Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2023. 10(3): 110-120

DOI: 10.13187/jare.2023.3.110

Journal homepage:
http://kadint.net/our-journal.html

Articles

Re-imagining the Technical and Vocational Education and Training Curriculum that can Address the Skills Shortage Gap in South African Rural Communities

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Abstract

The study's main aim was to investigate challenges faced by the Technical and Vocational Education and Training (TVET) in addressing the skills shortage gap in the rural communities of South Africa. The human capital theory was employed as the theoretical framework in this study. The study followed the qualitative approach for data generation and analysis. In their respective portfolios, six campus senior personnel participated in the in-depth interviews. The findings identified a lack of trained lecturers, the poor design of the TVET curriculum, curriculum fragmentation, weak institutional structures, and poor infrastructure. The findings also noted the poor funding norms, poor policy frameworks, lack of active support by the stakeholders, and a poor relationship with the TVET partners.

Keywords: skills, skills shortage, technical and vocational education, training curriculum.

1. Introduction

The concept of Technical and Vocational Education and Training (TVET) came into effect after the first higher education summit held in Johannesburg in April 2010, during which the government and the Department of Higher Education and Training (DHET) called on all stakeholders in education and training, for example, parastatals, Universities, civil society organisations and businesses, to collaborate and respond to the need for improving mid- to high-level skills development opportunities, job creation and improvement of the poor educational achievement which continue to confront South Africa. The TVET colleges were formerly called Further Education and Training (FET). The government renamed these colleges (TVET colleges) to emphasise vocational education and training (Sithole et al., 2022).

Surprisingly, Lagakos (2020) reveals that rural communities' education and development remained behind compared to the education of urban communities. Rural communities' education is envisaged for rural development. Yet, rural schools and colleges are poorly serviced regarding infrastructure and other necessary resources. Nevertheless, communities are expected to be liberated through education and training for social, economic and psychological abilities. Individuals may also discover their identity and ways to fight poverty through education and training (Jagers et al., 2019).

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Hence, Mustapha and Hussain (2022) suggest that to mitigate the situation, the TVET curriculum programmes should be designed to assist trainees in working in a specific trade or occupation for the job market that is recognised by the relevant bodies. That supports the relevance of this study in identifying challenges facing the TVET in addressing the skills shortage gap in South African rural communities and further finding possible alternative ways for the TVET curriculum to address the skills shortage gap in the South African rural communities. Moreover, Ronnie (2023) avers that the TVET curriculum is also faced with several challenges that limit its attempt to address the skills shortage gap. Accordingly, this study investigated the challenges facing the TVET curriculum, addressing the skills shortage gap in South African rural communities. This has been done through the conclusions that were reached as well as the recommendations based on them for all the partners of the TVET sector, with a particular focus on the DHET and the government.

2. Theoretical framework

In this study, the Human Capital Theory was employed as the framework. The study explored the belief that human capital can be increased through higher education and training to promote access to various skills and knowledge while promoting lifelong learning and economic security for communities. The theory has a background in macroeconomic development theory back in the 1950s when the focus fell strongly on land, labour, management, and physical capital against peoples' capabilities as a resource in the production process. The human capital theory has its roots in the Industrial Revolution and the philosophy of productivism. The human capital theory was promoted by researchers such as Becker (1976), Houghton and Sheehan (2000), Laanan (2000), and Schultz (1961), as they believe that human beings are capital in themselves.

Human capital must be trained, educated, developed, and maintained within an organisation's system to enhance the organisation's productivity and the expertise of its workforce. Investment in human capital leads to greater economic outputs (Kareem, Hussein, 2019). According to Winterton and Cafferkey (2019), modern economists seem to concur that education and health care are the keys to improving human capital and, ultimately, increasing the economic output of the nation. In doing so, the skills shortage is addressed explicitly. Education and training through the knowledge, skills and abilities should be acquired to improve the employee production and performance of the organisation (Werdhiastutie et al., 2020). According to this approach, the TVET curriculum is perceived to play a fundamental role in providing the necessary human capital required by the industry (Ziad, 2021). Development financial institutions such as the World Bank have been advocating for policies to promote the TVET curriculum that invests in human capital as a means for supporting economic growth.

