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# Thought Piece: Promoting employment-oriented skills development in Africa: Reality, relevance and research as enablers

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## ABSTRACT

Overcoming the alarming youth unemployment challenge in Africa will entail youths acquiring employable skills. For the millions of young people who are illiterate or have never been to school, the learning of high-level technical skills for operating in the Fourth Industrial Revolution (4IR) work environment is a pipe dream. However, these poorly educated young Africans also need relevant skills for gainful employment and sustainable livelihoods. This thought piece argues that employment-oriented skills development in Africa should be multi-pronged and tailored to the educational profiles and needs of learners. Young people with a sound basic education and foundational STEM (science, technology, engineering and mathematics) skills can benefit from the learning of higher-order 4IR skills, while those who have never been to school or have dropped out of the school system at an early age could benefit from modern national apprenticeship schemes by qualifying as competent artisans who could serve the various sectors of the economy. Implementing such a disaggregated strategy for enhancing the employability and employment prospects of all young Africans, regardless of their educational background, will have to be anchored in the reality of the employment situation in each country, be informed by the relevance of the skills training programmes to the needs of the learner and the economy, and be driven by empirical research evidence.

## KEYWORDS

*Youth unemployment; skills development; digital skills; training relevance; informal-sector apprenticeships*

## Introduction

Youth unemployment is one of the greatest challenges of our time. Getting young people to become gainfully employed is a major concern of many African governments. All over Africa, governments face the daunting task of creating opportunities for young people to enter the world of work. Out of a total youth population of about 200 million, 95 million are illiterate, unskilled, and either unemployed or in very low-paid jobs (Garcia & Fares, 2008; AfDB/OECD, 2010). Unemployment has become a cancer eating away at the heart and social fabric of African societies. There is glaring evidence of unemployment in many African countries: from frustrated young men who loiter around public spaces to teenagers who struggle to earn a precarious living on the streets of major cities, offering whatever wares they can vend to passengers in moving vehicles at busy traffic intersections.

Although the lack of employable skills is a major cause of youth unemployment, the absorption capacity of enterprises is an equally important factor. Economies need to expand to meet the growing demand for job opportunities. For example, it is estimated that the Ghanaian economy needs to create 300 000 new jobs a year to absorb the growing number of the unemployed (Honorati & Johansson de Silva, 2016).

The African Union (AU) has led the call for skills development as a response to the challenge of youth unemployment with its publication of a continental technical and vocational education and training (TVET) strategy with broad guidelines and guidance intended to help Member States to design and implement competency-based training systems to foster youth employment (AU, 2013). The importance that the AU attaches to TVET is also evident in the Skills Development Initiative for Africa (SIFA). SIFA is a joint initiative of the AU and the German government to improve the occupational prospects of young people in Africa. SIFA has established a financing facility that provides funding grants for the design and implementation of innovative skills development programmes that benefit youths, women and vulnerable groups.[1]

Employment-oriented skills development is key to enhancing the employment and economic prospects of young people. However, such initiatives must be rooted in the reality of the African situation with training relevance and research evidence as enablers.

## Conceptual clarification

According to the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2015), 'TVET' refers to education, training and skills development which relate to a wide range of occupational fields, production, services and livelihoods. A traditionalist view of TVET is an education and training system that emphasises the acquisition of technical knowledge and skills that are directly relevant to the needs of the labour market.

1 Detailed information on SIFA is available at: <www.skillsafrica.org>.

Whereas TVET is often associated with the acquisition of skills in the formal education and training system, the concept of skills development is broader and refers to the acquisition of skills and productive capabilities from all learning environments and pathways, including formal, non-formal, informal and on-the-job training.

The notion of skills in the context of vocational education and training (VET) is complex and its definition has to be approached from different contexts and perspectives. The concept of skills is multidimensional, involving the type of skills, the level of complexity and also the context. A practical approach to understanding the different dimensions and connotations of skills would therefore be to adopt a parametric definition that takes into account these dimensions: the types of skill (e.g. digital skills, entrepreneurial or business skills, and soft, transferable or personal skills such as honesty, creativity and communication); the level of complexity (e.g. basic, intermediate or advanced); and the dimension of the context (e.g. specialised technical skills that are sector-specific and linked to a particular industrial, technological or economic activity or environment).

