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Identification of Skills Gaps in South Africa

A Technical Research Report



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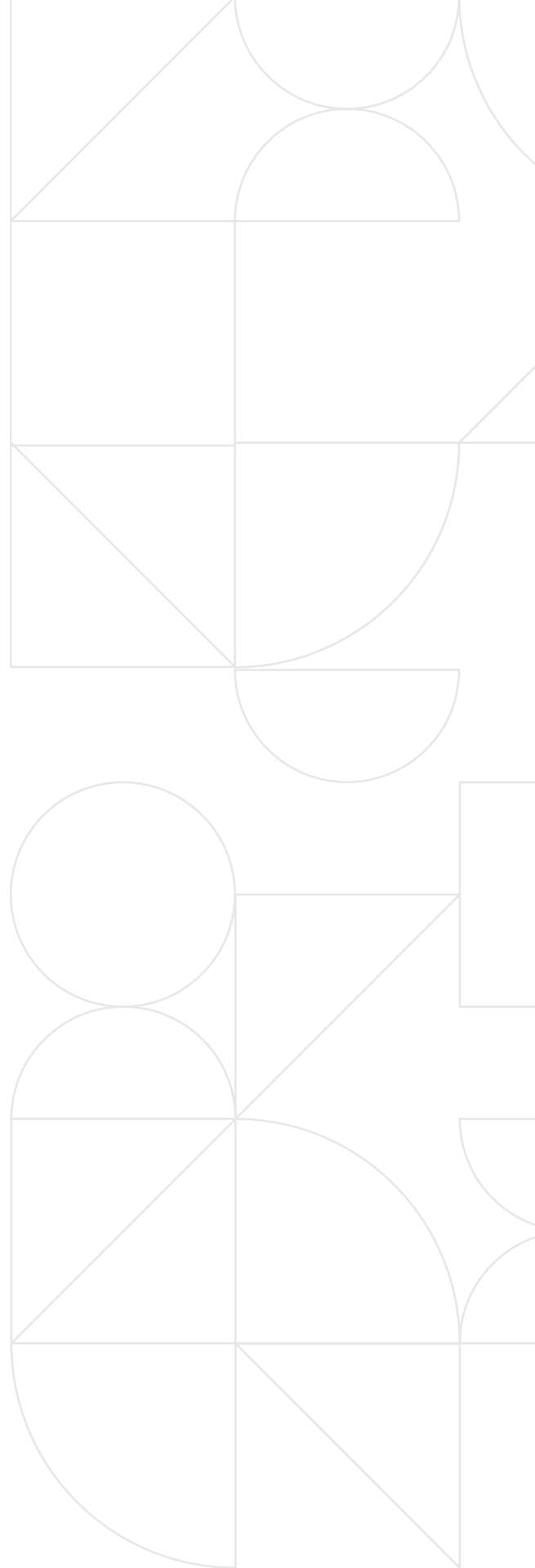
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Acronyms and Abbreviations

ACRONYM/ABBREVIATION	TERM/DEFINITION
AI	Artificial intelligence
ASTD	American Society for Training and Development
AU	African Union
CEDEFOP	European Centre for the Development of Vocational Training
CET	Continuing education and training
COVID-19	Coronavirus disease
CSDS	Continental Skills Development Strategy
CSfW	Core skills for work
CSR	Corporate social responsibility
DHET	Department of Higher Education and Training
DMRE	Department of Mineral Resources and Energy
DoL	Department of Labour
EPWP	Expanded Public Works Programme
ERRP	Economic Reconstruction and Recovery Plan
ESCO	European Skills, Competences, Qualifications, and Occupations
ETA	Employment and training administration
GDP	Gross domestic product
HR	Human resources
ICT	Information and communication technology
ILO	International Labour Organization
IoDSA	Institute of Directors in Southern Africa
IRM	Installation and repair maintenance
IRP	Integrated resource plan
JET	Just energy transition
LGSETA	Local government sector education and training authority
LMI	Labour Market Intelligence
MCP	Microsoft Certified Professional
MTN	Mobile Telephone Network (a telecommunications company)
NDP	National Development Plan
NQF	National Qualifications Framework
NSDP	National Skills Development Plan

ACRONYM/ABBREVIATION	TERM/DEFINITION
NSDS	National Skills Development Strategy
O*NET	Occupational Information Network
OECD	Organisation for Economic Co-operation and Development
OLES	Office of Literacy and Essential Skills
PSET	Post-School Education and Training
PYEI	Presidential Youth Employment Intervention
QLFS	Quarterly Labour Force Survey
SAB	South African Breweries
SAIPA	South African Institute of Professional Accountants
SAREM	South African Renewable Energy Masterplan
SDA	Skills Development Act
SDG	Sustainable Development Goals
SETA	Sector Education and Training Authority
SHRM	Society for Human Resource Management
SMEs	Small and medium-sized enterprises
SRDC	Social Research and Demonstration Corporation
SSACI	Swiss–South African Cooperation Initiative
StatsSA	Statistics South Africa
TVET	Technical and Vocational Education and Training
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO–UNEVOC	The UNESCO–UNEVOC International Centre for Technical and Vocational Education and Training
WEF	World Economic Forum
WSP	Workplace Skills Plans
YES	Youth Employment Services



PART 1

Introduction

The identification of skills gaps in South Africa involves analysing and assessing the disparities between the skills possessed by the workforce and the skills demanded by employers and the job market. This process aims to identify areas where there is a shortage of specific skills or a mismatch between the skills available and the skills required. A skill gap can be caused by various factors, such as rapid technological advancements, changes in the job market, and a lack of investment in training and education. It can lead to a shortage of qualified workers, slower economic growth, and lower productivity. Employers may struggle to fill job openings, while job seekers may have difficulty finding employment that matches their skills and experience. Thus, it is crucial to identify the skills gaps in the South African labour force. By understanding these gaps, policymakers, employers, and educational institutions can take targeted measures to bridge the divide.

1.1 Background

In 2019, it was reported that South Africa had a skills mismatch of more than 50% and the lowest productivity in labour workforce compared to 30 other countries (Isaac M, in IOL, 2023). According to the Global Competitiveness Index for 2017–2018, South Africa ranked 61st out of 137 countries in terms of its ability to develop, attract, and retain talent (WEF, 2017).

The country faces several economic and labour market contextual issues that impact its overall development and stability. According to the World Bank, South Africa's economic growth has been sluggish, averaging around 1% annually over recent years. Factors such as policy uncertainty, corruption, inadequate infrastructure, and electricity supply constraints have hampered private sector investment and stifled economic expansion. Insufficient progress in structural reforms and addressing governance issues have also impacted the confidence of investors. In addition, South Africa has a complex labour market regulatory framework, which includes minimum wage legislation, collective bargaining, and strict labour market entry and exit regulations. While these mandates aim to protect workers' rights and promote social justice, they can also create barriers to employment, especially for small businesses and low-skilled workers. This result is exacerbated in an era where technological advancements and automation are gradually transforming the nature of work.

As a consequence of the above issues, South Africa has one of the highest unemployment rates globally, at 32.9% in the first quarter of 2023 overall and at 63.9% for those aged 15–24 years (StatsSA). In addition, the country's education system faces numerous challenges such as poor infrastructure, inadequate resources, and low-quality education in many schools. According to Amnesty International (2020), these challenges perpetuate inequality and fail too many children, with the poor hardest hit. As a result, there is a significant gap between the skills demanded by employers and those possessed by job seekers. This discrepancy leads to a phenomenon referred to as 'skills gaps'. Thus, identifying and addressing skills gaps is crucial for fostering economic growth, reducing unemployment, and enhancing productivity in any country.

Marisa Jacobs, Managing Director at Xpatweb says solving the skills problem will take hard work and starts with an honest appraisal of the constraints. As such, the identification of skills gaps in the South African labour market is crucial, and addressing them needs to be a key priority for the government, as well as for businesses and educational institutions in the country. Providing workers with the skills and training needed to succeed in the workforce often requires a coordinated effort between employers, educators, and policymakers.

Towards this aim, the University of the Western Cape, which manages the Labour Market Intelligence (LMI) research programme, contracted the Swiss–South African Cooperation Initiative (SSACI). The LMI programme is a flagship intervention of the Department of Higher Education and Training (DHET) to ensure that the post-school education and training (PSET) system is responsive to the needs of the labour market.

1.2 Purpose

The purpose of this research is to firstly review existing skills frameworks to then design a comprehensive and tailored skills framework that reflects the specific needs and requirements of the South African labour force and their lives. Secondly, this study will identify skills gaps in the South African labour force with the aim of addressing these through appropriate skills development programmes. By exploring the current state of skills gaps and the associated challenges, this review intends to contribute towards a better understanding of the skills landscape in South Africa, inform policy development, and provide signals on the kinds of education and training programmes that should be prioritised.

1.3 Methodology

This research adopts a mixed methods research design that combines qualitative and quantitative approaches. This combination allows for a comprehensive exploration of existing skills frameworks, qualitative insights from stakeholders, and a quantitative analysis of secondary data.

The following research activities were undertaken:

Literature review: An extensive literature review was conducted to identify and analyse existing skills frameworks from international organisations, regions, and countries. A review of academic papers, government reports, industry publications, and international organisations' studies was conducted to gather insights on best practices and methodologies.

Data collection: The relevant secondary data from various sources was collected. The data accessed for the desktop review included but was not limited to skills data from the Organisation for Economic Co-operation and Development (OECD), the International Labour Organization (ILO), the LMI, and other research papers and reports as well as policies that relate to skills gaps. In addition, 21 of the Sector Education and Training Authorities' (SETAs) sector skills plans, the Economic Reconstruction and Recovery Plan's (ERRP) skills strategy, the South African Energy Skills Roadmap, and the 2021 report on interviews conducted by the SETAs with employers, among others, were examined. This data provided information on the current state of the South African workforce, existing skills gaps, and trends in skill demands.

Skills framework development: The insights gathered from the literature review and qualitative data were utilised to develop a comprehensive skills framework tailored to the specific needs of South Africa. The framework encompasses a wide range of skills and competencies relevant to different industries and occupations as well as life in general.

Quantitative data analysis: The latest data for South Africa on skills for jobs on the OECD's website was analysed to determine skills gaps in the country.

Identifying skills gaps: The skills framework was compared with the results of the skills gaps assessments to determine the gaps in the current workforce.

Recommendations and interventions: Based on the identified skills gaps, targeted recommendations and interventions were formulated to address the gaps effectively.

Policy implications: Policy implications of the research findings were identified, and insights were provided to inform policymakers and relevant stakeholders.

Dissemination: A comprehensive research report has been prepared that outlines the methodology, findings, and recommendations for the DHET and its stakeholders. A popular report has been prepared for dissemination to a wider audience.



PART 2

Policy Context

2.1 International Perspectives

Various regional and international organisations that are focused on skills were assessed and evaluated. A comprehensive summary of these organizations can be found in Annexure A.