3. Methods and Materials

Approach and design

This study utilised qualitative research and case study design to explore participants' experiences pertaining to a specific phenomenon whilst also attempting to understand how those people have constructed reality through interrogation processes such as interviews (McMillan, Schumacher, 2010; Sarfo et al., 2021).

Sampling and sampling procedure

Researchers used purposive sampling to identify participants (Creswell, 2014; Sarfo et al., 2022). Purposive sampling is a process where the researcher selects a sample based on the experience or knowledge of the group on the topic of study. Purposive sampling means participants are selected because they possess the distinct features of the data needed (Creswell, Plano Clark, 2011). This implies that the researcher purposively selected participants with knowledge and experience in the TVET curriculum. Purposive sampling refers to the process where the researcher selects a sample based on experience or knowledge of the group. Importantly, purposive sampling means participants are selected because they possess the distinct features of the data needed (Creswell, 2014; Sarfo et al., 2021). The complete sample frame consisted of one (1) TVET College Principal, two (2) Campus Managers, one (1) Assistant Director for Curriculum, and two (2) Curriculum Specialists. The College Principal was regarded as the chief executive of TVET College. The Campus Managers were regarded as the overseers of the TVET College at campuses where different TVET curriculum programmes were implemented. They were looked at as the

supervisor of the campus. The Assistant Director for Curriculum was regarded as a staff member with sound curriculum training and experience. The curriculum specialists were believed to be the managers of different departmental units of homogeneous instructional offerings. All participants were identified as subject managers who fully understood the theory and practice of TVET Curriculum design and implementation.

Instrument

Individual semi-structured interviews were conducted with the sampled participants to generate data. Corbin and Strauss (2008) suggest that semi-structured interviews are used to elicit individual perceptions, opinions, facts, forecasts, and their reactions to the findings and the potential solutions. Semi-structured interviews had a predetermined list of open-ended questions or topics, but they also allowed for flexibility in probing further based on the participant's responses (Osborne, Grant-Smith, 2021). Considerably, the researchers believed that the combination of structured and unstructured elements ensured that researchers could cover specific areas of interest while allowing for unexpected insights. Additionally, the researchers used the predetermined questions or topics during the interview as a guide since they could ask follow-up questions and explore new areas based on the participant's responses. Taherdoost (2022) suggests that this flexibility helps capture a wide range of information. Hence, all questions asked to participants were related to challenges facing the TVET curriculum in addressing the skills shortage gap in South African rural communities and suggestions that may be used to overcome challenges.

Data analysis

Data generated from interviews were analysed by identifying themes, patterns, and relationships that were manageable first. As part of the process, Terry and Hayfield (2020) advise that theme identification and a thematic content analysis should be applied to allow the researchers to immerse themselves in the collected data and categorise it into different themes by employing a bottom-up approach as the data emerged from the transcripts. Bryman and Bell (2014) further propose that keywords, names, letters, and numbers are assigned to themes according to the source as pseudonyms to hide the identity of the participants. Table 1 indicates all the steps that were taken to analyse data.

Table 1. Procedure for analysing qualitative data (Interviews)

Step 1	Interviews were done with participants
Step 2	Transcriptions were done on the same day the interviews were conducted.
Step 3	All the interviews transcribed were read.
Step 4	Codes were indicated for each interview scheduled with the description.
Step 5	The themes that emerged were established through grouping codes.
Step 6	To get an idea of the data generated, thematic networks were placed with codes.
Step 7	Codes were trimmed and added together to find a better meaning and coherence.
Step 8	Thereafter, results were presented and discussed in the following section of the study.

4. Results

Table 2 presents the sample frame of those who participated in the study. The researchers gave participants the following pseudonyms (Zodwa, Zakes, Zandi, Zinzi, Zethu, and Zipho) to hide their identities.

