> <ul style="list-style-type: none"> Demonstrate high levels of competency and proficiency in area of specialization. Exhibit advanced TVET facilitation skills in area of specialization. Use current instructional technology to design, deliver and assess teaching/training. Communicate clearly in a variety of forms, to meet the standards of the profession. Utilize research in guiding solutions for the teaching and learning process and enhancing professional development. 	<p>Five CSEC or GCE O'Level subjects, including Mathematics & English A</p> <p>Or NVQJ Level III in relevant skill area plus Mathematics, English and 2 other subjects (CSEC/ equivalent)</p> <p>Or Mature entry qualification/ non-traditional entry requirement</p>	4 Years	<p>Blended</p> <p>(Full-Time – 8 semesters)</p> <p>(Part-Time – 12 semesters)</p>

Programmes	Minimum Entry Requirement	Programme Duration	Delivery Modality
School of Applied Science, Engineering & Technology			
<p>Bachelor of Science in Information & Communication Technology (Advanced Placement)</p> <p>Programme learning outcomes include:</p> <ul style="list-style-type: none"> • Demonstrate the competencies required to function effectively as ICT professionals. • Adapt new technologies and methods to create solutions. • Apply research and evaluation skills to advance technological innovation and improvements. • Develop ICT products to advance technological innovation and improvements. • Apply good analytical, design, and implementation skills required to formulate and solve technology-based problems. • Analyse various implementation approaches to distributed domains. • Design cloud-based services that fulfil the requirements of distributed virtualization. 	<p>VTDI ICT Diploma/ Associate Degree in Information and Communication Technology</p> <p>Or Holders of a Diploma or an Associate Degree in ICT from an approved/ accredited institution</p>	2 Years	Blended (Full-Time & Part-Time)
<p>Associate of Science Degree in Information Communication Technology</p> <p>Programme learning outcomes include:</p> <ul style="list-style-type: none"> • Demonstrate the competencies required to function effectively as ICT Technologists. • Adapt to new technologies and methods. • Apply research and evaluation skills to advance technological innovation and improvements. • Develop ICT products to advance technological innovation and improvements. • Design enterprise applications. 	<p>Five CSEC or GCE O'Level subjects, including Mathematics, English & Information Technology</p> <p>Or Mature entry qualification/non-traditional entry requirement</p>	2 Years	Blended (Full Time) & (Part Time)
<p>Associate of Science Degree in Animation</p> <p>Programme learning outcomes include:</p> <ul style="list-style-type: none"> • Demonstrate high levels of technical skills and creativity to function effectively in the global animation industry. • Develop animated products to advance innovation and improvements in the global animation industry. • Demonstrate highly specialized technical skills in their area of specialization to meet the high expectations that the global animation industry requires. 	<p>Minimum of Five CSEC or GCE O'Level subjects, inclusive of Mathematics, English A and Information Technology or Visual Arts</p> <p>Or NCTVET Level 2 qualifications in related Animation area plus Mathematics and English Language</p> <p>Or CAPE IT Digital Animation (including</p>	24 Months	Blended (Full-Time)

Programmes	Minimum Entry Requirement	Programme Duration	Delivery Modality
	CSEC or GCE O'Level Mathematics) Or Mature entry qualification/non-traditional entry requirement (inclusive of work experience in Visual Arts)		
Associate of Science Degree in Events Planning and Management Programme learning outcomes include: <ul style="list-style-type: none"> • Demonstrate competence in planning, organizing, coordinating and executing events • Manage various programme elements to create seamless memorable events • Use current and emerging technologies to effectively plan, organize and execute events • Manage event risks, including legal, financial, and occupational health and safety risks 	Five CSEC or GCE O'Level subjects, including Mathematics, English A Or Mature entry qualification/non-traditional entry requirement	2 Years	Blended (Part-Time)
Associate of Science Degree in Logistics & Supply Chain Management Programme learning outcomes include: <ul style="list-style-type: none"> • Demonstrate the competencies required to function effectively in the Logistics Industry. • Apply research and evaluation skills to advance technological innovation and improvements. • Apply management techniques to organize and execute a successful project. • Analyse the creation of new value in the supply chain for customers, society, and the environment. 	Minimum of five CXC's/or equivalent, (inclusive of Mathematics, English Language) Or NVQJ Level 2 in relevant skill area and four (4) CXC/CSEC inclusive of Mathematics and English. Or NVQJ Level 3 in relevant skill area and three (3) CXC/CSEC inclusive of Mathematics and English. Or Candidates may be eligible for admission into this programme if they satisfy the requirements to be accepted via mature entry.	32 months	Blended (Part Time)