Organisations reviewed include:

- The African Union (AU)
- The ILO
- The OECD
- UNESCO for its Education 2030 Framework for Action
- The UNESCO–UNEVOC International Centre for Technical and Vocational Education and Training (UNESCO–UNEVOC)
- The United Nations for its Sustainable Development Goals (SDGs)
- The World Economic Forum (WEF)

2.2 The South African Government's Perspectives and Initiatives

South Africa has implemented various policies, strategies, and initiatives to address skills development and to bridge skills gaps in the country. These include:

- **Skills Development Act (SDA) 97 of 1998:** The SDA is the primary legislation governing skills development in South Africa. It establishes the legal framework for skills development levy contributions by employers, the institution of the SETAs, and the implementation of learnerships and other skills development programmes.
- **The Continuing Education and Training (CET) Act of 2006:** The purpose of the CET Act is to enable students to acquire the necessary knowledge, practical skills, applied vocational and occupational competence, and attributes required for employment, entry into a particular occupation, or entry into a higher education institution.
- **The White Paper on PSET:** Published in 2013, this paper sets out strategies to improve the capacity of the PSET system to meet South Africa's needs. It outlines policy directions to guide the DHET and the institutions for which it is responsible in order to contribute towards building a capable workforce.
- **The National Development Plan (NDP) 2030:** The NDP serves as a guiding framework for South Africa's development, including the enhancement of skills development policies and programmes. It emphasises the need for a robust education and training system that equips individuals with the skills needed for inclusive economic growth, job creation, and social development.
- **The National Skills Development Strategy (NSDS):** The NSDS is a comprehensive policy framework that guides skills development in South Africa. It sets out strategies and targets for promoting skills development, improving access to education and training, and enhancing the quality and relevance of skills programmes.
- **The National Skills Development Plan (NSDP) 2030:** The NSDP seeks to ensure that South Africa has adequate, appropriate, and high-quality skills that contribute towards economic growth, employment creation, and social development.
- **The National Qualifications Framework (NQF):** The NQF provides a framework for the quality assurance, recognition, and portability of qualifications in South Africa. It ensures that qualifications are aligned with industry needs, facilitates lifelong learning, and promotes the recognition of prior learning.

- **The SETAs:** The SETAs are responsible for skills development within specific economic sectors in South Africa. They play a vital role in identifying skills needs, developing sector-specific qualifications, disbursing skills funding, and promoting workplace-based learning initiatives.
- **The skills development levy (SDL) and the workplace skills plans (WSPs):** The SDL is a mandatory levy paid by employers to fund skills development initiatives. Employers are required to submit WSPs that outline their skills development strategies, priorities, and planned interventions. WSPs are used to guide funding allocations and ensure alignment with national skills priorities.
- **The Expanded Public Works Programme (EPWP):** The EPWP is a government initiative aimed at creating employment opportunities and skills development for the currently unemployed. It focuses on infrastructure development, social and environmental programmes, and community-based projects, providing temporary employment and skills training to participants.
- **The Economic Reconstruction and Recovery Plan (ERRP):** In response to the COVID-19 pandemic, President Cyril Ramaphosa announced the ERRP in October 2020. The ERRP outlines key focus areas and measures to drive economic recovery, including infrastructure investment, job creation, industrialisation, and support for small and medium-sized enterprises (SMEs). This will require relevant skills.
- **The Presidential Youth Employment Intervention (PYEI):** The PYEI aims to grow the range of opportunities available to young people in South Africa. It focuses on helping them gain work experience and linking them to jobs and entrepreneurship and skills development opportunities. The PYEI is supported by the DHET, the Harambee Youth Employment Accelerator, the Department of Employment and Labour, the National Youth Development Agency, and the Development Bank of South Africa. The PYEI also partners with organisations that give young people access to additional support or resources to help them on their pathway to earning.
- **The South African Renewable Energy Masterplan (SAREM):** The draft SAREM presents the vision and opportunity for a renewable energy manufacturing value chain in South Africa, on the back of a rollout of renewable energy technologies as mandated by the Department of Mineral Resources and Energy (DMRE). The Integrated Resource Plan (IRP) envisages adding 14,400 MW of wind and 6,400 MW of solar PV, including some additional 4,000 MW of embedded generation and 2,000 MW of storage by 2030. Alongside potential export opportunities and the growth of the hydrogen market in the longer term, this plan represents a significant opportunity for economic growth and the creation of decent jobs in South Africa.

These policies and initiatives reflect South Africa's commitment to skills development as a critical driver of economic growth, employment creation, and social inclusion. The government continues to refine and implement these policies to address skills gaps, improve access to quality education and training, and enhance the country's human capital.

2.3 The Private Sector's Perspectives and Initiatives

The private sector in South Africa plays a crucial role in skills development, training, and addressing the skills gaps within the country. Many companies support some or all of the initiatives below:

- **Corporate training and development:** Several companies in South Africa have their own training and development programmes to enhance the skills of their employees. These programmes focus on improving industry-specific skills, leadership development, and technical competencies. They often provide opportunities for employees to upskill or reskill in line with evolving job requirements. Some of these initiatives include the Anglo-American Technical Training Academy,

the Sasol academy, the Standard Bank academy, the MTN academy, the Shoprite Group academy, the Telkom Centre for Learning, the SAB World of Learning, and others.

- **Workplace-based learning:** Some companies collaborate with educational institutions and SETAs to provide workplace-based learning opportunities. These include learnerships, internships, and apprenticeships, where individuals gain practical skills and experience in a real work environment while earning a qualification. SSACI supports Technical and Vocational Education and Training (TVET) students by placing them in relevant companies for workplace-based learning.
- **Skills partnerships and consortia:** Private sector organisations often form partnerships and consortia to address skills development challenges collectively. These partnerships bring together multiple companies, industry associations, and training providers to pool resources, share best practices, and develop joint initiatives to address skills gaps within specific sectors. Some examples of these organisations include the Harambee Youth Employment Accelerator, the YES programmes, the Installation and Repair Maintenance (IRM) programme, Allan Gray Makers, and the High Gear programme by IYF.
- **Corporate social responsibility (CSR) programmes:** Many companies have CSR programmes that focus on skills development in communities and disadvantaged groups. These initiatives may involve providing scholarships, bursaries, or mentorship programmes to support individuals with gaining skills and accessing educational opportunities. Some examples of these initiatives include the Woolworths Good Business Journey, the MTN Foundation, the Anglo American Zimele Enterprise Development Program, the ABSA Ready to Work Initiative, and the Nedbank Foundation.
- **Collaboration with TVET institutions:** Private sector organisations collaborate with TVET colleges to align training programmes with industry needs. This collaboration ensures that TVET graduates are equipped with the skills and knowledge required for employment in specific sectors. Examples include the Mercedes-Benz Learning Academy and The Platinum Incubator.
- **Industry-led training and certification:** Some industries in South Africa have established industry-led training and certification programmes to ensure that workers possess the necessary skills and competencies. These programmes often involve the development of industry-specific standards, assessments, and certifications to validate skill levels and enhance employability. Some examples of these include the Microsoft Certified Professional (MCP) programme, Institute of Directors in Southern Africa (IoDSA), and the South African Institute of Professional Accountants (SAIPA).
- **Sector-specific skills development initiatives:** Various industry sectors have their own skills development initiatives to address sector-specific skills gaps. These are often implemented through the SETAs.

Private sector initiatives on skills are diverse, reflecting the specific needs and challenges of different industries and organisations. These efforts aim to enhance the skills of the workforce, promote industry competitiveness, and contribute to sustainable economic growth in South Africa.



PART 3

Skills Classification

As defined by the international group of stakeholders involved in the OECD Future of Education and Skills 2030 project, skills are the ability and capacity to carry out processes and to be able to use one's knowledge in a responsible way to achieve a goal. Skills are part of a holistic concept of competency, involving the mobilisation of knowledge, skills, attitudes, and values to meet complex demands.

The classification of skills provides a structured framework for understanding and evaluating individuals' capabilities and helps inform decisions related to education, training, recruitment, and workforce development. It provides a structured way to understand and communicate the skills required in the labour market, thereby facilitating better workforce planning, training, and talent management. Classification plays a crucial role in shaping education and training policies to meet the evolving needs of the job market and to foster a skilled and adaptable workforce. Organisations such as the U.S. Department of Labor's Employment and Training Administration, which is responsible for the development and maintenance of the Occupational Information Network (O*NET), the International Labour Organisation (ILO), the European Skills, Competences, Qualifications, and Occupations (ESCO), and the United Nations International Children's Emergency Fund (UNICEF), among others, have developed skills frameworks that may be applied across a region or internationally. These frameworks as well as skills frameworks developed for other countries are discussed in detail herewith. The South African skills framework is constructed by incorporating elements from the various skills frameworks examined.

3.1 Why Skills Frameworks Are Important

Skills frameworks are essential for several reasons:

Standardisation: Providing a standardised way of classifying skills across different industries and job roles. This helps in ensuring consistency in the way skills are defined and assessed.

Clarity: Providing clarity on the skills required for different job roles. This helps individuals understand the skills they need to develop in order to progress in their careers, and it allows employers to identify the skills required for different job positions.

Career development: Providing a clear pathway for career development by identifying the skills required for different job positions. This helps individuals to plan the trajectories of their careers and identify the skills they need to develop in order to reach their career goals.

Training and development: Designing training programmes that are tailored to the specific needs of employees. Skills frameworks help in developing a targeted approach to training and development.

Performance evaluation: Setting performance standards and evaluating the performance of employees against those standards.

Qualification development: Standardising the evaluation and recognition of skills across different individuals and organisations through qualifications. Skills frameworks provide a common language and benchmark for assessing a person's abilities in a particular domain. This standardisation allows for better comparison and understanding of skill levels, making it easier for employers, educators, and policymakers to gauge someone's competence.

Curriculum development: Ensuring that the content and learning outcomes of educational or training programmes align with the skills and competencies outlined in the skills framework. Well-designed

curricula help bridge the gap between the skills needed in the workforce and the knowledge and abilities that learners acquire through education or training.

Overall, skills frameworks help individuals and organisations to understand the skills required for different job roles, develop targeted training programmes, and evaluate employee performance based on clearly defined standards.

3.2 Why We Need to Classify Skills

The classification of skills is important for various reasons:

Effective communication: Helps in effective communication between employers and employees. Classifying skills helps to clearly define job requirements and employee qualifications.

Career development: Helps individuals identify the skills they need to develop in order to progress in their careers. Classifying skills also helps in identifying the skills required for different job positions.

Skills planning: Helps organisations plan their workforce by identifying the skills they need in order to achieve their goals. It helps in identifying skills gaps and developing strategies to address them. Classifying skills helps governments as well as the private sector to undertake human resource (including skills) planning. In South Africa, SETAs identify skills gaps as part of their sector skills plans to guide governments and the private sector on the kinds of education and training programmes that they should fund. However, in the absence of a national skills framework, each SETA classifies skills differently. Thus, it is important to develop and implement a national skills framework.

Training and development: Helps in designing training programmes that are tailored to the specific needs of employees. Classifying skills helps in developing a targeted approach to training and development.

Performance evaluation: Helps in evaluating employee performance by identifying the skills required for a particular job position. Classifying skills helps in setting performance standards and evaluating employee performance against those standards.