Table 2. Description of the participants who were interviewed

Participants	**Responsibility and accountability**
Pseudonyms	
Zodwa (College Principal)	She is responsible for running the whole TVET college daily and reports to the regional director of colleges.
Zakes (Campus Manager A)	He is responsible for running campus A and reports to the

Participants	Responsibility and accountability
	college principal for everything that happens at campus A.
Zandi (Campus Manager B)	She is responsible for running campus B and accounts to the college principal for everything that happens at campus B.
Zinzi (Assistant Director for Curriculum)	She is responsible for curriculum management in the entire TVET college. She accounts to the college principal.
Zethu (Curriculum Specialist)	She is responsible for curriculum management in the entire campus A and accounts for the assistant director for curriculum and campus manager A.
Zipho (Curriculum Specialist)	He is responsible for curriculum management in the entire campus B and reports to the assistant director for curriculum and the campus manager B.
Total = 6	

Main theme one (1): The challenges facing the TVET in addressing the skills shortage gap of South African rural communities

- The results revealed that many of the TVET lecturers possessed lower qualifications. This presents a challenge that affects the administration and management of the TVET curriculum. **Zodwa** confirmed that "*most of the staff members that are responsible for curriculum implementation only hold diplomas as their qualifications".*

- The results revealed that lecturers in TVET colleges lack vocational training and experience. **Zethu** stated that "*lecturers studied for normal qualifications to work in normal schools which do not require vocational skills*".

- The results further stated that TEVET colleges offer inappropriate skills to students. **Zodwa** explained, "Many students have completed and passed with distinction, but they fail to get jobs in their careers; *instead, they take anything they come across.*"

It was also noted that the TVET curriculum does not address issues that are encountered in South African rural communities. **Zandi** stated, "*TVET colleges have many courses that do not have a market in rural areas*." **Zakes** agreed by indicating that "inappropriate skills acquired in relation to the available jobs can hamper graduates in their careers, and there is a lack of information and connections with regard to employment opportunities.*"*

Main theme two (2): The possible alternatives for the TVET curriculum to address the skills shortage in the rural areas of South African rural communities

- The results showed that the TVET sector has pillars that need to be strengthened to address the skills shortage gap. **Zandi** said, "*The college is on a plan to open new campuses deep in the villages. The purpose is to take skills training to rural students where they are."*

- The results further indicated that the current TVET system needs to be reviewed and re-designed. **Zinzi** asserted that "*The TVET system needs to be overhauled from scratch. The DHET must release more funds to establish and develop the necessary infrastructure, such as infrastructure related to technology*."

- The results also implied that a relationship with all the stakeholders in the TVET sector is imperative. **Zipho** indicated that: "*TVET colleges must establish partnerships. Partnerships may help to relate the curriculum to the local, national, and international skills demand*."

- The results have suggested continuous training for lecturers. **Zethu** was quoted emphasising that "*Colleges must always try to offer some training to lecturers. For example, training for moderators, assessors, coaching, and facilitators*."

5. Discussion

Main theme one (1): The challenges facing the TVET in addressing the skills shortage gap of South African rural communities

Unqualified TVET lecturers

TVET has remained the same even though the TVET curriculum is supposed to contribute significantly to skill development for economic growth. Omar et al. (2021) allude that many TVET lecturers do not possess the requisite training, skills, experience, motivation, and vocational

exposure. On the other hand, McPherson (2021) postulates that TVET lecturers should ideally have theoretical knowledge and practical skills relevant to their teaching fields, which is not the case with the current TVET lecturers. Without proper training and skills, they may struggle to convey knowledge and effectively provide hands-on training to students. Additionally, practical experience in the industry is often essential for TVET lecturers to relate classroom teachings to real-world applications. Without sufficient experience, lecturers may be unable to effectively bridge the gap between theory and practice (Mesuwini, Mokoena, 2023).

