

TOWARDS A STRATEGIC FRAMEWORK FOR EFFECTIVE TVET-INDUSTRY PARTNERSHIP: PATHWAYS TO SUSTAINABLE DEVELOPMENT

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Received: January 2025 | Accepted: April 2025 | Published: June 2025

Please cite this paper as: Nthako, D., Khumalo, S.S. (2025) Towards a strategic framework for effective TVET-industry partnership: Pathway to sustainability development, *Holistica Journal of Business and Public Administration*, Vol. 16, Iss.1, pp.73-88

Abstract

This paper explored the state of the partnership between the TVET sector and the industry by identifying the challenges and recommending a strategic framework to improve the collaboration. Research demonstrates that an effective and efficient partnership between TVET and industry promotes sustainable development in society. One of the drawbacks and factors that contribute to ineffective and inefficient collaboration is misaligned TVET-industry objectives. The misalignment of TVET programs with industry needs impact negatively on skills development, employability, and economic growth. The partnership between the two, namely TVET and industry enhances economic spurn-offs and social stability. In our exploration, we deployed a qualitative research method underpinned by interpretivism. Participants included students from both engineering and business studies students and academic support staff members. Amongst others, the study findings expose a significant lack of resources, curriculum alignment issues, and practical training opportunities, which hinder the preparedness of TVET graduates for the workplace.

Keywords: TVET, industry partnership, curriculum alignment, work-integrated learning

1. Introduction

Youth unemployment in South Africa has reached alarming levels because reports indicate that it is amongst the highest as compared to other countries globally. The youth unemployment crisis is partly caused by a mismatch between the skills taught in TVET colleges (including universities) and the needs of the labour market. A significant number of young people are classified as NEETs (Not in Employment, Education, or Training), and many graduates from Technical and Vocational Education and Training (TVET) colleges are not adequately prepared for industry demands. Makgato and Moila (2019) found a disconnect between TVET colleges and the industry and this also contributes to the high

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dropout rate increasing the gap in relevant skills. Furthermore, the lack of a structured partnership between TVET institutions and industry has hindered the development of a sustainable workforce. The absence of proper leadership from both sides to facilitate collaboration between these sectors exacerbates the issue. There is an urgent need for TVET colleges to work together with industry to ensure that the curriculum aligns with market demands and produces employable graduates. This paper explored the state of the partnership between the TVET sector and the industry by identifying the challenges and recommending a strategic framework to improve the collaboration.

2. Review of literature

2.1. TVET Industry curriculum misalignment

Du Plooy and Du Preez (2022) elucidate the discrepancy between theory and practice in the NCV curriculum, attributing it to large class sizes and imbalanced student-to-staff ratios in practical lessons. The study also found that students often skipped theory classes, and some staff members considered the NCV curriculum outdated and disconnected from technological advances. Msibi (2021) posits that TVET's core mission is to develop skilled and employable graduates, while Brand (2021) notes challenges in rolling out the NCV curriculum, such as staffing and administrative issues. Mesuwini, Nkadimene and Kgomotlokoa (2021) and Mbarushimana and Allida (2020) stress the importance of ensuring that lecturers possess both content knowledge and pedagogical skills. Omar et al. (2021) argue for a structured curriculum to address rapidly evolving technology trends, experienced lecturers are crucial for relevant curriculum delivery. Denhere and Moloi (2021) identified dissatisfaction with the curriculum's ability to prepare students for the 4IR. Madimabe and Omodan (2021) advocate for student-centered learning, where students construct their knowledge, leading to better outcomes. TVET colleges should be at the forefront of the future workforce (Oviawe & Ehirheme, 2020). Williams (2021) and Oviawe (2018) agree that lecturers, with the right competencies, are key to effective curriculum implementation. Ramamurthy, Alias, and DeWitt (2021) point out the misalignment between the curriculum and industry needs, while Kamarudin (2022) and Amornvuthivorn (2016), Soyemi and Soyemi (2019), recommend aligning the TVET curriculum with industry demands to improve graduate quality. Ehlers, Schuwer, and Janssen (2018) call for the use of Open Educational Resources (OER) to enhance the quality of TVET education, urging TVET to adopt OER to stay relevant in the digital world. Eicker, Haseloff, and Lennartz (2017), Siddiky and Uh (2020), Attah (2020) suggest that the curriculum should be co-designed with industry partners to ensure alignment, advocating for a partnership-based approach with shared responsibilities and mutual benefits.