Skills development therefore encompasses all the dimensions of skills. It may be considered generally as the acquisition of productive capabilities to perform a given task or job effectively in the labour market. It can also refer to the outcome of the learning process and does not necessarily refer to the source of the skills acquisition (Johanson & Adams, 2004).

## Multiple skills development pathways

Skills for the world of work may be acquired from different learning environments. These include:

- A formal or school-based system;
- An informal-sector training system (e.g. traditional or modern apprenticeship schemes);
- Enterprise-based on-the-job training;
- Non-formal, semi-structured or unstructured training; and
- Online Internet-based training.

Recognising that skills development can take place at all levels of the spectrum (from low to high levels), and that each level has a different impact on national economies, it is necessary for African countries to adopt a multi-pronged approach to skills development and to find the right mix that offers not only opportunities for employment, but also increases productivity in the formal technology-dominated and capital-intensive sector. African countries should therefore prioritise both the acquisition of basic employable skills for economic survival and poverty-reduction (for their illiterate populations) and the acquisition of higher-level and advanced digital skills for economic stimulation and effective participation in the 4IR economy.

## Reality of the African situation

### *Precarious livelihoods*

The unemployment situation in Africa is dire. According to the Africa Progress Report (2012), there are 173 million Africans between the ages of 15 and 24 years, most of whom have entered the world of work from childhood with limited education and skills to equip them for decent employment and jobs. This figure is expected to grow to about 250 million in 2025. Every year, millions of poorly skilled young Africans make the difficult transition from school to the labour market, where they end up in insecure and sometimes hazardous employment with no prospect of further education or of developing their skills. According to recent estimates by the World Bank, more than 12 million young Africans, often poorly educated, leave the school system every year in search of jobs in local employment markets (World Bank, 2016). On a positive note, Johanson and Adams (2004) have also reported that the number of new annual entrants into the labour markets of Africa was as high as 500 000 in Kenya, 700 000 in Tanzania and 250 000 in Zimbabwe (Johanson & Adams, 2004).

A recent joint publication by the World Bank, UNESCO and the International Labour Organization (ILO) (Levin et al., 2023) estimates that more than 20% of youths in low- or middle-income countries are not in education, employment or training (NEET). Worldwide, 3% of young women and 14% of young men were not in employment, education or training in 2019 (UNESCO, 2021). In Ghana, the 2023 Annual Household Income and Expenditure Survey Report produced by the Ghana Statistical Service (GSS) revealed that about two million young people in the country, aged 15 to 35 years, are not in education, employment or training (GSS, 2024). Women account for the majority of the NEET population, at 1,2 million, compared with 715 691 men. According to the United Nations SDG Report of 2019 (UN, 2019), the proportion of NEETs in sub-Saharan Africa was 20%. These alarming NEET rates, representing a population of idle hands, pose a serious challenge to the peace and security of African countries.

On the whole, of the estimated 200 million youths in Africa, about 100 million are illiterate and unemployed or in low-paid jobs (AfDB, 2010; World Bank, 2016). It is important, therefore, for governments to design and implement skills training programmes that can equip this category of youths in particular with basic occupational skills. In this regard, TVET is the most practical avenue for acquiring readily employable skills that equip them for the world of work, because it provides individuals with employable technical skills and knowledge (UNESCO, 2022). Therefore, TVET enhances the employment prospects of learners and it promotes sustainable livelihoods, social stability, community well-being and the reduction of poverty (McGrath & Powell, 2015, McGrath et al, 2023). Well-functioning TVET and skills development systems are best placed to train the more vulnerable populations to acquire the occupational skills they also need to secure gainful employment. For the illiterate or poorly educated populations of Africa, basic occupational skills for livelihoods, bolstered by basic digital literacy, should therefore be prioritised.