3.3 Skills Frameworks

3.3.1 The Occupational Information Network (O*NET)

The Occupational Information Network (O*NET) is a comprehensive online database and system developed by the U.S. Department of Labor that provides detailed information for 965 occupations within the US economy, including job duties, skills required, education and training needed, earnings, and employment outlook (Tsacoumis and Willison, 2010). The content model is the conceptual foundation of the O*NET and it offers a framework that identifies the most important types of information about work and integrates them into a theoretically and empirically sound system. Most of the occupational information is collected from job incumbents such as occupational tasks, generalised work activities, knowledge, education and training, work styles, and work context areas. Occupational analysts provide the importance and level information regarding the knowledge, skills, and abilities associated with these occupations. The O*NET database is categorised as follows:

- **Abilities (52 categories):** Enduring attributes of the individual that influence performance (e.g., originality, depth perception, finger dexterity).
- **Knowledge areas (33 categories):** Organised sets of principles and facts that apply in general domains (e.g., business and management, engineering and technology, mathematics and science).
- **Skills (35 categories):** Developed capacities that facilitate learning or performance, including basic skills (e.g., active listening, writing, critical thinking) and cross-functional skills (e.g., negotiation, programming, time management).

The 35 skills in the O*NET database are divided into basic skills and cross-functional skills. Basic skills, such as reading, facilitate the acquisition of new knowledge. Cross-functional skills, such as problem-solving, extend across several domains of activities. Under these two broad headers, the skills are grouped into smaller categories.

- a. Basic skills are grouped into two smaller categories, namely:
 - ▶ Content skills
 - ▶ Process skills
- b. Cross-functional skills are grouped into five smaller categories, namely:
 - ▶ Social skills
 - ▶ Complex problem-solving skills
 - ▶ Technical skills
 - ▶ Systems skills
 - ▶ Resource management skills

The O*NET basic and cross-functional skills framework, with definitions for each of the skills, is provided in Annexure B.

The 52 abilities in the O*NET database are grouped into four categories:

- ▶ Cognitive abilities
- ▶ Psychomotor abilities
- ▶ Physical abilities
- ▶ Sensory abilities

The O*NET abilities framework, with definitions for each of the abilities, is provided in Annexure B.

The O*NET provides a standardised way of classifying skills across different industries and job roles, ensuring consistency in the way that skills are defined and assessed. The O*NET's substantive scope is impressive. It provides a comprehensive list of skills required for different job roles, making it a valuable resource for the public. But as a classification tool, it is overly complex because it has too many categories and is therefore difficult to use. As Tippins and Hilton (2009) point out, in the abilities domain, "the descriptors reflect a long history of psychological research on the nature and measurement of human abilities, but many of the descriptors in the skills domain lack extensive research base".

3.3.2 European Skills, Competences, Qualifications and Occupations (ESCO)

According to the European Commission's website, ESCO is a comprehensive framework (developed by the commission) designed to provide a common language and standardisation for describing skills, competences, qualifications, and occupations across Europe. ESCO was developed to facilitate communication and cooperation between education and training institutions, employers, and jobseekers by creating a unified and accessible system for understanding the skills and qualifications required for various job roles.

ESCO is organised into three main pillars:

1. **Occupations:** This pillar defines and categorises the various job roles and occupations found across different industries and sectors. Each occupation is described in terms of its tasks, responsibilities, and requirements, including the skills and competences necessary to perform the job effectively.
2. **Skills and competences:** This pillar outlines a wide range of skills and competences that individuals may possess, regardless of their occupation. These skills cover technical expertise, personal attributes, and transferable skills applicable to different roles.
3. **Qualifications:** The qualifications pillar provides a structure for classifying educational and training credentials. It helps individuals, employers, and education providers understand the level and content of various qualifications in a consistent manner.

ESCO provides descriptions of 3,008 occupations and 13,890 skills linked to these occupations, translated into 28 languages (all official EU languages plus Arabic, Icelandic, Norwegian, and Ukrainian). The skills and competences pillar is structured in a hierarchy that contains four subclassifications:

- Knowledge
- Language skills and knowledge
- Skills
- Transversal skills

The ESCO skills pillar distinguishes between i) skill or competence concepts and ii) knowledge concepts by indicating the skill type. There is, however, no distinction between skills and competences. The ESCO skills and transversal skills framework, with subcategories, is presented in Annexure C.

ESCO serves as a valuable tool for classifying skills at a European level, but it may not be the most suitable option for individual countries due to differences in economic, cultural, and policy contexts. A country-specific skills framework can provide a more accurate and relevant classification of skills, leading to better-informed decisions in education, training, and workforce development.

3.3.3 ILO: Global framework on core skills for life and work in the 21st century

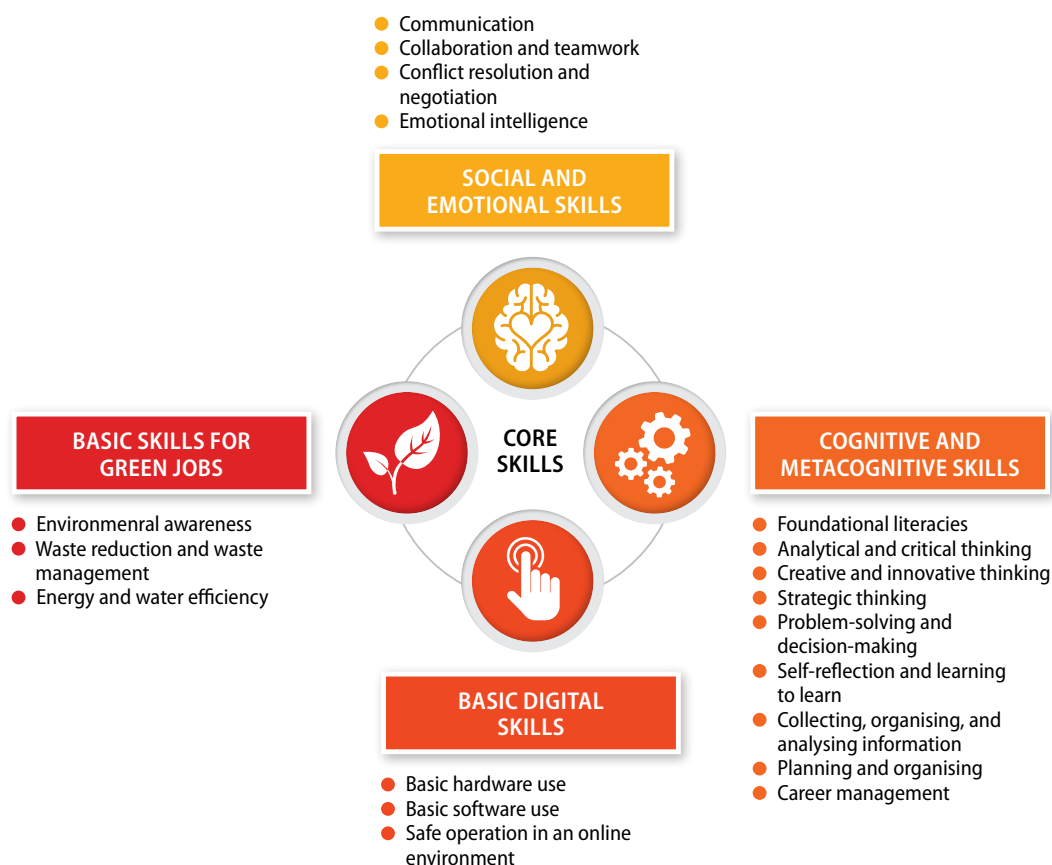
In 2021, the ILO published the 'Global framework on core skills for life and work in the 21st century' to establish coherence in the definition and categorisation of core skills. This new, global framework aims to reflect the ongoing transformations and opportunities emerging in the world of work, including the impact of the Covid-19 pandemic. The approach used in developing the framework puts people and the work they do at the centre of economic and social policy and business practice: a human-centred approach for the future of work (ILO, 2019). Most importantly, it means investing in people's capabilities, enabling them to acquire skills, reskill, and upskill and supporting them through the various transitions they will face over the courses of their lives.

According to the ILO, there is no standard terminology for what the organisation refers to as core skills. Alternative terms include soft skills, life skills, transferable skills, employability skills, core competences, portable competences, and others. The ILO developed 19 core skills that were considered essential both for work and life and further grouped them into the following four categories:

1. Social and emotional skills
2. Cognitive and metacognitive skills
3. Basic digital skills
4. Basic skills for green jobs

The ILO global framework for core skills is presented in Figure 1.

FIGURE 1: ILO: Global framework on core skills for life and work in the 21st century



Definitions for each of the ILO core skills are presented in Annexure D.

The ILO provides a helpful list of skills in the ‘social and emotional’ and ‘cognitive and metacognitive’ categories, especially in the latter. However, the list of skills associated with the former is not comprehensive. Moreover, while the emphasis on ‘green jobs’ and ‘digital skills’ is helpful in drawing attention to the importance of these issues, the introduction of these categories in the classification system diminishes the internal logic of the ILO classification system. The ILO global framework on core skills is designed to be applicable across countries and regions, focusing on skills that are considered fundamental for the world of work. However, the specific skill needs of a country can vary significantly based on its economic structure, industry priorities, and social context. A country-specific framework takes these unique factors into account to better align with the country’s specific workforce requirements.

3.3.4 Canada: The Skills for Success Program

Considering the evolving Canadian labour market and the modernisation of workplaces, the Canadian Office of Literacy and Essential Skills (OLES) has updated its Essential Skills Framework and rebranded it as the Skills for Success Program. This new framework identifies everyday skills needed by Canadians to participate and thrive in work, learning, and life in the country. The programme speaks to nine skills and focuses on foundational and transferable skills. It reflects changing skills needs and is designed to be more sustainable over time (SRDC, 2021). The Skills for Success Program includes skills that are important for effective social interaction. These skills overlap and interact with each other, and with other technical and life skills (see Figure 2). They are inclusive and can be adapted to different contexts.

FIGURE 2: Canada: The Skills for Success Program



The Skills for Success framework reflects core transversal skills needed for the workplace and life. However, it is not comprehensive—excluding many soft skills and technical skills associated with jobs.

3.3.5 Australia: The Core Skills for Work Developmental Framework (CSfW)

The CSfW describes a set of non-technical skills, knowledge, and understandings that underpin successful work participation in Australia. Participation in work could be as an employee, as someone who is self-employed, or as a volunteer (Commonwealth of Australia, 2013).

This set of non-technical skills, often referred to as generic or employability skills, contribute to work performance when combined with technical or discipline-specific skills and core language, literacy, and numeracy skills.

The CSfW describes performance in ten skill areas, grouped under three skill clusters:

Cluster 1: Navigate the world of work

- ▶ Manage career and work life
- ▶ Work with roles, rights, and protocols

Cluster 2: Interact with others

- ▶ Communicate for work
- ▶ Connect and work with others
- ▶ Recognise and utilise diverse perspectives

Cluster 3: Get the work done

- ▶ Plan and organise
- ▶ Make decisions
- ▶ Identify and solve problems
- ▶ Create and innovate
- ▶ Work in a digital world

Each skill area describes a combination of knowledge, skills, and understandings and their application to work.