2.2. Provision of resources

Du Plooy and Du Preez (2022) posit that procurement, if not properly and timeously administered, might be a major obstacle to the attainment of strategic objectives. The authors found management of funding and revenue, and delays in the acquisition of teaching and learning resources as some of the challenges. The shortage of resources

leads to curriculum confusion as the students of all programs may be required to share classrooms and laboratory space. Ojo, Nwandu, Ogunjobi and Edoka (2020) argue that if the necessary resources are available and easily accessible to both lecturers and students at no cost, a good teaching-learning transaction can be simply established. Edokpolor and Dumbiri (2019) are of the view that resources for successful teaching and learning processes in TVET programs are insufficiently provided. This negatively impacts students' acquisition of the skills necessary to courageously pursue entrepreneurial jobs and lifelong learning.

2.3. Digital and technological advances and professional continuous development

Madu and Edokpolor (2021) highlight the challenges TVET faces in providing resources during the Covid-19 pandemic, as institutions quickly transitioned to virtual platforms. While governments were expected to equip TVET with modern technologies, some were unprepared and faced issues such as misappropriation of funds and theft. The physical distancing measures led to insufficient resources, prompting some colleges to revise and trim programs. Students from rural areas struggled with a lack of gadgets, electricity, and connectivity, leading to higher dropout rates. Okon (2019) notes that TVET faces increasing demands and challenges, including youth unemployment and social disengagement. Chetty (2021) argues that TVET colleges are unprepared for the 4th Industrial Revolution (4IR), with none of the 50 public colleges offering programs in AI or robotics. Makgato (2019) maintains that technological advancement drives economic growth and underscores the need for TVET to be responsive to the evolving technological landscape.

Zinn, Raisch and Reimann (2019) assert that it is significant that the TVET lecturers possess competencies that are related to the profession that they are in. Nthako (2020) reveals that TVET is experiencing a challenge of lecturers who are not adequately trained, most of them are academically qualified and not professionally qualified. It is against this background that Nthako (2020) recommends that universities should work with TVET to ensure that all lecturers obtain the professional qualifications to be employed in TVET. Njenga (2018) sees that TVET lecturer training as not adequate as most of them lack practical expertise. Njenga (2018) claims that most of the lecturers working in TVET are inherited from the former technical colleges without undergoing any upskilling. In maintaining similar sentiment, Motala and Pampallis (2020) believe that lecturers are not ready to prepare the youth of South Africa for the 4IR due to their under preparedness professionally. This may account for the poor performance of students on NCV programs, poor attendance, low retention rates, low throughput and certification rates. As reported by Motala and Pampallis (2020), the management of lecturer professional development in TVET is ineffective and requires urgent attention.

2.4. Strategic collaboration of industry and TVET

Spöttl and Windelband (2021) argue that chambers of commerce in the industrial, trade, and crafts sectors should work together with educational institutions including TVET colleges. They are of the view that for this to happen, this strategy must be implemented at all levels, in close consultation with both the public and commercial sectors, extending to the effective practices within TVET colleges. For Anis (2020), this should include all three spheres, namely, the macro level, which involves the creation of explicit national policy; the meso level, which focuses on providing technical support and fostering consultation between the public and private sectors; and the micro level, which involves the application of effective practices within TVET colleges to motivate and incentivize lecturers. Kotter (2022) argues that TVET and industry organizations should from time to time evaluate their practices to determine the need for change. Kotter further posits that cultivating expertise, knowledge, and credibility among role players within the sector is key in facilitating continuous improvement.