This is not to say that Africa should not be training its youths for the 4IR. Universities and higher-level TVET institutions are better placed to offer this kind of higher-order training. However, the reality is that many of the unemployed youths do not have the foundational STEM skills required to acquire or use 4IR technologies. Undoubtedly, Africa needs competent artisans and technicians imbued with basic and intermediate employment-related skills, and also highly skilled technologists and engineers.

There is also no doubt that Africa needs technically qualified high-level TVET graduates who can

- drive economic growth and transformation, with an emphasis on manufacturing and modern production systems;
- boost agricultural-production value chains, including agro-processing, and add value to primary commodities and natural resources such as gold and timber;
- provide technological solutions and support to SMEs (small and medium-sized enterprises), including businesses in the informal sector of the economy; and
- build and maintain large-scale socio-economic infrastructure, such as roads and bridges, dams and irrigation systems, airports and railways, power plants, and water-supply and sanitation installations.

At the same time, Africa needs well-trained artisans who are equipped with basic technical and digital skills to support, in particular, the building, construction and manufacturing sectors.

The current unemployment situation in Africa suggests that the acquisition of occupational skills and basic digital literacy by the less-educated youths to meet the existing national labour market demands will be a pragmatic approach to easing the growing problem of youth unemployment. There is evidence of a demand in the labour market of many countries for competent artisans such as masons, tilers, welders and steel benders, electricians and plumbers.

### *Inadequate digital infrastructure*

The second reality of the African situation which demands that basic and intermediate skills should not be neglected in favour of 4IR skills is that many countries lack the digital infrastructure and high-speed Internet backbone required for the widespread introduction of automation into their production and service sectors. The World Bank (2016) estimates that the share of employment that is susceptible to automation in Africa is less than 50% – even in the more advanced economies of the continent. The ratio is 40% for Nigeria, 42% for Ethiopia and 48% for South Africa compared with about 60% for China and OECD (Organisation for Economic Co-operation and Development) countries. For many years to come, therefore, African economies that are still in the process of industrialising will have to depend on manual and semi-skilled workers, many of whom ply their trade in the informal economy.

### *High rate of informality of skills acquisition*

The third reality of the African situation is the high level of informality of skills acquisition. Skills development for the vast majority of out-of-school individuals or early school-leavers is delivered through apprenticeships and on-the-job training in the de-industrialised informal sector. In West Africa, for instance, it is estimated that about 80 to 90% of all skills training takes place in the informal economy. This tallies with findings of the African Development Bank, according to which African economies are dominated by informality (AfDB, 2019): the informal sector is the largest provider of employable skills. It is estimated that the share that informal employment constitutes in the economy is about 86% in sub-Saharan Africa (Balliester & Elsheikhi, 2018). Accordingly, because informal employment is so pervasive, it can no longer be considered as a domain on the periphery of national employment policies and strategies. Skills development in the informal economy is synonymous with apprenticeship training, where skills are transferred to apprentices by master trainers in a largely unregulated training environment with no nationally approved curriculum. Apprenticeship training is, as a result, the default option for the acquisition of employable skills in the case of poorly educated youths and early school-leavers.

Skills development in the informal sector tends to be more flexible than school-based formal TVET, which is characterised by rigid admission criteria that are based on the academic achievement, age restrictions and foreign-language limitations of learners. Formal TVET colleges are often not innovative in their training methodologies, partly because they are usually constrained by nationally imposed regulations to respond to the peculiar skills needs of disadvantaged categories of learner in respect of teaching approaches, admission requirements and language of instruction. However, the medium of instruction in the informal sector does include the use of a local language that less-educated learners can understand and are more comfortable expressing themselves in. Although skills development in the informal economy has been slow to incorporate new technologies into learning and teaching methodologies, this mode of skills acquisition remains dominant in many countries, especially in East and West Africa. An improved apprenticeship training system powered by technology and digitalisation and involving mentoring and coaching by qualified trainers has the potential to contribute to the enhancement of the quality and attractiveness of skills development initiatives and the employability of those who emerge from them (Smith, 2023).

That said, though, the reality is that many of the pupils leaving primary school in Africa lack the foundational literacy and numeracy skills to pursue further studies in the formal education and training system; and yet these young people also need employable skills that are relevant to their community and the local labour market. Failure to cater to their skills and employability needs will only add to the ranks of the unemployed youths.