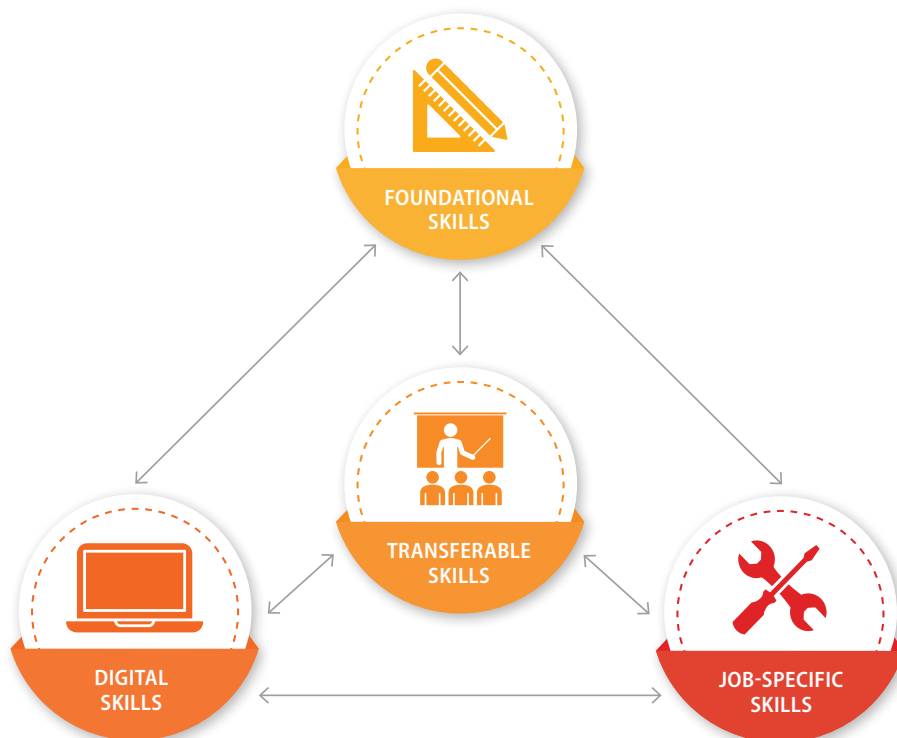
The CSfW employs a developmental approach, informed by Dreyfus and Dreyfus' *Novice to Expert Model of Skills Acquisition* and other research on skill development and performance. A generic description of stages of performance and the skills framework, with definitions of the skills areas, is included in Annexure E.

The CSfW primarily focuses on core skills relevant to the workplace. It does not cover skills associated with the changing world of work due to technological advancement. Furthermore, it lacks emphasis on soft skills, which are essential for the world of work and life.

3.3.6 UNICEF: The Global Framework on Transferable Skills

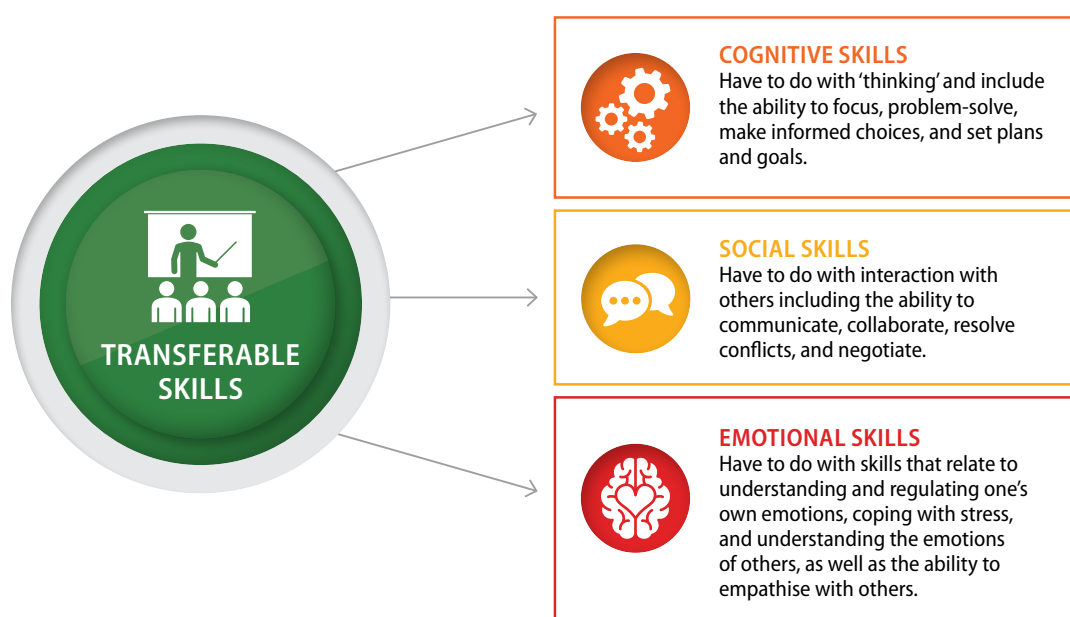
Transferable skills (that is, core skills) should be understood within the lifelong learning cycle as a dynamic, progressive, and cumulative process from early childhood to adolescence through to adulthood. The framework guides UNICEF country offices, policymakers, programmers, and educators to embed transferable skills within different education and learning systems, resulting in the systematic development of a breadth of transferable skills, at scale, across the life course and through multiple learning pathways—formal, non-formal, and community-based. The UNICEF Global Framework on Transferable Skills model is depicted in Figure 3.

FIGURE 3: UNICEF global framework on transferable skills model



Building on the four categories of skills (foundational skills, digital skills, transferable skills, and job-specific skills), the UNICEF Global Framework on Transferable Skills proposes a working definition of transferable skills composed of three main interrelated categories of skills (UNICEF, 2019) (see Figure 4).

FIGURE 4: UNICEF working definition of transferable skills



The UNICEF global framework identifies useful skills needed for life and work today. However, the categories used are not exclusive, and therefore, a problem of internal logic arises and compromises the framework's construction validity. For example, foundational skills are created as a separate category to transferable skills, yet foundational skills in themselves could be considered as being transferable.

3.3.7 OECD: Learning Compass 2030

The OECD Learning Compass 2030 defines the knowledge, skills, attitudes, and values that learners need in order to fulfil their potential and contribute to the wellbeing of their communities and the planet.

The OECD Learning Compass 2030 distinguishes between three different types of skills:

- **Cognitive and metacognitive skills:** Cognitive skills are a set of thinking strategies that enable the use of language, numbers, reasoning, and acquired knowledge. They comprise verbal, nonverbal, and higher-order thinking skills. Metacognitive skills include learning-to-learn skills and the ability to recognise one's knowledge, skills, attitudes, and values.
- **Social and emotional skills:** These skills are a set of individual capacities that can be manifested in consistent patterns of thoughts, feelings, and behaviours that enable people to develop themselves, cultivate their relationships at home, school, work, and in the community, and exercise their civic responsibilities.
- **Practical and physical skills:** Practical skills are a set of abilities required to use and manipulate materials, tools, equipment, and artefacts to achieve particular outcomes. Physical skills are the abilities to use physical tools, operations, and functions.

Attitudes and values, key components of the OECD Learning Compass 2030, refer to the principles and beliefs that influence one's choices, judgements, behaviours, and actions on the path towards individual, societal, and environmental well-being.

(Obtaining a detailed skills framework from the OECD Learning Compass 2030 website proved challenging.)

3.3.8 Singapore: Skills Framework

According to Singapore's SkillsFuture website, Singapore Skills Framework is a SkillsFuture initiative, designed to promote skills mastery and lifelong learning for the Singaporean workforce. It is an integral component of the HR Industry Manpower Map. The framework is organised into three main components, each serving a specific purpose in guiding skills development, career progression, and workforce planning. The Singapore Skills Framework provides a comprehensive overview of key job roles, skills, and career pathways within various industries in Singapore.

1. **Industry skills maps:** These maps form the foundation of the framework. They outline the key job roles and occupations within different industries in Singapore. For each job role, the industry skills maps provide a detailed overview of the necessary skills, competencies, knowledge, and attributes required to perform the role effectively. The maps are developed in consultation with industry stakeholders, employers, and industry associations to ensure their relevance and accuracy.
2. **Skills frameworks:** These frameworks build upon the industry skills maps by further categorising and detailing the skills and competencies required for each job role. The skills frameworks provide a clear and standardised way of identifying the specific skills and proficiency levels needed for different occupations. They also help individuals and employers understand the progression pathways and training opportunities available to upskill or reskill in their chosen careers. Refer to the SkillsFuture website for the skills included.
3. **Career pathways and development:** This component focuses on career progression and development opportunities within specific industries. It outlines the potential advancement pathways for individuals in various job roles, taking into account the skills and competencies needed to move to higher-level positions. The career pathways aspect encourages continuous learning and skills upgrading to support career growth and personal development.

The Singaporean classification may be useful for South African SETAs in developing skills maps, skills frameworks, and career pathways for their respective sectors.

3.4 Devising a Skills Framework for South Africa

After careful examination of the various frameworks, a comprehensive skills framework for South Africa (Table 1) has been developed—categorised into four distinct yet complementary skill sets, namely foundational, technical, soft, and cognitive skills. Each category plays a crucial role in defining a holistic approach to an individual's development and professional growth.

Foundation (or basic) skills: The Basic Skills Agency defines basic skills as “[t]he ability to read, write and speak, and to use mathematics at a level necessary to function and progress at work and in society in general.” The basic skills category of the South African skills framework comprises foundational abilities that are essential for success in various aspects of life and work. These skills include reading, writing, and numeracy, altogether forming the core of effective communication and problem-solving capabilities. Additionally, basic computer skills are added into this category as they are vital in today's digital age, enabling individuals to navigate technology and perform essential tasks in the modern workplace.

Technical (or hard) skills: These are specific competencies required to perform tasks and duties related to a particular job or profession. Technical skills are typically learned through formal education, on-the-job training, certifications, or specialised courses. According to the Occupational Outlook Handbook,

they vary greatly depending on the industry and the nature of the job. Digital and artificial intelligence (AI) skills are added to this category as they are essential skills that are required in the modern workplace.

Soft (or transverse) skills: These encompass both interpersonal skills, which involve how individuals interact with others, and intrapersonal skills, which relate to self-awareness and self-management.

Cognitive skills: These skills refer to the mental processes and capabilities that enable individuals to think, reason, learn, and solve problems effectively. Cognitive skills are critical for acquiring knowledge, understanding complex concepts, and adapting to new situations.

The overall rationale for categorising skills depending on if they are foundational, technical, soft, and cognitive lies in the need to understand, develop, and utilise a diverse set of abilities that contribute to an individual's personal and professional success. Each category serves a distinct purpose and collectively forms a comprehensive framework that can benefit individuals, employers, educators, and society as a whole in the following ways:

Comprehensive skill development: Categorising skills helps ensure that all essential aspects of skill development are covered. Foundational skills provide the necessary basis for learning, while technical skills equip individuals with the technical expertise required for specific roles. Soft skills enhance interpersonal interactions and teamwork, and cognitive skills enable effective thinking and problem-solving.

Effective workforce planning: Employers can use this categorisation to identify the specific skills needed for various job roles and design job descriptions accordingly. It helps in creating targeted development plans for employees and recruiting individuals who possess the desired skill sets.

Personal growth and career advancement: Individuals can assess their skills across these categories to understand their strengths and areas for improvement. This empowers them to make informed decisions about their career paths, set personal development goals, and work on enhancing their skills.

Enhanced teamwork and collaboration: Emphasising the importance of soft skills fosters a positive work environment, leading to improved teamwork, communication, and conflict resolution among employees.