3. Research Approach

In conducting this study, a qualitative approach underpinned by interpretivism was deployed. The qualitative research approach is relevant in this study due to its nature in helping researchers understand human phenomena (McMillan and Schumacher, 2001; McMillan and Schumacher, 2006). This approach enabled us to collect rich, detailed data through descriptive phrases, thick descriptions, and participant explanations. For Mouton (2016), this approach provides units of analysis with opportunities to interpret the own world without interference.

3.1. Sample selection, instrumentation, and procedures

Research without appropriate data is a misrepresentation and a waste of time, energy, and resources. The data collection exercise requires meticulous preparation and execution. Cohen, Manion, and Morrison (2005) believe that the process of data collection is significant since it impacts the quality of empirical outcomes. For this study, we purposively selected three academic support staff, six engineering studies students, and six business studies students. The inclusion criteria were based on the following characteristics, willingness and availability, reasonable geographic location, gender mix, and diversity of experience with emphasis on not less than three years. Only public TVET colleges were selected, and semi-structured face-to-face interviews were conducted. Permission to record the interviews was requested from the participants. The table below represents the participants and their codes.

Table 1: Participants codes and rationale for inclusion

Participants	Number	Codes	Rationale for inclusion
Academic Support Officers	3	ASO A ASOB ASOC	They are critical in arranging placement for students with companies.
Business Studies Interns	6	BSIa, BS Ib, BS Ic, BS Id, BS Ie, BS If.	They provide personal life experiences during placement

Engineering Interns	Studies	6	ESla, ESib, ESic, ESId, ESId, ESIf	They provide personal life experiences during placement.
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3.2. Data analysis method

Data analysis is a skill that demands meticulousness. Our approach to data analysis was informed by the advice of Patton (2016), who argues for a systematic approach that involves identifying patterns, categories, and ultimately developing themes. The data analysis was guided by the thematic method, involving extensive reviews of transcribed data. Our research positionality was declared beforehand, and we did not in any manner influence data processing, and all data was presented verbatim, with participants coded to maintain anonymity.

3.3. Credibility and ethical protocol

Before conducting the study, we received an ethical clearance certificate from the university and permission from the relevant educational authority (Department of Higher Education). To ensure credibility, we adhered to the strategies outlined by Guba and Lincoln (1985), including prolonged engagement, thick description, dependability, and confirmability. The findings were analyzed and discussed in related literature. We ensured that the discussion integrated our reflections

4. Results and discussion

The purpose of this study was to explore the state of the partnership between the TVET sector and the industry which resulted in the development of a strategic framework for ensuring that an efficient and healthy partnership between TVET and the industry exists. Through thorough descriptive analysis of empirically collected data, several key thematic strands were identified. The researcher's position did not impact the findings, and efforts were made to maintain objectivity throughout the process. The participants' perspectives were recorded exactly as expressed. Below is a detailed discussion of the emerged thematic strands.

4.1. Placement challenges, inadequate financial and other related resources

For TVET to operate effectively and efficiently and achieve its desired objectives, adequate resources in the form of capital, human, and technical resources are a requirement. It is practically impossible to expect this sector to achieve its mission without the resources. But not only the TVET sector but also the industry. Placing students where there are challenges creates nightmares for them. Below are the frustrations of the select participants:

ESla lamented the experience in the industry as follows:

"We were scared when we arrived at the industry when we saw the equipment that they have for the first time. The people there do not have time to teach us how to use the machines because they have their own jobs".

According to ESIC, the machines were advanced.

Echoing the same sentiment, BSIE lamented:

"We know things theoretically but when we arrive at the company, we can't point out the equipment or work on it as we only saw the equipment in the book. I suggest that companies should inform the college of what resources to buy".