Programmes	Minimum Entry Requirement	Programme Duration	Delivery Modality
<p>Associate of Science Degree in Draughting & Building Technology</p> <p>Programme learning outcomes include:</p> <ul style="list-style-type: none"> • Provide technical advice and services in accordance with the needs of the client. • Prepare detailed drawings of architectural designs and plans for buildings, structures, plumbing, finishing and landscaping, according to specifications. • Ensure that safe and satisfactory standards of development are sustained with regard to building regulations. • Demonstrate a critical understanding of organizations within the construction sector, their management and the changing external environment in which they operate. 	<p>Minimum of five CXCs/or equivalent, (inclusive of Mathematics, English Language)</p> <p>Or NVQJ Level II in relevant skill area plus Mathematics, English A and 1 other subject</p> <p>Or Mature entry qualification/ non-traditional entry requirement</p>	<p>2 Years FT 3 Years PT</p>	<p>Blended (Full Time & Part Time)</p>
<p>Associate of Science Degree in Entrepreneurship (upgraded from the original Level 3 programme)</p> <p>Programme learning outcomes include:</p> <ul style="list-style-type: none"> • Develop a market-ready, financially viable product. • Apply management techniques to improve an actual business operation. • Design a winning business plan for monitoring and funding their business. • Conduct market research for effective strategic planning. 	<p>Minimum of five CXC/CSEC subjects inclusive of Mathematics and English Language, or the equivalent.</p> <p>Or NVQJ Level 2 in relevant skill area, plus four CXC/CSEC inclusive of Mathematics and English Language, or the equivalent.</p> <p>Or NVQJ Level 3 in relevant skill area and three (3) CXC/CSEC inclusive of Mathematics and English</p> <p>Or Mature entry qualification/ non-traditional entry requirement</p>	<p>1 Year and 1 semester (Full Time) 2 Years (Part Time)</p>	<p>Blended (Full Time & Part Time)</p>
<p>CISCO Certified Network Associate (CCNA)</p>	<p>Basic skills in the use of English Language and Computer Literacy</p>	<p>1 Year (Part Time)</p>	<p>Blended (Part-Time)</p>
<p>CISCO Certificate in CCNP Routing and Switching</p>	<p>CISCO Certified Network Associate (CCNA)</p>	<p>1 Year (Part Time)</p>	<p>Blended (Part-Time)</p>

Programmes	Minimum Entry Requirement	Programme Duration	Delivery Modality
Pre-College Programme <i>(For applicants who need additional subjects to matriculate into VTDI's standard programmes)</i>	At least one CSEC or GCE O'Level subject Or NVQJ Level II in relevant skill area	1 Year	Blended (Part Time)
School of Professional Studies			
<p>Short Programmes:</p> <ul style="list-style-type: none"> • NVQ-J Level 4 in Assessment (Assessor Training) • Post Graduate Certificate in TVET Leadership <p>On-demand Short Courses include (but are not limited to):</p> <ul style="list-style-type: none"> • Introduction to Competency-Based Education and Training (CBET) • Prior Learning & Assessment • Andragogical Principles and CBET Lesson Planning • Internal Verification • Item Writing • Train the Trainer • NVQJ Level 4 in Assessment (Assessor Training) • Internal & External Quality Assurance of Assessment • Item Writing • Supervisory Management • Project Management • Introduction to Human Resource Management • Customer Engagement and Service Excellence 			

Appendix B

Role, Function and Procedures of the Digital Education Unit (DEU)

Overview

Digital Education at the VTDI is spearheaded by the Digital Education Unit (DEU) which is branded as the 'FACE' of technological innovation (flexibility, accessibility, convenience, excellence). The Unit uses a variety of strategies to provide pedagogical, technological, technical, and other support to our stakeholders and is responsible for the promotion of online/distance/flexible education and training across all sites. The Unit assists all three Schools to respond to labour market demands for training in new and emerging TVET areas.

The unit is staffed by a director, an instructional designer, a graphic artist, and two technical assistants. The digital learning infrastructure of the VTDI is dually maintained by the DEU in conjunction with the ICT Support Services Department.

Digital Learning Landscape at the VTDI

Student management at the VTDI is centred around the Integrated Student Information Management System (iSIMS), the Institution's Student Management System (SMS). This system manages student application, registration, payment, access to online course resources, timetabling (course, lecturer, and student scheduling), and student grades and feedback.

Access to Moodle 4.2 is also facilitated for students and staff through iSIMS authentication. Moodle is the official learning management system (LMS) of the VTDI and, as such, is used to facilitate all online assessment (reference policy), such as the uploading of assignments and the facilitation of online quizzes. The Safe Exam Browser is used in collaboration with Moodle to strengthen assessment validity. This is also in keeping with the recently piloted Paperless Examination Framework (reference policy), which allows for previously paper-based exams to be completed in the computer lab on campus.