Lack of enough trained vocational and experienced lecturers

Significantly, Russon and Wedekind (2023) reveal that the national education quality assurance body in South Africa concluded that most lecturers are ill-equipped to cope with the academic and social demands of vocational teaching. This implies that lecturers are incapacitated to achieve the purposes of the curriculum. The lack of trained vocational and experienced lecturers is a significant issue in South Africa's education system, as highlighted by Russon and Wedekind (2023). The findings of the national education quality assurance body in South Africa suggest that many lecturers in vocational education are ill-prepared to meet the academic and social demands associated with vocational teaching (McGrath et al., 2023).

Poor timetabling

TVET colleges were inundated with unplanned programmes and events within and without. Muchineripi et al. (2022) argue that a theoretical workload that is too heavy and the poor timetabling of the TVET calendar year are key challenges for the TVET curriculum. This has affected the teaching and learning activities as the core values of the curriculum. Subsequently, Muchineripi, Akwasi and Kofi (2022) agree that a heavy theoretical workload can compound the problems caused by poor timetabling. Students may be required to cover substantial theoretical content in a limited time. This makes it difficult for them to grasp and apply the concepts fully. Significantly, Alghamdi et al. (2020) emphasise that effective timetabling is essential for optimizing the use of resources such as classrooms, equipment, and instructors. Poor timetabling may result in underutilized resources during some time slots, while overcrowding in others leads to inefficiencies in the educational process.

Unresponsiveness of the TVET curriculum

Most of the participants answered that the TVET curriculum was structurally unresponsive to the national skills needs. Importantly, it was noted that the content of the curriculum is too theoretical and does not address the salient skills needs of the labour market, especially in rural areas. Rensburg (2020) maintains that the South African TVET system needs to be strengthened to provide access to high-quality, differentiated technical and vocational education and skills training that is responsive and relevant for all. The TVET curriculum appears to have structural issues that hinder its ability to adapt to the changing demands of the labour market. This suggests a potential mismatch between the skills taught in TVET institutions and those required by industries and employers (Comyn, 2018). Le et al. (2022) argue that the emphasis on theoretical content in the curriculum may not align with the practical skills needed by individuals entering the workforce. This imbalance could lead to a gap between what students learn in TVET programs and what employers require in the real world.

Inaccessibility to TVET training

Accessibility indicates providing inclusive education and training for all within the limits of finance, distance, affordability, flexibility, and adjustability. All participants asserted that the TVET curriculum does not offer full accessibility to the required training for employment. Elfert (2019) states that the United Nations Education and Scientific Cultural Organisation (UNESCO) on Agenda 2030 emphasises universal access to basic education and lifelong learning opportunities, including vocational education, higher education, and adult learning. Therefore, the TVET curriculum needs to offer differentiated bridging courses to allow for flexibility and mobility within the college sector to achieve an articulated post-school education and training system with no dead ends for students. Consequently, Mhlanga et al. (2022) agree that TVET institutions are scarce in rural areas and far from where people live. This can make it difficult for individuals with limited resources to access TVET institutions. Nevertheless, some prospective students may not be aware of the existence or benefits of TVET programs. A lack of information about available opportunities can prevent individuals from seeking out this type of education and training (Le, 2022).

Poor TVET curriculum design

The design of the TVET curriculum lacked the authenticity to address the skills shortage gap. All participants indicated that the TVET curriculum was destined to address the skills shortage gap despite the institutional challenges faced. Magidi and Mahiya (2021) regard the TVET curriculum as pivotal in addressing the skills shortage gap in rural communities. Education and training are central to long-term development, reducing poverty and inequality, and building a foundation for an equal society. However, Nkwanyane et al. (2020) indicate that outdated content is one of the most significant issues with poorly designed TVET curricula. Industries and technologies are constantly evolving, and if the curriculum does not keep pace with these changes, students may graduate with skills that are no longer in demand.