Edokpolor and Dumbiri (2019) posit that resources for successful teaching and learning processes in TVET programs are underutilized and insufficiently provided. Amornvuthivorn (2016) punts for the collaboration between government, industry, and the TVET sector. The scholar is of the view that this partnership, particularly between TVET and industry could assist in addressing resource-related problems. Bronfenbrenner (1979) sees this partnership as a microsystem and argues that it can significantly influence individual development, experiences, and growth opportunities, ultimately impacting the success and sustainability of TVET and industry partnerships. This system focuses on the interactions between TVET students and lecturers, as well as students' connections with their peers and teams within the immediate environment. In this context, the microsystem encompasses the TVET and industry. TVET can foster partnerships with industry by sharing experiences, resources and offering specialized training programs.

According to Du Plooy and Du Preez (2022), procurement of resources may destabilize the achievement of sector strategic goals if it is not managed appropriately. Ojo, Nwandu, Ogunjobi and Edoa (2020) believe that the availability of resources significantly improves the quality of teaching and learning. The findings of the study present evidence of lack of resources in both TVET and industry.

4.2. Consultation prior placement

Placement of interns is very important and to avoid confusion and unstructured processes, thorough consultation between the two stakeholders (TVET and industry) happens. This process should be characterized by clear lines of communication where objectives are clarified, mutual respect, and a shared vision. It emerged from the study that there is a need for consultation between TVET and the industry. The participants suggested that TVET and industry should consult with one another before the students are placed.

ESID suggested that:

“The companies and the colleges should discuss before we are placed. If the company cannot cover the work that we did, the college should look for a company where we can get relevant experience. You learn something at the college and do not do it at companies”.

Sharing similar sentiments, BSIf maintained that:

“Colleges should consult with industry before the process of placement kicks off. I think the people from industry should visit TVET colleges to see if what we are doing is what is needed at companies because we are their future workforce”.

Spöttl and Windelband (2021) argue that chambers of commerce in the industrial, trade, and crafts sectors should oversee workplaces and educational institutions. Moreover, this strategy must be implemented at every level, in consultation with the public and commercial sectors, right up to the implementation of efficient practices at TVET colleges. Anis (2020) emphasizes technical support and consultation within the public and private sectors and the micro level should take place. Strong industry involvement is necessary because of the nature of TVET, as stated by Eicker, Haseloff, and Lennartz (2017).

4.3. Sustainable curriculum in TVET

A misaligned TVET-industry curriculum is not sustainable. Such a curriculum fails to equip students with the necessary knowledge, skills, and attitudes to contribute to a more sustainable future. Sustainable TVET curricula produce a skilled workforce dedicated to economic viability by emphasizing practical skills, critical thinking, and real-world applications. Aligning TVET programs with current industry needs enables students to gain practical experience in real-world settings, enhancing their employability upon graduation. It emerged from the study's findings that the curricula offered by TVET are irrelevant and do not meet the needs of the industry.

ASOB is of the following viewpoint:

“We must also create programmes that align and cater for the future direction of industries because of new technologies”.

In supporting the assertions above, ESIf lamented the TVET curriculum which is not aligned to what is happening in the industry. Here is what was indicated:

“TVET should improve their curriculum because when we arrive at industries we are not able to work, what we do at the college is not what is done at companies”.

ESIf suggested that:

“The college must give us the correct skill so that when we arrive at companies we are not shocked”.

Based on the findings of the study, it is evident that the TVET curriculum is not adequately aligned with the evolving needs of industry. The rigidity of the curriculum, coupled with outdated equipment and methods, hinders students' ability to effectively adapt to the advanced technologies used in contemporary industries. It is imperative for TVET to implement a more flexible and responsive curriculum in order to address these shortcomings. This would involve frequent reviews and updates to ensure that the content remains relevant to industry trends.