Digital tools and platforms like Articulate 360, H5P, and Moodle resources and activities (Book, Quiz, Assignment, Discussion Forum) are employed to make the platform more engaging. Student grades are also captured on Moodle with facilities for lecturers to give feedback through the rubric and other avenues. iSIMS allows grades to be transferred from Moodle to iSIMS directly. Synchronous facilitation at the VTDI was, for several years, delivered using Cisco Webex. Since the VTDI's separation from HEART/NSTA Trust, the VTDI switched from Cisco Webex to Microsoft Teams as the official synchronous facilitation platform of the Institution.

The Institution uses other digital learning tools and strategies to facilitate student engagement. Virtual and physical labs are a key part of our facilitation process as a TVET organization. Our CCNA courses are currently the main proponents of virtual labs with tools like Packet Tracer, Modeling Labs (CML), NetAcad Virtual Labs, and Skills for All – Interactive Labs. While this is the case, we continue to explore options to widen the Institution's offering in this area. In terms of physical labs, the Institution has six computer labs (two of which are dedicated to animation), an electrical lab, and a green room for photography and animation.

In addition to these options, emerging AI-powered tools for facilitation, learning resource development, and infrastructure strengthening are being examined and employed by the VTDI. These tools include Canva, Turnitin (with AI detection), ChatGPT, Microsoft 365 Copilot, Moodle AI plugins, Safe Exam Browser with AI proctoring plugins, and AI tools to support research like HappyScribe and ATLAS.ti.

Professional development for faculty is ongoing at the VTDI. Institutional initiatives like the annual Institutional Development and Planning Period (IDAPP) provide wide-ranging development offerings for all staff. There are more tailored tools for faculty development like pre-semester orientation, workshops, online (self-paced) courses, pedagogical support, and cross-functional engagement. Self-paced courses are employed to provide resources to faculty and students to assist in navigating the online learning environment.

Self-paced courses available to faculty include:

- Starting the Semester with Moodle – an orientation into course and user scheduling as it relates to iSIMS and Moodle
- Orientation to the six phase lesson planning and facilitation model, namely 'BOPPPS' (Bridge-in, Outcomes, Pre-assessment, Participatory Learning, Post-assessment, and Summary)

- Safe Exam Browser Faculty Orientation – provides training and insight into how to access, set up, and facilitate assessment on Moodle using the Safe Exam Browser

Student offerings include:

- Introduction to Moodle Student Workshop – an introduction to Moodle as employed by the VTDI
- Safe Exam Browser Student Orientation – provides training and insight into how to access and complete assessment on Moodle using the Safe Exam Browser
- Microsoft Digital Literacy – an introduction into and exploration of basic ICT concepts

Other initiatives in place to support student learning include attempts to bridge the digital divide, like allowing students to attend online classes or assessment on campus using the labs. Designing Moodle courses with downloadable resources is also a strategy to support offline access. Assistive initiatives are also in place to support learners with disabilities. One such example is the configuration of the Safe Exam Browser to allow the NVDA (NonVisual Desktop Access) software to be used for accessing assessments on Moodle. Online libraries and other similar support are also available to students via the library.

In addition, there are a wide range of synchronous and asynchronous facilitation strategies used to support digital learning. These include, but are not limited to:

- E-Portfolio – used to collect and curate developed resources for assessment or exposition
- Blended Learning – combining face-to-face with online instruction
- Fully Online Learning – asynchronous and synchronous courses offered via Moodle or Teams
- Web Enhanced – asynchronous resources made available for otherwise face-to-face or synchronous courses
- Simulation-Based Learning – virtual resources to mimic real-world activities
- Gamification – using game elements (points, levels) to increase engagement and motivation
- Flipped Classroom – content is reviewed outside of class to facilitate active learning during sessions
- Virtual Labs – digital labs for subjects like CCNA, electronics, or IT when physical resources are limited
- Microlearning – short, focused learning modules delivered digitally for skill reinforcement
- Use of YouTube for Instruction – as supplemental tools for demonstrations and tutorials, and as a means of collecting and sharing institutionally developed material
- Collaborative Tools (e.g., Microsoft Teams) – supporting group work and feedback for faculty, staff, and students

Digital and online learning is very dynamic and grows more so every day. In this state of Industry 4.0 and 5.0, it is critical that the Institution leverages every resource to fully equip learners. The VTDI continues to make strides in its effort to employ strategies in TVET to facilitate accessibility, flexibility, engagement, and skills development.