Outdated information technology

The study revealed that the TVET colleges were facilitated by poor technology in communication and instructional offerings. Olowoyo et al. (2020) opine that TVET colleges have a challenge regarding securing modern training equipment for workshops that will expose students to practical life in the workplace and the world of employment. Hence, Oviawe (2018) maintains that an effective TVET curriculum requires access to up-to-date equipment and facilities to provide practical training. If the curriculum design does not consider the need for such resources, students may graduate without gaining the necessary hands-on experience.

Insufficient funding

Insufficient funding was identified as one of the main challenges facing the TVET curriculum in addressing the skills shortage gap. Accordingly, Sithole et al. (2022) contend that the funds allocated by the government through the DHET should be maximised to implement the TVET curriculum and do research on a comparative study of good practices in other countries that offer TVET systems. An improvement in the funding norms for the TVET curriculum was seen as important for acquiring facilities, tools, equipment, instruments, workshops, laboratories, library, maintenance, and capacity building. Therefore, Wanjohi et al. (2019) affirm that insufficient funding often means that TVET institutions have limited resources to invest in modern equipment, technology, and infrastructure. This can hinder the quality of education and training that students must receive.

Weak partnerships and collaboration links

According to the findings, most TVET colleges have no formal relationship with the industry, except for cases where they offer an apprenticeship, leadership, or other skills programmes that are inherently practical. Makgato and Moila (2019) affirm that the relationship between TVET colleges and other partners is weak. Secondly, the TVET curriculum is alienated from its prime market as well as the consumers of the graduates in the form of the trade and industry (employers). As a result, many TVET graduates cannot get the workplace experience required to complete the practical component for reasonable work. The training offered seems ambiguous, unrealistic, and unresponsive to the economy's needs for rural areas. Additionally, Mabunda and Frick (2020) state that if there is no collaboration between colleges and industries, there is a risk of a skills mismatch. Graduates may not possess the skills and knowledge employers require, leading to higher unemployment rates among TVET graduates.

Main theme two (2): The possible alternatives for the TVET curriculum to address the skills shortage in the rural areas of South African rural communities

TVET curriculum change

Curriculum change was seen as a possible alternative way for the TVET curriculum to address the skills shortage gap. Change is necessary for TVET colleges to provide the relevant programmes required for specific students and specific locations. Curriculum change may promote accessible and high-quality skills training. Le (2022) asserts that education is a medium through which the formal schooling system transforms learners' global values and norms. Investing in education through the TVET curriculum will explore the potentialities of the rural youth and enable them to enjoy complete citizenry and their purpose in life. A challenge for any government is to estimate and anticipate the education and skills required to support the development and production of society (Majid, 2020). A framework to set up the indicators of skills planning should be set up to inform the government to obtain a holistic understanding of the supply and demand for skills.

Universal accessibility to TVET training

Accessibility entails providing inclusive education and training for all within the limits of finance, distance, affordability, flexibility, and adjustability. Therefore, the TVET curriculum should be designed to include bridging courses to allow for flexibility and mobility within the college sector. Quality education (Agenda, 2030) emphasises universal access to basic education and long-life learning opportunities, including vocational education, higher education, and adult learning (Elayyan, 2021). This is important to achieve the version of an articulated post-school education and training system with no dead ends for students. In this study, dormitories were found to be a challenge for TVET students because they were a causative factor in the phenomena of absenteeism and dropping out.

Offering continuous professional development programmes

The DHET and the TVET colleges must have a comprehensive plan for in-service vocational training programmes for the TVET lecturers. This training should form part of the continuous professional development programmes and refresher courses, workshops, conferences, and symposia to keep lecturers abreast of the new skills developments and innovations within the TVET sector, industry, and curriculum. This will speak to the critical pedagogy and the skills training requirements regarding the TVET students in rural areas. Addressing the issue of the heavy workloads and understaffing in TVET colleges is a possible alternative way of improving the TVET curriculum.