## Relevance

The ultimate goal of TVET is to prepare learners for the world of work. The relevance of training is often measured by the employability of the learners and the ease with which

they transition to the labour market. However, the notion of relevance is broader in sense and scope than this. Relevance needs to be contextualised and mapped against not only the needs of the labour market, but also the needs of the individual and their community. Communities differ in the relevance of their social interventions and physical infrastructure needs. Employment-oriented skills development in Africa should also therefore be tailored to equip young people in rural areas with the technical skills necessary to overcome the significant infrastructure deficits and skills shortages at the local community level, and not only the needs of the wider industrialised labour market.

Training relevance is also associated with skills mismatches between the training market and the employment market. However, the notion of skills mismatches is often based on employer surveys in the formal economy. Conducting skills audits to identify skills gaps and shortages is a complex activity based very often on unpredictable factors and projections in the national economy. In contrast, skills relevance in the informal economy is driven by the evolution of local community needs. In any event, though, the acquisition of technical skills is a factor of employability and a prerequisite for entry into the world of work. For example, employer surveys conducted in Benin, Liberia, Malawi and Zambia show that more than 60% of firms consider technical skills to be very or extremely important to their operations (Arias, Evans & Santos, 2019). However, as the future of work is digital, the relevance of technical skills training will be enhanced by the digitalisation of the training provision or the curriculum in both the formal and the informal sectors of the economy.

### *The future of work is digital*

The full spectrum of TVET stretches from basic occupational skills training to the high end of skills required for industrialisation, innovation and participation in the 4IR or the 5th Industrial Revolution, which is on the horizon. The World Economic Forum (WEF) publication on the future of jobs (2018) describes the 4IR work environment as being characterised by accelerated technology adoption and robotics technology, including the use of stationary robots in manufacturing and assembly plants, aerial drones and underwater robots in the oil and gas industry, and humanoid robots in the financial and hospitality services sector. The drivers of these innovations include high-speed mobile Internet, artificial intelligence (AI), big data analytics, genetic engineering and cloud computing (WEF, 2018). Increasingly, a new human–machine frontier is being created with the coming together of the physical, biological and digital worlds.

Although the future of work is digital, prioritising the learning of advanced automation technology over basic occupational skills development in countries with large numbers of unskilled and barely literate youths will have grave social and political implications. Advanced digital production technologies associated with the 4IR are not widespread in many African countries because of the absence of enabling infrastructure such as high-grade regular electricity and affordable and reliable Internet connectivity. Governments will therefore have to consider labour-intensive job-creation options as a strategy by which to increase

employment opportunities for these categories of youths. According to a recent report of the United Nations Industrial Development Organization (UNIDO, 2020), most firms in Africa still use technologies typical of the third and even second industrial revolutions.[2]

However, Africa cannot ignore the integration of relevant digital skills into the acquisition of basic occupational competencies in even traditional occupational fields such as masonry, carpentry, cookery and catering services, hospitality and tourism, fashion design and tailoring, electrical installation and agribusiness. Occupational skills training and informal-sector apprenticeships for poorly educated learners should therefore include basic literacy and numeracy education to enable the learning of basic digital skills.

Since the future of work is assuredly digital, future-ready skills development programmes should involve the adoption of digital learning tools such as online learning platforms, digital diagnostic devices and multimedia resources to support personalised learning; here, the learning content is tailored to diverse learning styles, learner abilities and learner interests. Skills development strategies should include investment in digital infrastructure and affordable Internet to enhance the digital fluency of all learners, regardless of the course they are pursuing.

### *Digitalising the training curriculum*

Very often, the term 'digital skills' is used broadly to include digital capabilities and digital literacy. However, it can best be expanded upon to clarify the different levels of skills: basic, intermediate and advanced. For instance, basic digital skills include email communication, web research and online transactions; intermediate digital skills relate to the use of professional software and digital tools, and managing data; whereas advanced digital skills include data analytics, AI and machine learning, and the Internet of Things (World Bank, 2019).