Educational curriculum design: Educational institutions can use the skills framework to design curricula that incorporate a balance of foundational knowledge, technical expertise, soft skills, and cognitive abilities. This approach prepares students for future challenges and workplace demands.

Promoting lifelong learning: The framework encourages individuals to adopt a lifelong learning mindset, as it emphasises the importance of continually developing and refining various skills throughout one's personal and professional life.

Addressing global and economic challenges: By fostering a workforce equipped with a diverse skill set, society is better prepared to effectively tackle economic uncertainties, technological advancements, and social changes.

Policy and workforce development: Policymakers can use the skills framework to inform decisions related to workforce development, training programmes, and education policies, ensuring alignment with the needs of the job market.

Overall, the rationale behind categorising skills lies in creating a balanced and well-rounded approach to skill development and addressing the multifaceted requirements of modern life and work environments. This comprehensive framework helps individuals thrive in their careers, fosters a skilled and adaptable workforce, and contributes to the overall growth and success of society.

This framework (Table 1) lays the groundwork and establishes a fundamental basis for establishing a skills framework for South Africa. However, due to its complexity and the multifaceted nature of the task, it is imperative to seek input and insights from a diverse group of stakeholders. By involving stakeholders from various backgrounds such as subject matter experts, end-users, policymakers, and community representatives, we can ensure that the framework aligns with the varied needs and interests of those it will impact. This participatory approach fosters a sense of ownership and buy-in, increasing the likelihood of successful implementation and positive outcomes.

TABLE 1: The South African skills framework

FOUNDATIONAL OR BASIC SKILLS	TECHNICAL SKILLS	SOFT SKILLS		COGNITIVE SKILLS
		INTER-PERSONAL (SOCIAL)	INTRA-PERSONAL	
Reading	Leadership	Customer care (service orientation)	Proactiveness	Problem-solving
Writing	Administration and management (such as HR, finance, project, operations, marketing, business)	Communication	Flexibility	Analytical (critical) thinking
Numeracy	Planning	Collaboration and teamwork	Time management	Decision-making
Speaking	Organising	Resource management (finances, HR, water, energy, waste)	Adaptability	Creative thinking
Oral and written comprehension (active listening)	Designing (technology design)	Public speaking	Discipline	Logical reasoning
Basic computer skills	Selecting relevant equipment, tools, machinery, methodology, and technology	Active citizenry	Strong work ethic	Memory
Media literacy	Using appropriate equipment, tools, machinery, methodology, and technology (operations and control)		Managing your money	Learning to learn (active learning)

FOUNDATIONAL OR BASIC SKILLS	TECHNICAL SKILLS	SOFT SKILLS		COGNITIVE SKILLS
		INTER-PERSONAL (SOCIAL)	INTRA-PERSONAL	
	Analysing (operations, data, information, policy, quality control, and similar)		Reliability	Self-reflection
	Installation		Accountability	Judgement
	Repairing		Positive attitude	
	Maintenance		Ethical practices (integrity)	
	Troubleshooting		Self-awareness	
	Conflict resolution (negotiation)		Cultural awareness (functioning in a diverse environment)	
	Digital and AI		Social perceptiveness (empathy)	
	Physical strength		Environmental awareness	

Definitions for each of the skills above are included in Annexure F.

PART 4

Skills Gaps: Rationale for Addressing the Gaps



4.1 Defining Skills Gaps and Related Terms

There are numerous definitions that have been established for the term 'skills gap'. Based on the analysis of different studies, the conceptualisation of the term is mostly guided by the direction in which an organisation takes to address skills gaps. In 2007, the term was referred to as "the idea that the demand for certain skills exceeds supply" (Daniels, 2007). In 2012, the American Society for Training & Development (now known as the Association for Talent Development), defined a skills gap as a significant gap between an organisation's current capabilities and the skills it needs to achieve its goals. It further states that "it is the point at which an organization can no longer grow or remain competitive because it cannot fill critical jobs with employees who have the right knowledge, skills, and abilities". In a study by Whittaker and Williams (2016:13), skills gaps are defined as a phenomenon whereby "the skills of the available workforce are mismatched with the skilled talent needs of employer".

In a more recent study, the ILO distinguishes the concept of skills gaps from the term 'skills mismatch' by defining the former as "a situation when an employer believes that workers do not possess the right type of competencies to perform tasks associated with their job" (ILO, 2020). Skills gap refers to the mismatch of what employers require and what employees or job seekers are offering (Platts, 2020). These skills could be generic and therefore transferable across occupations (such as reading, writing, computer skills, or 'soft' skills), or they could be technical in that they are linked to a specific occupation or job. The gap occurs when the skills and knowledge required for a job or industry change faster than workers can learn them or when there is a shortage of workers with specific skills. The Training Industry (2022) defines the term skills gap as "a gap between the skills an employee has and the skills they need to perform a job". These definitions indicate that the term is understood differently by different organisations, but for this research, the definition used by the Training Industry will be applied.

Existing literature suggests that the concept of skills gaps is viewed by various stakeholders as a hindrance for employees to perform their assigned tasks. According to The WalkMe Change Movement (2022), a skills gap usually emerges when employers struggle to hire people with the appropriate skills to perform the tasks required for an organisation to operate effectively. This may be because existing employees have outdated skills, which then creates a gap that can be difficult to fill, especially in a competitive labour market. In terms of the broader workforce, a skills gap is created when organisations struggle to find talent to meet their needs (Training Industry, 2022).

Often, confusion arises between the terms 'skills mismatch', 'skills gap', and 'skills shortage'. These terms are sometimes used interchangeably, yet they are quite distinct. Cappelli (2015) makes these nuances clear:

Skills mismatch: An imbalance (an over-supply or under-supply) between the types or level of skills available and what the labour market needs.

Skills gap: A shortfall in the aggregate supply of a certain skill or set of skills broadly sought by employers (e.g., communication or computational skills).

Skill shortage: A shortfall in the supply of specific skills associated with particular occupations (e.g., a dearth of workers prepared to work as nurses or special education teachers).

There are several terms associated with skills gaps. Some of these include:

Occupational mismatch: This occurs when an individual's skills, qualifications, or experience do not align with the requirements of their current job or the job market. This can lead to underutilisation of skills and knowledge, as well as decreased job satisfaction and productivity. (OECD, 2019; WEF, 2018).

Education and training gap: This term refers to the gap between the skills and knowledge acquired through formal education and training programmes and the skills required by employers. It can occur when the education system fails to keep pace with the changing demands of the labour market, resulting in graduates who lack the skills needed for available job opportunities (OECD, 2019; WEF, 2018).

Digital skills gap: According to the OECD (2019), a digital skills gap refers to the disparity between the demand for digital skills in the workforce and the availability of individuals with these skills. As technology continues to advance rapidly, many industries require employees who possess digital literacy, proficiency in using digital tools, and the ability to adapt to new technologies (OECD, 2019; WEF, 2018).

Upskilling and reskilling: Upskilling refers to the process of acquiring new skills or upgrading existing skills to enhance employability and career progression. Reskilling, on the other hand, involves learning new skills to transition into a different field or occupation. Upskilling and reskilling initiatives are often implemented to address skills gaps and help individuals meet the changing demands of the labour market (OECD, 2019; WEF, 2018).

Other terms associated with skills are included in the Glossary.

4.2 An Analysis of Skills Gaps in South Africa

This section of the report analyses skills gaps in South Africa based mainly on secondary data sources. To identify skills gaps, a review of the previous OECD reports on South Africa was undertaken along with an analysis of the 2022 SETA employer interviews and the current OECD Skills for Jobs database (as per the timestamp, the data for South Africa was last updated on 11 September 2022). The OECD uses Quarterly Labour Force Survey (QLFS) data for South Africa to determine the skills shortage index by knowledge, skills, and abilities (as per O*NET framework).

An analysis of QLFS data for South Africa from 2008–2019 (DHET, 2022) by the OECD reveals the following top 10 skills gaps (Refer to skills imbalances in the South African labour market by the DHET (2022)):

1. Reading comprehension
2. Writing
3. Speaking
4. Active listening
5. Critical thinking
6. Learning strategies
7. Active learning
8. Monitoring
9. Social perceptiveness
10. Judgement and decision-making

The above list of skills suggests that South Africans have the technical skills required for undertaking their work, but they may lack foundational, cognitive, and soft skills.

To gain up-to-date information, the OECD's Skills for Jobs database (time stamped 11 September 2022) was analysed. Figure 5 indicates the skills gaps in the South African labour force. Based on this figure, the list below is ranked from the highest skills gap to the lowest skills gap:

- Active learning
- Persuasion and negotiation

- Active listening
- Complex problem-solving
- Management of personnel resources
- Judgement and decision-making
- Management of financial resources
- Reading comprehension
- Speaking
- Originality
- Writing
- Digital skills
- Reasoning and problem-solving
- Auditory and speech abilities
- Adaptability or resilience
- Time management

FIGURE 5: Skills shortage index by skills and abilities (South Africa 2022)