To overcome the reported skills gap, Okon (2019) argues that TVET must form a collaboration with the industry. For Soyemi and Soyemi (2019), the implementation of a void curriculum could be the reason why TVET education fails. Hence, it is crucial to redesign the curriculum at every level which is industry fit. In addition, industrial content needs to be included in the curriculum otherwise the country might not meet its educational objectives for the twenty-first century. Attah (2020) maintains that it is necessary to match the outcomes of TVET curricula to the industry's requirements for higher skill levels. In supporting the assertions, Okon (2019) acknowledges that to close the skills gap, TVET must form collaborations with the industry. Oviawe and Ehirheme (2020) argue that TVET should be seen as a workplace preparation tool for the creation of a sustainable industrial and technological workforce. Ramamurthy, Alias and DeWitt (2021) posit that companies think TVET graduates do not have relevant skills. Kotter (2022) suggests that TVET and industry entities should periodically assess their practices to determine the necessity of change.

4.4. Digital technologies and staff deficiency and continuous professional development

The study revealed that several lecturers are not digitally proficient, which makes it difficult for them to effectively use digital teaching methods. This anomaly contributes to the quality of graduates from the TVET sector and hence high numbers of unemployability of these graduates.

ESId, one of the engineering studies students, indicated that their curriculum overemphasizes theory and no technology is part of the syllabus. She recommended that computer literacy be added as one of the subjects that they are taught. This is what she said:

“The first point that the engineering studies must have computer literacy as one of the subjects and TVET institutions ensure that their curricula or syllabus and training programmes meet the needs of industry”.

Further, one participant lamented the fact that the industry is always ahead of TVET about technological advancements. ASOC postulates that TVET should appoint lecturers who are able to deliver lessons by using alternative technological methodologies.

ASOC:

"We must have lecturers that will be able to deliver, you know, alternative delivery methodologies and who can blend in remote and digital based teaching and learning so that they evolve with the times and the technologies that we have".

ASOA supported that:

"Even the lecturers are still behind. When you look at what is happening, the industry will always be 5 steps ahead of us in terms of technology. That is the reason I'm saying that it's important that now and again they should be going to industry and be exposed to new technology all the time, so that when they come back to class, they are able to apply the knowledge that they have acquired. That is why I say constant lecturer capacitation is required".

Subrahmanyam (2020) believes that the effective and efficient use of Information and Communication Technology (ICT) is critical in the TVET space considering the digital age in which the world finds itself. Further, Subrahmanyam (2020) maintains that TVET should provide platforms such as online portals for continuous training for staff members. For Njenga (2018), academic staff members require intensive training regarding digital technologies to be ahead of the rapid technological advancements. However, this is often not the case for current TVET lecturers, who face challenges due to insufficient professional development. Motala and Pampallis (2020) argue that lecturers are inadequately prepared to equip South Africa's youth for the Fourth Industrial Revolution (4IR), which may contribute to issues such as poor student performance in NCV programs, low attendance, retention, throughput, and certification rates. Effective reforms require a commitment to providing the necessary tools, information, skills, and training (Mbarushimana & Allida, 2020). They further assert that new lecturers must possess both pedagogical and subject-specific knowledge to teach effectively. To keep pace with rapidly changing technology trends, Omar et al. (2021) propose that TVET should adopt a structured curriculum, with experienced lecturers playing a crucial role in ensuring optimal outcomes. Even with theoretical training, lecturers must have ongoing support, especially when integrating new innovations into their teaching.

4.5. Challenges during WIL sessions

The placement of students comes with a myriad of challenges such as limited access to well-resourced industry opportunities. As indicated earlier, a lack of adequate guidance or mentorship from industry professionals also hinders learning. Based on the study's findings, engineering lecturers cannot operate certain machines in the workshops.

ESlc:

“There are also machines but some of the lectures when they present the lecture, they don’t show us how to operate these machines. It haunts us as students because we are the ones who are preparing for workplaces. We are the ones who going outside the world, we are the ones who will be employed. The management should do WIL for lecturers so as to add to what we do at the college. If lecturers are not capacitated, they will continue doing what they are doing to students. Lecturers should consider what is in the curriculum serious. Managers should send lecturers for WIL to supplement what they know”.