Following these distinctions, then, when promoting the acquisition of digital skills in occupational trades for all categories of learner in the broad context of TVET and skills development, 'digital skills' would mean computer literacy and the application of technology in the learning of the various vocational trades and occupations. Digitalisation levels would naturally vary according to the learner or worker profile and the occupational domain. Workers engaged in the provision of routine services, such as hotel and hospitality staff, would need basic computer-literacy skills, whereas mechanics and technicians involved in installation, repair and maintenance work would need competencies in the use of professional software and digital diagnostic tools to enhance their productivity.

2 Preceding the 4IR were the 1st, 2nd and 3rd industrial revolutions. The 1st Industrial Revolution harnessed the power of water and steam to mechanise production, whereas the 2nd was characterised by the rapid industrialisation and manufacturing driven by the power of the steam engine and electricity to create mass production and transportation systems. The 3rd Industrial Revolution witnessed the shift from traditional industry to an economy based primarily on electronics and information technology to automate production.

### *Why embedding digital skills into occupational skills training is important*

The importance of introducing digital literacy into occupational skills training is evidenced by the fact that the labour market demand for digital skills is growing. It is estimated that 230 million jobs in sub-Saharan Africa will require varying digital competencies by 2030 (World Bank, 2019). This presents an opportunity for TVET colleges and training centres to employ a blended skills development strategy to train young people to meet this enormous labour demand. Embedding digital skills training into TVET, including traditional or informal apprenticeship training, will also help considerably to elevate the image and public perception of TVET.

### *Relevance of high-level TVET*

Training relevance is not only about basic occupational skills, but is also concerned with high-level TVET. Skills development programmes at the tertiary level, which include polytechnics and technical universities, hold the promise of producing graduates equipped with high-level skills to support the transformation of national economies through value-addition to natural resources. As many countries poor in natural resources, such as South Korea and Singapore, have demonstrated, high-level skills and not natural resources are the key drivers of economic growth. Indeed, natural resources have no natural owners: it is those who have the knowledge and skills to exploit or add value to them that are their true owners. There is therefore a need for high-level skills development in Africa in areas such as the extractives-industry sector, telecommunications, renewable energies (in particular, solar energy), power generation, transmission and distribution, biotechnology, and rail, air and marine transportation. Polytechnics, technical universities and universities of technology, when properly resourced, are strategically positioned to train the higher-order skilled workforce that African countries need to drive their economic growth and industrialisation agendas (N'gethe, Sobotzky & Afeti, 2008; Afeti, 2017).

In addition, incorporating the learning of green skills and technologies, waste management and recycling techniques, renewable-energy systems and environmentally friendly practices into TVET provision will contribute to sustaining the environment, mitigating the impact of climate change, and promoting the relevance of training. The United Nations Environment Programme (UNEP) defines 'green skills' as referring to those technical skills, knowledge, attitudes, values and behaviours that enable environmental sustainability (UNEP, 2011). Green jobs help to protect ecosystems and biodiversity, reduce energy, and avoid or reduce the generation of all forms of waste and pollution. TVET and skills development graduates can therefore contribute to the building of a green or environmentally friendly economy by, for example, learning to instal and maintain solar panels and by learning about the proper recycling of waste products and the servicing of electric vehicles that are gradually penetrating the African market.

## Research

The third R in the trilogy of Rs is research. policies, and strategies formulated to redress the skills deficits in African economies, all of which must be data-driven and based on

credible research evidence. Unfortunately, there is currently a paucity of academic research into TVET in Africa. There is therefore a need for greater Africa-centred academic research to be conducted and data to be developed on the impact of TVET on livelihoods, labour productivity, business competitiveness and economic growth as a means of guiding policy formulation and implementation. Moreover, aligning TVET with the wider education and training sector will require in-depth research and analysis of the factors involved in building a competent and diversified workforce. Pertinent research topics would include TVET teacher profiles, TVET pedagogy, the employability of students, the soft or new skills needed to serve emerging economic subsectors, and attracting female learners to TVET.