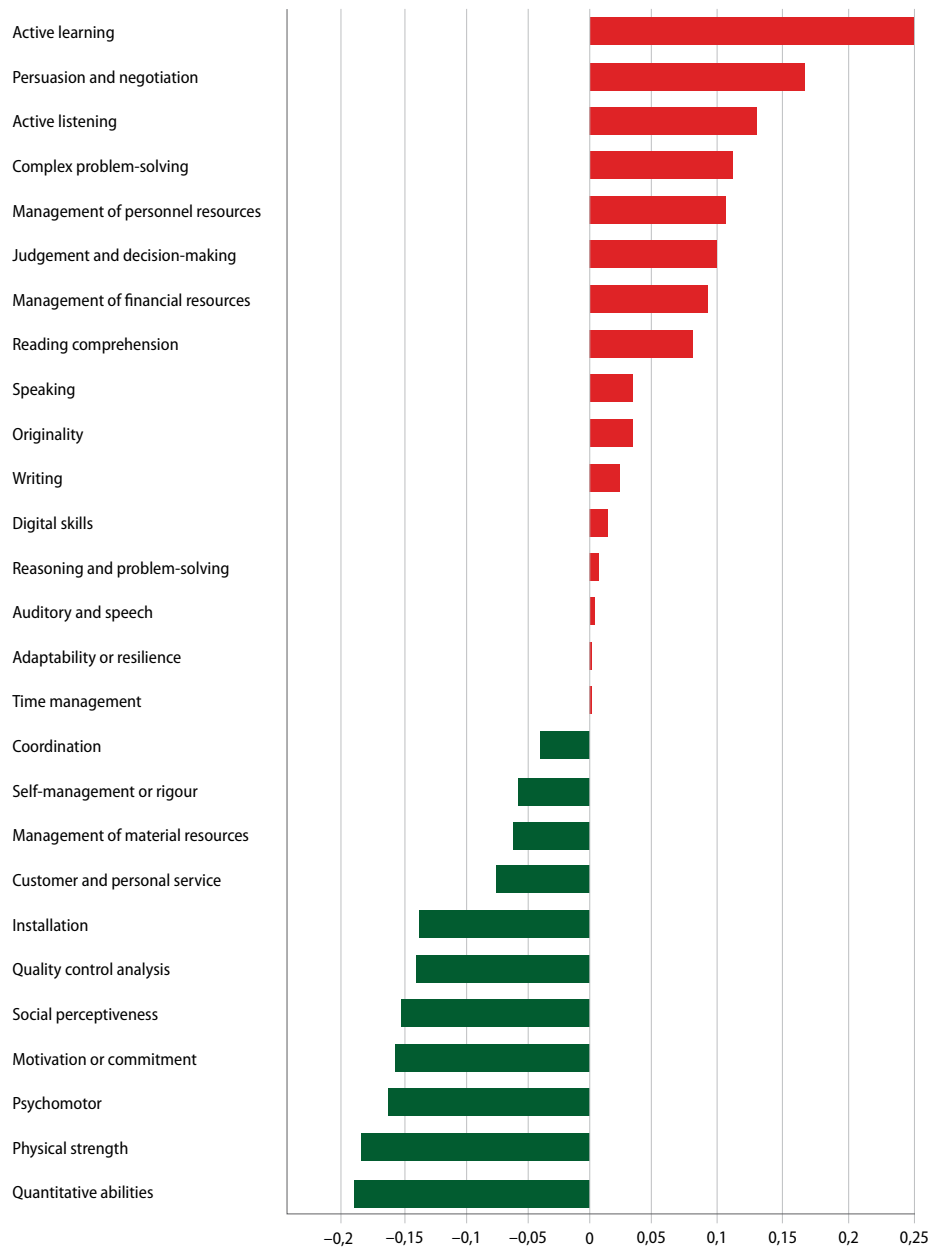


Table 2 presents an analysis of the 2022 SETA employer interviews (data from these interviews was made available to the researcher by the DHET) and the top five skills gaps mentioned in the three occupational levels. The skills gaps common to all three levels are communication as well as information and communication technology (ICT) skills. The top three skills gaps reported by each SETA per category are included in Annexure G.

TABLE 2: The top five skills gaps (SETAs 2022)

HIGH-LEVEL OCCUPATIONS (MANAGERS AND PROFESSIONALS)	MID-LEVEL OCCUPATIONS (TECHNICIANS, ASSOCIATES, ARTISANS, AND CLERICAL WORKERS)	LOWER-LEVEL OCCUPATIONS (PLANT OPERATORS AND ELEMENTARY WORKERS)
Leadership	ICT skills	Accountability
Communication	Communication	ICT skills
Project management	Technical (job-specific)	Communication
ICT skills	People management	Customer service
Financial management	Problem-solving	Literacy and numeracy

According to the 2018 WEF Future of Jobs Report, in South Africa, emerging skills include:

- Analytical thinking and innovation
- Creativity, originality, and initiative
- Active learning and learning strategies
- Technology design and programming
- Complex problem-solving
- Leadership and social influence
- Reasoning, problem-solving, and ideation
- Critical thinking and analysis
- Resilience, stress tolerance, and flexibility
- Emotional intelligence

In a study by the LGSETA (2020), it is stated that South Africa struggles with skills shortages, particularly in the medium-skilled and high-skilled occupations. “There is a shortage in most managerial jobs, and more than 50% of professionals, technicians and clerical support workers are employed in shortage occupations” (LGSETA, 2010:31). Shortage occupations among the professionals group have the strongest shortage intensity. “With regard to specific skills and abilities, the highest shortages were for active learning, reading comprehension, learning strategies, and writing written expression, written comprehension, problem sensitivity, oral expression and deductive reasoning” (City Sight, 2020:40). This observation is consistent with Figure 5. Knowledge shortages are strongest for computers and electronics, administration and management, and clerical knowledge.

In a study conducted by Akoobhai (2023) on employer perceptions of TVET college graduates, foundation skills such as reading, writing, numeracy, speaking, oral and written comprehension, and computer skills were rated as very poor. In addition, this research study found that skills such as planning, organising, project management, maintenance and troubleshooting, and financial management were lacking among TVET graduates. Moreover, soft skills were rated very poorly by the employers as well.

According to Rasool (2021), the top five skills gaps in the country are management and leadership, computer, technical, communication, and customer service.

Based on a composite review of all available secondary information sources on skills imbalances in South Africa, the analysis of the OECD's Skills of Jobs database (2022), and the 2022 SETA employer interviews, as well as a review of other research studies conducted on skills gaps in South Africa, Table 3 indicates the skills gaps (marked in **RED**) and the skills surplus (marked in **GREEN**). It should be noted that those skills not marked in red or green have not yet been measured and tested.

TABLE 3: Skills gaps in South Africa (2023)

FOUNDATIONAL OR BASIC SKILLS	JOB-RELATED SKILLS (TECHNICAL SKILLS)	SOFT SKILLS		COGNITIVE SKILLS
		INTER-PERSONAL	INTRA-PERSONAL	
Reading	Leadership	Customer care (service orientation)	Proactiveness	Problem-solving
Writing	Administration and management (such as HR, finance, project, operations, marketing, and business)	Communication	Flexibility	Analytical (critical) thinking
Numeracy	Planning	Collaboration and teamwork	Time management	Decision-making
Speaking	Organising	Resource management (finances, HR, water, energy, waste)	Adaptability	Creative thinking
Oral and written comprehension (active listening)	Designing (technology design)	Public speaking	Discipline	Analytical thinking
Basic computer skills	Selecting relevant equipment, tools, machinery, methodology, and technology	Active citizenry	Strong work ethic	Logical reasoning
Media literacy	Using appropriate equipment, tools, machinery, methodology, and technology (operations and control)		Managing your money	Memory
	Analysing (operations, data, information, policy, quality control, and similar)		Reliability	Learning to learn (active learning)
	Installation		Accountability	Self-reflection
	Repairing		Positive attitude	Judgement

FOUNDATIONAL OR BASIC SKILLS	JOB-RELATED SKILLS (TECHNICAL SKILLS)	SOFT SKILLS		COGNITIVE SKILLS
		INTER-PERSONAL	INTRA-PERSONAL	
	Maintenance		Ethical practices (integrity)	
	Troubleshooting		Self-awareness	
	Conflict resolution (negotiation)		Cultural awareness (functioning in a diverse environment)	
	Digital and AI		Social-perceptiveness (empathy)	
	Physical strength		Environmental awareness	

4.3 The Importance of Understanding Skills Gaps

Research has shown that the identification of skills gaps in the labour market improves productivity and effectiveness in the workplace. However, in the South African context, this still needs to be further investigated. Rutashobya et al. (2021:63) argue that identifying skills gaps in communities and the labour market as a whole plays a significant role in improving employer–employee satisfaction. This means in identifying the skills gaps in an organisation, an employer is able to provide necessary training for existing employees and that the employer is provided with the knowledge of what skills are necessary for the recruitment of future employees. For employees, this means individuals are able to upskill themselves and therefore become employable in the everchanging and competitive labour market.

The lack of appropriate skills in various occupational sectors and industries has great impact on the performance of the organisation (Morris & Reed, 2008; McIntyre, 2013). Therefore, conducting an analysis of skills within the workforce becomes a vital exercise for understanding skills-related factors affecting organisational productivity and growth. This process of analysing the existing skills within different organisations will assist in comparing the skills that are needed for achieving strategic organisational objectives against the current skills base of the workforce. This exercise, done thoroughly, will alert organisations of the skills gaps within their workforce.

The assessment of skills gaps in the labour market assists policymakers in the development of informed responses for improving the quality of skills supplied, resulting in an improved business environment (OECD, 2015). In terms of impact, skills gaps seem to predominantly affect organisations' competitiveness, with companies reporting direct impact on their efficiency, quality in service, and running costs, as well as a loss of sales (OECD, 2015).

4.4 Why Skills Gaps Exist Or Arise

The presence of skills gaps in both the South African and global labour markets can be attributed to a multitude of factors. An analysis of the 2022 SETA employer survey (data made available by the DHET to the researcher) revealed that the major change drivers for skills gaps in South Africa are technological advancement followed by Covid-19 and economic performance (Table 4). These factors and others are discussed in detail henceforth.

TABLE 4: Change drivers in South Africa (SETAs 2022)

CHANGE DRIVERS	NO.
Fourth Industrial Revolution (4IR), technology, gig (short-term work) economy	21
Covid-19	6
Economic performance	6
Adjusting to the hybrid work system	3
BBBEE strategy	2
Environment and climate change	2
Changes in legislation	4
Civil unrest or uncertainty	1
Constraints to service delivery	1
Cyber security	1
Inflation and loashedding	1
New energy technologies	1
Regulatory changes	1
Sustainable resources and climate change	1

Technological advancements

There are various factors pertaining to the existence of skills gaps nationally and globally. One such factor is rapid technological evolution, which has led to easily automated skills being taken over by machines or AI. The 2018 WEF Future of Jobs Report highlights the impact of technological changes on the labour market and identifies the skills that are becoming more or less in demand due to automation and digital transformation. The report further indicates that in addition to machine learning algorithms, AI is attracting significant business interest in adoption. This result will consequently impact on the skills required.

The OECD' 2019 Skills Outlook examines the impact of technological advancements on skills requirements and provides an analysis of the evolving nature of work and the implications for skill development. The 2023 edition of Deloitte's annual Global Human Capital Trends survey addresses the skills gap resulting from technology-driven changes in the workplace and offers insights into strategies for organisations to address this gap. In 2021, Deloitte published an article (Renner et. al., 2021) on how digital skills for the food industry are rapidly transforming. It goes as far as saying, "Technology may not be the only thing unlocking new possibilities for the future of work, but it is a major driver."

Technological advances have an impact on the emergence of skills gaps in various industries. A skills gap can arise if a company fails to keep pace with the technological changes that make operations more efficient, or if new technology is introduced but existing employees are not sufficiently trained on how to use it to its best advantage. For example, South Africa saw a rapid advancement in the instalment of solar panels and plants, largely necessitated due to load-shedding. While there are many standardised skills required in the construction and implementation of solar plants and wind farms, there are also technology-specific specialised skills related to equipment made by original equipment manufacturers, such as solar panels and inverters. These are the skills that the industry is currently lacking (Maxontana, 2022). Maxontana further elaborates, “Electrical technicians receive generalised sector training, including an in-depth understanding of how heavy currents work, how inverters work, the safety and regulations governing commercial and private electrical installations and so on. However, product training is required to install or troubleshoot a specific inverter.”

Another industry that is rapidly growing in South Africa is the green hydrogen economy. As alluded to by Pillay (2023), in the next five to ten years, South Africa faces a major skills crisis in the local green hydrogen economy. Thousands of engineers, technicians, and green artisans will be required to realise the country’s green hydrogen aspirations. Many companies in the nascent stages of green hydrogen production and distribution are already announcing shortages in skilled hydrogen fuel transporters. If left unattended, the massive gains in green hydrogen infrastructure investment could lead to minimal returns for the country.

The Covid-19 pandemic

Another major factor driving change has been the Covid-19 pandemic. Many companies have had to reinvent their entire business models in order to sustain their businesses and be in alignment with the different changes brought by the pandemic.

The pandemic has accelerated the adoption of digital technologies and remote work, leading to a greater demand for digital skills such as remote collaboration, digital literacy, cybersecurity, and data analysis. On the other hand, certain industries that rely heavily on in-person interactions, such as hospitality and tourism, have experienced a decline in demand, resulting in a gap in specific skill sets (WEF, 2020). With the changing nature of work, individuals and organisations have recognised the need for reskilling and upskilling to adapt to new job roles and requirements.