ASOB feels that five days is too short for the lecturer to grasp all concepts and suggest that the period of lecturer placement be extended. He specified that:

“I think the WIL is not properly structured because they say a lecturer must go to industry for a minimum of five days. Five days is too short. Lecturer might not grasp all the concepts in five days, at least, a longer period for me. What I suggest is that the college could get some lecturers that can come in to stand in for these lecturers and they give them an opportunity to both industry for a longer period like 6 months or one year while we are having these lecturers that stand in for them. Then it may close this gap”.

The findings indicate that the partnership between TVET and industry may expose the youth to the way things are done in real place environments. Furthermore, by placing TVET lecturers for Work- Integrated Learning may keep them abreast of things, especially with the ever-advancing technology. By so doing, lecturers will be able to align what they teach in class to what is being done in the world of work.

ASOB pointed out that:

“Through these partnerships, we will also be able to determine what skills are needed in the labour market. We will also be able to place our lecturers for Work Integrated Learning (WIL) because of these partnerships. I also believe that it reduces the skills shortages and mismatches. These partnerships will also allow adoption of business principles into the college setup or in the into the college management. The team at colleges will be able to improve its responsiveness. I think it may also bring in opportunities for generating new streams of income for TVET colleges. We will also be able to better identify and anticipate skills needs and deliver according to expectations of both the industry and benefit to our students. I think it will also enable the student internship opportunities and also the labour market entry”.

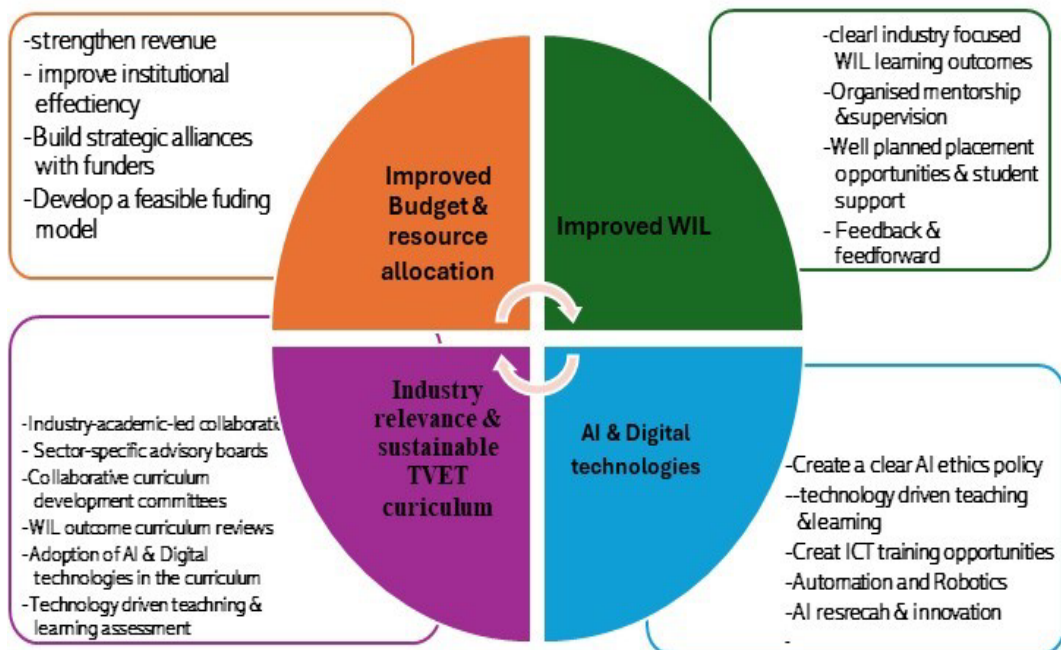
According to Gamede and Uleanya (2019), TVET plays a key role in securing profitable jobs for qualified individuals who are ready to enter the workforce. Mesuwini, Nkadiemene and