### *TVET teachers*

While investment in learning and teaching infrastructure, facilities, equipment and training materials is unquestionably important, it is also true that well-trained teachers, master trainers and TVET system managers hold the key to improving the quality of training and facilitating the transition from the learning environment into the employment market, especially in the 4IR. A competent TVET teacher or trainer is not only someone who has a technical qualification in relevant occupational disciplines: a good TVET teacher must also possess adequate pedagogical and digital skills plus workplace or industry experience. In this regard, research questions may include: What are the current profiles of teachers in TVET institutions and how are they affecting learner outcomes? How are new technology-mediated teaching and learning methodologies shaping the next generation of TVET graduates? Has the COVID-19 pandemic created new teaching technologies that TVET teachers have embraced?

### *Transferable or soft skills*

How are TVET institutions supporting learners to acquire employability skills or so-called soft and transferable skills such as leadership, creativity, critical thinking, problem-solving and decision-making, teamwork and communication, initiative and reliability? And how can these soft skills be acquired and assessed? Increasingly, employers are considering soft skills to be as important as technical knowledge and skills because soft skills enable employees, among other attributes, to adapt more quickly to changing work environments. The World Economic Forum report on the future of jobs (WEF, 2018) predicted that problem-solving, critical thinking, people management and emotional intelligence would be among the most important skills required in the workplace. However, the TVET curricula in most African countries do not provide for training in soft skills. There is therefore a growing need for research to identify effective methodologies for teaching, learning and assessing soft skills.

### *Female learners in TVET*

Female participation in the labour market is generally low, with women who do participate being more likely to be engaged in vulnerable low-paid jobs. The place of women in the

digital economy is likely to see greater disruptions, since many 'feminine-tagged' jobs, such as office and restaurant workers, are 70% more likely to be automated (Bonnet, Vanek & Chen, 2019). This risk is exacerbated by the gender-stereotyping of occupations, where some jobs are considered as masculine and therefore not appropriate for females, which leads to a reduction in the career options available to women and girls.

The issue of gender-stereotyping in TVET is complex and has to date not been adequately dealt with. Research in this area has been limited to assessing the influence of parents, culture, society, teachers and learning environments on the atypical vocational aspirations of girls (e.g. Ajayi, Akinsanya & Agbajeola, 2011; Martin & Barnard, 2013; Oluniyi, Oviawe & Barfa, 2015). Long-held societal views on what is an 'appropriate' or an 'inappropriate' occupation for boys and girls, and the lingering dichotomy in occupational preferences, have to be investigated in the arena of research.

## Conclusion

If it is to be at all effective, employment-oriented skills development in Africa should be rooted in the reality of the African situation and should therefore be driven by relevance and research evidence. The challenge of youth unemployment cannot be eased without all categories of young learner – including the NEET population – acquiring the relevant occupational and digital skills. Unemployment breeds poverty, inequality, frustration, loss of self-esteem, anger, sometimes mental illness, and crime, and it eventually leads to social disruptions. The weapon of choice to defeat the menace of youth unemployment is relevant employment-oriented technical, vocational and entrepreneurial skills.

The security threat that unemployment poses to the integrity of the state is one of the reasons many African countries are developing more responsive TVET systems to equip young people with employment-oriented skills that prepare them for the world of work. However, it must be noted that the canker of unemployment is a complex phenomenon and tackling it will have to involve the implementation of multi-pronged initiatives, including fiscal policies that promote the creation and expansion of enterprises and the capacity of the economy to generate jobs. The bottom line, however, is that, without work-related skills, unemployed youths simply cannot enter the labour market.

## REFERENCES


AfDB (African Development Bank) & OECD (Organisation for Economic Co-operation and Development). 2010. *Africa economic outlook 2010*. Abidjan: AfDB/OECD.

AfDB (African Development Bank). 2019. *Africa economic outlook, 2019*. Abidjan: AfDB.

Afeti, G. 2017. Differentiation within the postsecondary education sector in Ghana. In PG Altbach, L Reisberg & H de Wit (eds), *Responding to massification: Differentiation in postsecondary education worldwide*. Johannesburg: Sense Publishers & Korber Foundation.