In addition, the pandemic disrupted traditional education and training systems, with the closure of schools, universities, and training centres. This disruption has highlighted the importance of remote learning and the need to adapt education and training models to ensure continued skills development (UNESCO, 2022).

Certain groups of workers, such as low-skilled workers or those in informal sectors, have been disproportionately affected by the pandemic. The skills gap for these workers may widen further as the demand for specific skills changes, emphasising the need for targeted support and reskilling programmes (ILO, 2021b).

Employee turnover

According to The WalkMe Change Movement (2022), “a high staff turnover through either resignation, termination, retirement (or a combination of all three) can deprive an organisation of the skills it needs to be fully operational and meet targets for productivity and revenue”. Martin (2014) indicates that turnover can lead to a loss of productivity, increased recruitment and training costs, and a temporary

skills gap until new hires become proficient. The WalkMe Change Movement (2022) adds, “While retirements are unavoidable, high turnover through resignations and/or terminations is indicative of more serious issues within an organisation that need to be identified, examined and managed”. Losing experienced employees can result in a loss of specialised skills and institutional knowledge, which may hinder organisational performance and competitiveness (Scullion and Collings, 2011).

Economic factors

In a study conducted by The WalkMe Change Movement (2022), it was found that economic conditions can affect the skill levels in an organisation in multiple ways. Basic rules of supply and demand in the labour market can have an impact—for example, if basic skill levels are required but demand for labour is high, then wages can rise significantly. In sectors where competition for labour is intense, this problem can be intensified. Fluctuations in the supply and demand of labour can reflect fluctuating economic conditions. The employers that struggle to pay higher wages are more exposed to skills gaps in these circumstances. Economic growth and expansion of specific industries can create an increased demand for skilled workers (e.g., in the solar and wind energy industries), leading to skills gaps in those sectors (Du Toit and Visser, 2017).

Changes in the economic structure, such as technological advancements and shifts in production methods, can create new skills requirements. Failure to keep up with these changes can result in skills gaps (Khuzwayo and Khuzwayo, 2018). Migration patterns, including brain drain, where skilled individuals leave the country due to economic downturn, can exacerbate skills gaps by depleting the pool of skilled workers, as evident in South Africa (Gideon, 2017).

Stringent policies

South Africa’s labour regulations are often criticised for being rigid and inflexible, making it difficult for businesses to adapt quickly to changing market demands. These regulations hinder employers from hiring skilled workers on a temporary or contract basis, potentially leading to shortages in certain specialised fields or leading them to search for relevant skills (OECD Economic Surveys: South Africa, 2022).

Uneven access to education and training

The disparities in education quality and access in different regions of South Africa contribute to a mismatch between the skills available and the skills required in the job market. Historically disadvantaged communities often have limited access to quality education and training opportunities, exacerbating the skills gap between different segments of the population (NPC, 2011).

Inadequate TVET system

South Africa’s TVET system faces challenges in terms of relevance, quality, and perception (Rogan, 2022; Akoobhai, 2022). Many TVET institutions struggle to provide training that meets industry needs, and the stigma associated with vocational education leads to a preference for academic pathways. This leads to a shortage of skilled workers in certain vocational fields.

Labour market dualism

South Africa has a dualistic labour market with a significant informal sector. Many skilled workers, particularly in sectors like construction and services, operate in the informal economy due to barriers to formal employment. This informality in the labour market can hinder skills development and recognition, impacting economic growth (ILO, 2022).

Lack of collaboration between educational institutions and industries

A lack of effective collaboration between industries and educational institutions has been an ongoing issue in South Africa. This disconnect means that the skills being taught in schools and universities do not always align with the skills demanded by employers. As a result, many graduates struggle to find suitable employment, and industries face difficulty in finding the right talent (HSRC, 2022).

Degrees in low-demand fields

Research from the National Centre for Education Statistics looked at the two million bachelor's degrees earned by the 2020 graduating class in the United States (Waltower, 2023). Researchers found 281,000 degrees in the fields of social science, history, and psychology. The problem is that none of these fields are in high demand. According to Waltower, "More Engineering and Science majors are needed". The National Centre for Science and Engineering Statistics reported that only 33% of US tertiary degrees are in engineering and science, despite the need for more qualified individuals in these fields.

According to the 2019 Post-School Education and Training Monitoring report, between 2010 and 2016, the field of humanities accounted for the biggest share of graduations (6.6%) in South Africa. This was followed by science, engineering and technology, and business management and education—with graduation rates of 5.5%, 5.2%, and 1.8%, respectively. Yet unemployment of humanities graduates was the highest (Mncayi and Dunga, 2016), indicating a misalignment between what fields students are studying and what is required by the labour industry. One of the areas that The Labour Market Intelligence programme is focused on is to better understand what employers want (DHET, 2019). However, the career choices of individuals is complex and affected by many factors, including family background, schooling, race, higher education institution, employer perceptions, and many others (Mncayi and Dunga, 2016).

Small skilled worker pool

According to Waltower (2023), a smaller worker pool is a determinant of the skills gap. The study asserts that post-boomer generations are smaller than previous generations. It adds, "Additionally, companies have not changed their infrastructure to accommodate the new generation of workers. For example, benefits packages may not include adequate family leave time, paid leave policies or childcare options."

Lack of soft skills

According to Wiseman (2022), "Many people assume the skills gaps organisations face today are primarily a lack of technical or hard skills such as coding, but there are also major gaps in soft skills like communication, creativity, etc. In fact, nearly 3 in 4 employers say they have a hard time finding college graduates with the soft skills they need. This is an alarming statistic, as 91% of talent acquisition professionals think soft skills will be very important in the future".

Mncayi and Stanz (2019) explore the soft skills gaps among higher education graduates in South Africa. Their study identifies specific soft skills that are in high demand by employers and examines the extent to which graduates possess these skills. The research highlights the importance of soft skills development to enhance employability. Visser and Jansen (2016) discusses the challenges faced by graduates in acquiring and demonstrating soft skills, and the implications for employability. This study emphasises the need for comprehensive soft skills development initiatives. Reddy and Klopper (2017) examine the importance of soft skills in the engineering profession and discuss strategies for integrating soft skills development into engineering education.

Eresia-Eke and Pillay (2016) conducted a study looking at perceptions of both students and employers regarding the importance and proficiency levels of various soft skills. Akoobhai (2023) ascertains the perception of employers of TVET graduates with respect to their soft skills.

Entrepreneurship

The high unemployment rate in South Africa has driven many individuals to turn to entrepreneurship as a means to generate income and create opportunities for themselves. However, this shift is hindered by two critical issues highlighted by Akoobhai (2023): the limited provision of entrepreneurship education at TVET colleges, and the scarcity of exit-level entrepreneurship support through incubation programmes. As a result, aspiring entrepreneurs are often left without the essential skills and resources required to succeed in their entrepreneurial endeavours. This skills gap in entrepreneurship education and support further exacerbates the challenges faced by individuals attempting to establish and grow their businesses in the country.

Climate change

Climate change and the transition to a green economy is another driving force influencing the skills needs of the current and future workforce. It is estimated that the global transition to greener economies will create millions of jobs through the implementation of cleaner and more sustainable technologies. The Global Commission on the Future of Work estimates that implementing the Paris Climate Agenda will create four times as many jobs globally as are lost, with around six million job losses being offset by job gains of 24 million (ILO, 2019).

Just energy transition

Speaking at the Skills for a Just Transition Conference on 11 May 2023, Presidency Project Management Office Head Rudi Dicks said, "To successfully effect a just energy transition (JET), South Africa needs to urgently identify the skills required and create a skills development roadmap, as it could take between five and ten years to ready the skills system for new value chains and competencies." He added that the cross-cutting nature of skills interventions for the JET meant that South Africa needed to establish strong coordination and planning mechanisms. Moreover, the country would need to unpack skills in extended and connected value chains, including the coal, renewable energy, and green hydrogen value chains, as well as the value chains associated with vehicles, and interlinked value chains such as platinum mining and manufacturing.

The skills identification, anticipation, planning, and implementation for the JET would require both national level strategic support and local-level alignment. Most importantly, extensive reskilling will be required to execute the South African Renewable Energy Masterplan.

4.5 The Impact of Skills Gaps

Skills gaps can have various impacts on individuals, organisations, and economies. According to the research conducted by Skillsoft, Behbahani (2023) reported the following organisational impacts:

- Increased stress on existing employees
- Increased project durations and slower resolution times
- Decreased ability to meet business objectives
- Decreased innovation in developing new products and services
- Increased security vulnerabilities and risks

- Increased operating costs
- Increased talent acquisition costs
- Loss of business to competitors
- Declining customer satisfaction
- Loss of revenue

Key impacts of skills gaps are presented herewith:

Reduced productivity

According to the Institute of Labour Economics (2015), skills gaps have the potential to harm firm-level productivity since average worker productivity is likely to be lower in the presence of substantial skill gaps. When employees lack essential skills or knowledge, they may struggle to perform their tasks efficiently. This can lead to decreased productivity and overall performance within an organisation (Thompson, 2018). As per The Industry 4.0 Paradox report by Deloitte (2018), when employees lack the skills required to effectively use advanced technologies and tools, it can hinder their ability to automate processes and streamline operations, leading to decreased productivity.

Increased employee turnover

Increased employee turnover due to skills gaps is a significant issue that organisations may face. When employees feel that their skills are not being utilised or developed, they may become dissatisfied and seek opportunities elsewhere. According to the Society for Human Resource Management (SHRM, 2019), employees who believe their skill sets are not being effectively utilised are more likely to seek employment at other places, resulting in higher turnover rates for organisations. Gallup (2019) agrees that when employees perceive that their skills are not aligned with job requirements or organisational goals, they are more likely to leave the company, resulting in turnover costs and potential disruptions to productivity. Furthermore, the lack of meaningfulness, empowerment, or upskilling opportunities proves to be a better predictor of the willingness to move roles than burnout or the lack of wage increase (Makiel, 2023). As a result, companies experiencing persistent skills gaps are likely to face challenges in attracting and retaining talent, resulting in higher employee turnover rates (The Conference Board, 2017).

Increased training costs

When employees lack the required skills to perform their jobs effectively, additional training and development becomes necessary to bridge the gap (US Chamber of Commerce Foundation, 2017; SHRM, 2019; McKinsey & Company, 2019; Deloitte, 2020; WEF, 2020). The training requires bringing consultants from outside, which incurs costs for the company.

Hindrance to innovation

In a rapidly evolving industry, fast-tracked by the Covid-19 pandemic, outdated skills can affect the ability of a company to innovate and keep up, which hinders its capability to implement new ideas and adopt cutting-edge technologies. According to Behbahani (2023), in research published by Skillsoft, 35% of the companies surveyed indicated that there is less time for innovation in new products and services due to skills gaps in employees. This result is exacerbated by rapid technological advancements.