Kgomotlokoa (2021) state that for TVET to fulfill its goal, instructors must be equipped with real-world industrial knowledge. According to Okoye, Anioke, Ugwuanyi and Odokoro (2020), TVET and industry must realign their aims for sustainability and work together toward a single agenda through WIL. Working in a real workplace, whether for pay or not and doing real work are essential components of WIL. Under these circumstances, lecturers will be in a better position to assist students in gaining a more comprehensive grasp and awareness of sectors and the employment prospects that are open to them. According to Okoye et al. (2020), the WIL theory and models could significantly alter how TVET, businesses and society are positioned.

4.6. Strategic TVET-industry partnership framework

Based on the pertinent issues raised during the interaction with the participants, we suggest the comprehensive TVET-industry strategic framework which is characterized by an interrelated cohesive structure. This recommended framework contains a variety of interconnected elements. The framework is represented by figure 1 below:

Figure 1: Strategic TVET-industry partnership framework



The figure below represents a suggested framework for tackling the challenges and impediments related to the partnership between TVET and industry. This framework results from the empirical research findings and attempts to address some of the challenges identified. It consists of 4 critical focus areas which are improved budget and resource allocation, improved work-integrated learning, industry relevance and

sustainable TVET curriculum, and the AI and digital technologies. The recommended framework provides insight into how the four focus areas can be addressed. The suggested intervention list is suggestive and not limited (See text boxes reflected in the figure).

Focus area 1

Improved budget and resource allocation

This focus area provides funding intervention strategies to ensure that TVET is financially sustainable, and these strategies amongst others include, crafting a funding model that is characterized by leveraging public-private partnerships, and ensuring that funding revenue streams are diversified. Further, TVET colleges should rigorously identify companies that can adopt brilliant students and sponsor them through bursaries. This should form part of the broader and long-term strategy and will form part of building strategic alliances with business and big capital.

Focus area 2

Industry relevance and sustainable TVET curriculum

The curriculum of TEVT as indicated is characterized by irrelevance. For this reason, industry-academic-led curriculum development and collaborations are essential for aligning educational outcomes with real-world job market needs, ensuring that students acquire the skills required by employers. In addition, TVET management must lead efforts to ensure that sector-specific advisory boards are established to provide expert insights. These boards should also assist with the review of the syllabus. The adoption of AI technologies in the curriculum is critical in improving the skill set required by industry.

Focus area 3

Improved WIL

WIL serves as a preparatory school for students to have a feel of the real world of work. It is thus critical that TVET and the industry set clearly defined industry-focused WIL learning outcomes. These will come a long way in making sure that the requisite practical skills and knowledge for future careers are cultivated. Student placement should also be well thought out and well planned. The relationship regarding WIL between TVET and the industry should be characterized by clearly defined feedback from industry mentors.

Focus area 4

AI and digital technologies

Organizations globally including the TVET sector have been hit by the AI bug and ignorance of this global trend can be disastrous for those who will turn a blind eye to this technological phenomenon. For this reason, TVET must start by crafting clear AI ethics policies to govern the AI technological game. Providing ICT training opportunities for both staff and students is necessary. TVET sector should also infuse and integrate automation and robotics into the curriculum syllabus. These subjects are critical in preparing students for future job markets, where these technologies play a pivotal role in shaping industries.

Conclusion

This study was purposed to identify pertinent challenges regarding the TVET-industry partnership and suggest a strategic framework for improving the collaboration. Amongst others, the study findings expose a significant lack of resources, curriculum alignment issues, and practical training opportunities, which hinder the preparedness of TVET graduates for the workforce. The findings of the study resulted in the researchers proposing a strategic TVET-industry partnership framework. We think that this framework has the potential of contributing towards the resolution of some of the challenges identified and enhance the effective and efficient functioning of the collaboration between the industry and the TVET sector.

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