Africa Progress Report. 2012. *Jobs, justice, and equity: Seizing opportunities in times of global change*. Geneva: Africa Progress Panel.

Ajayi, KO, Akinsanya, OO & Agbajeola, RO. 2011. Parental role in gender stereotyping in vocational education in 21st century Nigeria. *Journal of Basic and Applied Scientific Research*, 1(7):627–630.

Arias, O, Evans, DK & Santos, I. 2019. *The skills balancing act in sub-Saharan Africa: Investing in skills for productivity, inclusivity, and adaptability. Africa development forum series*. Washington DC: World Bank.

AU (African Union). 2013. *Continental TVET strategy to foster youth employment*. Addis Ababa: AU Commission.

Balliester, T. & Elsheikhi, A. 2018. *The future of work: A literature review.* Working Paper No. 29. Geneva: ILO.

Bonnet, F, Vanek, J & Chen, M. 2019. Women and men in the informal economy: A statistical brief. Geneva: International Labour Office.

Garcia, M & Fares, J. 2008. *Youth in Africa's labor market*. World Bank, Washington DC.

GSS (Ghana Statistical Service). 2024. *Annual household income and expenditure survey report 2023*. Accra: Ghana Statistical Service.

Honorati, M & Johansson de Silva, S. 2016. *Expanding job opportunities in Ghana*. Washington DC: World Bank.

Johanson, RK & Adams, AV. 2004. *Skills Development in sub-Saharan Africa*. World Bank, Washington DC.

Levin, V, Santos, IV, Weber, M, Iqbal, SA, Aggarwal, A, Comyn, PJ, Katayama, H & Hoftijzer, MA. 2023. Building better formal TVET systems: Principles and practice in low- and middle-income countries. Washington DC/Paris/Geneva: World Bank/ UNESCO/ILO.

Martin, P & Barnard, A. 2013. The experience of women in male-dominated occupations: A constructivist grounded theory inquiry. *SA Journal of Industrial Psychology*, 39(2):art #1099.

McGrath, S & Powell, L. 2015. Skills for sustainable development: Transforming vocational education and training beyond 2015. *International Journal of Educational Development*, 50:12–19.

McGrath, S, Ladaah, GO, Lotz-Sisitka, H, Allais, S, Zeelen, J, Wedekind, V & Russon, JA. 2023. *Transitioning vocational education and training in Africa: A social skills ecosystem perspective*. Bristol: Policy Press.

N'gethe, N, Sobotzky, G & Afeti, G. 2008. *Differentiation and articulation in tertiary education systems: A study of twelve African Countries.* Working Paper No. 145. Washington DC: World Bank.

Oluniyi, A, Oviawe, JJ & Barfa, GI. 2015. Strategies for enhancing female participation in TVET in Nigeria. *Advances in Social Sciences Research Journal*, 2(4).

Smith, E. 2023. Apprenticeships: The problem of attractiveness and the hindrance of heterogeneity. *International Journal of Training and Development*, 27(1):18–38.

UN (United Nations). 2019. *The sustainable development goals report 2019*. New York: UN.

United Nations Environment Programme (UNEP). 2011. *Green economy: Why a green economy matters for the least developed countries*. Geneva: UNEP.

UNESCO (United Nations Educational, Scientific and Cultural Organization). 2015. *Recommendation concerning technical and vocational education and training.* Paris: UNESCO.

UNESCO (United Nations Educational, Scientific and Cultural Organization). 2021. *UNESCO strategy for TVET (2022–2029)*. Paris: UNESCO.

UNESCO (United Nations Educational, Scientific and Cultural Organization). 2022. *Digital transformation of TVET and skills development systems in Africa: State of play and prospects*. Paris: UNESCO.

UNIDO (United Nations Industrial Development Organization). 2020. *Industrialising in the digital age*. Geneva: UNIDO.

WEF (World Economic Forum). 2018. *The future of jobs report, 2018*. Geneva: Centre for the New Economy and Society, WEF.

World Bank. 2016. *World development report 2016: Digital dividends*. Washington DC: World Bank.

World Bank. 2019. Digital skills in sub-Saharan Africa. Washington DC: World Bank.