Notably, the TVET lecturers must be motivated regarding recruitment, service and maintenance. Accordingly, lecturers' remuneration should be standardised with attendant benefits to attract them to work at rural TVET colleges. Motivation will also help lecturers change their attitude towards the TVET curriculum and the entire sector in general. Govindasamy (2021) on Umalusi, the national education quality assurance body in South Africa, concludes that most lecturers are ill-equipped to cope with the academic and social demands of vocational teaching.

Practical skills training

There is no skills training without experiments. The practicality of training lays the foundation for skills acquisition. In this regard, results showed that the TVET colleges need to pay greater attention and provide more resources for practical training if they are to address the skills shortage gap. Practical lessons should form the largest part of the TVET curriculum training by implementing the approach for subject experts to meet the administrative requirements for undertaking practical work. Olowoyo et al. (2020) affirm that TVET colleges need to secure modern training equipment for workshops that will expose students to practical life in the workplace.

Exploring collaborative opportunities

The results showed that building strong partnerships is seen as an alternative way of effective skills training by the TVET curriculum and, subsequently, better addressing the skills shortage gap. The above may be done regarding other countries such as Germany, Ethiopia, and Australia, where companies play a crucial role in designing, development, implementation, assessment, experiential learning, apprenticeships, trade tests, and employment, as well as funding for vocational training (Melesse et al., 2022). Sgarz (2021) alludes that the social partners of TVET include organisations that represent the interests of workers and employers, while Allais and Marock (2020) maintain that social partners impact the responses to labour market policies. This is the role that is missing in the South African TVET context.

Addressing rural skills challenges

The TVET curriculum is perceived to address the rural skills challenges in a unique approach and strategy through an adequate vocational curriculum since unemployment is one of the big social challenges in rural areas (Yeap et al., 2021). Shereni (2020) affirms that the problem of unemployment in Africa can be traced through periods of socio-economic instability and political factors. The findings of this study revealed that the TVET curriculum has not yet played its role in addressing the skills shortage gap. Sano and Mammen (2022) believe that rural areas are faced with a deficit of high skills. However, they have a surplus of low-skilled members of the communities. Therefore, this is the gap the TVET curriculum must fill through relevant programmes and high-quality training with hands-on skills.

6. Limitations

This study was limited by its scope and the relatively small sample frame; hence, the researcher could not generalise the study's findings to the entire population of all the TVET

colleges. Nevertheless, the findings could be used as a motivation for effective skills training within the TVET curriculum. Time, space, and the shortage of other necessary resources also constrained the study. Hence, only six TVET managers were interviewed. The researchers are of the view that this was a small representation of the TVET sector.

7. Conclusion and Recommendations

The study concludes that capacity building is critical in any system to deliver as expected. TVET colleges do not have the suitable human capital to address the skills shortage gap. Thus, the study recommends that the DHET and TVET colleges should consider outsourcing personnel from industries in terms of trainers to upskill the TVET lecturers, especially regarding the practical lessons. Melesse and Obsiye (2022) indicate that the National Development Plan agrees that the TVET sector is not effective, and its output is poor due to a lack of capacity-building programmes for lecturers.

The study further concludes that the TVET curriculum does not address the economic and social issues that it was designed to address. Stein and Scholz (2020) confirm that job markets on pre-existing human capital needs completely ignore the obvious ways the markets manufacture needs and desires instead of merely responding to them. Therefore, the study suggests that the curriculum's re-design will be manifested by providing relevantly- demanded programmes for specific students and specific locations with high-quality training being offered, delivered, and made accessible to all students. The TVET curriculum should identify social issues in rural areas and not respond to them only.

8. Declarations

Ethics approval and consent to participate

Ethics approval was granted by the University of Zululand, South Africa, with informed consent from all participants.

Consent for publication

Not applicable.

Availability of data and materials

Data and materials associated with this study are available upon request.

Conflict of interest statement

The authors of the manuscript declare that there is no conflict of interest, and all reference materials were duly acknowledged.

Funding

Not applicable.

Acknowledgements

The paper stems from an unpublished doctoral thesis at the University of Zululand, South Africa. The study was completed in 2021.

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