Economic impact

Skills gaps have significant impact on national and regional economies. According to the Adcorp's employment review for 2022, recruiters and HR specialists in South Africa and around the world are facing difficulties filling vacancies in skilled positions, which leads to staff shortages and ultimately

impacts business growth and affects a country's GDP (Adcorp 2022 cited in Business Tech, 2023). The McKinsey Global Institute (2019) reported on the impact of skills gaps on wage stagnation, hindering the economic mobility of workers in the United States. CEDEFOP (2019) explores the economic implications of skills mismatches and shortages in European countries. Hanushek and Woessmann (2022), in an International Monetary Fund report, summarise the skills gaps findings at the global level:

- Skill differences account for three quarters of cross-country variations in long-term growth.
- The global skill deficit is immense, as two thirds or more of the world's youth do not reach even basic skill levels.
- Reaching the goal of global universal basic skills would raise future world GDP by USD 700 trillion over the remainder of the century.

Industry transformation

Organisations identify skills gaps and an inability to attract talent as the key barriers to industry transformation, with 60% of surveyed companies highlighting the difficulty in bridging skills gaps locally and 53% identifying their inability to attract talent as the main barrier to transforming their business (WEF, 2023).

4.6 Challenges in Identifying Skills Gaps

UNICEF (2019) found the following universal challenges in identifying skills gaps:

- **Different terminologies, taxonomies, and frameworks** leading to conceptual confusion among policymakers and implementors.
- **A lack of research on skill progression and interaction** across the life course throughout age and development stages, creating obstacles to embedding transferable skills in curricula, pedagogy, and assessment.
- **Lack of evidence-based approaches to skills development programming** in low-resource and low-capacity settings, including development and humanitarian settings; this is closely related to the high cost of measuring skills development learning outcomes.

PART 5

Conclusion



An analysis of skills gaps in South Africa, in a rapidly changing world of work, highlights the lack of foundational, technical, soft, and cognitive skills in the South African labour force. It points to a pressing need for strategic and comprehensive interventions to address this critical issue. The findings indicate the impact thereof at individual, organisational, and national level in terms of lower productivity, increased training costs, a hinderance to innovation, and low economic growth.

In South Africa, the correlation between skills gaps and social inequality cannot be ignored. As certain segments of the population face greater barriers to accessing quality education and training opportunities, the cycle of disadvantage persists, exacerbating existing inequality. Addressing skills gaps is thus imperative in achieving a more inclusive and equitable society.

To tackle this challenge effectively, a collaborative approach involving government, educational institutions, private enterprises, and civil society is required. Investments in basic education, technical and vocational training, and lifelong learning initiatives needs to be prioritised to equip individuals with adaptable skills that align with the demands of a rapidly changing world of work.

PART 6

Recommen- dations



6.1 Rudy Dicks

Addressing skills gaps in South Africa requires a multifaceted approach involving interventions and policy implementations that target both individuals and organisations. Here are some recommendations that take into account the ILO Skills Challenge Innovation Call and the ERRP strategy:

6.1.1 Education and training

- Focus on improving the quality of primary, secondary, and tertiary education to equip students with relevant and up-to-date skills, specifically soft skills, through curriculum transformation and the capacity development of teachers, lecturers, and management.
- Align technical and vocational education and training programmes with industry needs to provide technical skills, soft skills, and cognitive skills.
- Collaborate with industries to design and update qualifications and certifications that align with their needs.
- Ensure that accreditation processes for educational and training institutions are responsive to industry requirements.
- Promote a culture of continuous learning and upskilling among the workforce to adapt to evolving job requirements.

6.1.2 Public-private partnerships

- Foster collaborations between the government, businesses, and educational institutions to identify and address skills gaps.
- Involve the private sector in designing and implementing training programmes to ensure that they meet industry needs and result in employment opportunities.
- Collaborate with the industry to provide practical training and work experience to young job seekers.

6.1.3 Workforce planning and forecasting

- Encourage SETAs to conduct regular assessments of labour market demands and future skills requirements to identify potential skills gaps in various industries.
- Use data-driven insights to inform policy decisions and tailor educational and training programmes accordingly.

6.1.4 Upskilling the existing workforce

- Provide incentives for employers to invest in training and upskilling their current employees, thus closing skills gaps within their organisations.
- Promote the use of online learning platforms and resources to facilitate easy access to upskilling opportunities.

6.1.5 Promote inclusive growth

- Ensure that skills development initiatives are inclusive and address historical inequalities, including gender and racial disparities.
- Offer targeted support for marginalised groups to access education and training opportunities.

6.1.6 Monitoring and evaluation

- Establish a robust monitoring and evaluation system to assess the effectiveness of skills development policies and interventions.
- Use the data collected to continuously refine and improve strategies to address skills gaps effectively.

PART 7

Glossary



Implementing these recommendations will require a collaborative effort from the government, private sector stakeholders, educational institutions, and civil society. By addressing skills gaps, South Africa can foster a more skilled and competitive workforce that contributes to sustainable economic growth and development.

Job–skill mismatch	A situation where job seekers possess skills that do not align with the requirements of available job opportunities.
Upskilling	The process of acquiring new skills or improving existing ones to meet the changing demands of the job market.
Reskilling	The process of learning new skills to transition into a different role or field due to changes in job market demands, technological advancements, or industry shifts.
Continuous learning	The practice of consistently acquiring new knowledge and skills throughout one’s career to stay relevant and adaptable in a rapidly changing job market.
Training and development	Programmes or initiatives designed to improve the knowledge and skills of employees to enhance their job performance and productivity.
Skills shortage	A situation in which there is a deficiency of individuals possessing particular skills in the labour market.
Talent pipeline	A strategic approach to identifying, nurturing, and developing individuals with the potential to fill critical roles within an organisation or industry in the future.
Competency framework	A structured model that outlines the specific skills, knowledge, behaviours, and abilities required for success in a particular role or profession.
Workforce development	Comprehensive efforts aimed at preparing individuals for the workforce and enhancing their skills to meet the needs of employers.
Skill certification	Formal recognition of an individual’s proficiency and competence in a particular skill or area of expertise.
Occupational demand	The current and future need for specific skills and job roles within a particular occupation or industry.
Skill assessment	The process of evaluating an individual’s current skills and competencies to identify areas of strength and weakness.
Human capital	The collective skills, knowledge, abilities, and experiences of individuals in a workforce or organisation.
Job analysis	The systematic process of gathering and analysing information about job roles to identify the essential tasks, skills, and qualifications required for successful job performance.
Sectoral skills councils	Industry-led organisations or bodies that work to identify and address skills gaps within specific sectors or industries.
Skills forecasting	The process of predicting future skills requirements in the job market based on economic trends, technological advancements, and industry developments.
Career pathways	Structured roadmaps that outline the progression of skills, qualifications, and experiences required for career advancement within a particular industry or occupation.
Skills development levy	A tax or financial contribution imposed on employers to fund skills development initiatives within a country or region.
Lifelong learning	The concept of continuous learning and personal development throughout an individual’s life.

Re-training	The process of providing additional training or education to individuals in specific industries or occupations to equip them with new skills for emerging roles or technologies.
Skill standards	Defined benchmarks that outline the expected level of competency and performance in a particular skill or occupation.
Job automation	The process of replacing human labour with automated systems or technology to perform certain tasks or processes.
Skill ecosystem	The interconnected network of stakeholders, including employers, educational institutions, government agencies, and training providers, involved in skills development and workforce planning.
Workforce planning	The strategic process of forecasting workforce needs, identifying skills gaps, and developing strategies to meet those needs.
In-demand skills	Skills that are highly sought-after by employers due to their relevance to current market demands and industry trends.
Skills audit	A systematic review and analysis of the skills and capabilities of employees within an organisation.
Competency-based education	An educational approach that emphasises the mastery of specific skills and competencies rather than the traditional focus on course completion.
Skill transferability	The degree to which a particular skill or set of skills can be applied in different contexts or industries.
Digital skills	Skills related to using digital tools, technologies, and platforms.
Skills migration	The movement of individuals with specific skills from one geographic area to another, often in response to regional or global economic trends.
Skills passport	A document or digital profile that summarises an individual's skills, qualifications, and experiences.
Work-integrated learning	Educational programmes that integrate academic learning with practical work experiences.
Skill matching	The process of aligning the skills of job seekers with the requirements of available job opportunities.
Industry-recognised credentials	Certifications or qualifications that are widely acknowledged and valued within a specific industry or sector.
Skills analytics	The use of data analysis and insights to identify skills gaps, anticipate future skill requirements, and design effective workforce development strategies.
On-the-job training	Training provided within the workplace to help employees acquire specific skills and knowledge required for their roles.
Skills gap analysis	A systematic evaluation of the difference between the skills an organisation or industry requires and the skills its workforce possesses.
Career development	The ongoing process of managing one's career to achieve personal and professional goals.
Skill erosion	The loss or decline of certain skills over time due to technological advancements, changes in job requirements, or lack of practice.
Employer-led training	Training programmes initiated and sponsored by employers to address specific skills gaps within their organisations.

Job shadowing	A training method where individuals observe and learn from experienced employees as they perform their job duties.
Skill assessment tools	Instruments used to evaluate an individual's skills and competencies, often involving self-assessment or evaluations by supervisors or peers.
Agile workforce	A workforce characterised by flexibility and adaptability to changing business needs.
Workforce diversity	A diverse workforce that includes individuals from various backgrounds, experiences, and skillsets.
Upskilling initiative	Organisational programmes or government-led efforts aimed at upskilling employees to meet evolving job requirements.
Labour market information	Data and analysis about the labour market including job trends, skills demand, and employment outlook.
Employee re-training grant	Financial assistance provided to employees to pursue training and education in new skills or industries to address skills gaps caused by job displacement or industry shifts.
Reverse mentoring	A mentoring relationship where a younger or less-experienced employee mentors a more senior employee, often regarding specific skills, technology, or contemporary practices.
Industry 4.0 (or 4IR)	The Fourth Industrial Revolution, characterised by the integration of advanced technologies such as automation, artificial intelligence, and the 'internet of things' in manufacturing and other sectors.

PART 8

References



- African Union (2023). Available at: <https://au.int/en/search/node/skills>.
- Akoobhai, B. (2022). Curriculum relevance and responsiveness in selected NCV and NATED programmes in TVET colleges. Department of Higher Education and Training (DHET).
- Akoobhai, B. (2023). Employer perceptions of TVET college graduates. DHET.
- American Society for Training and Development (ASTD) (2012). *Bridging the Skills Gap: Help Wanted, Skills Lacking: Why the Mismatch in Today's Economy?* ASTD Press, Alexandria. Available: https://www.nist.gov/system/files/documents/mep/Bridging-the-Skills-Gap_2012.pdf.
- Amnesty International (2020). South Africa: Broken and unequal education perpetuating poverty and inequality. Available at: <https://www.amnesty.org/en/latest/news/2020/02/south-africa-broken-and-unequal-education-perpetuating-poverty-and-inequality/>.
- Government of Canada (2023). Jobs and the workplace: Training. Available at: www.canada.ca/en/services/jobs/training.
- Cappelli, P. H. (2015). Skill gaps, skill shortages, and skill mismatches: Evidence and arguments for the United States, pp. 251–290.
- Behbahani, N. (2023). Skills gap impacts drastically the business outcomes. Available at: https://www.linkedin.com/pulse/skills-gap-impacts-drastrically-business-outcomes-nicolas-behbahani/?trk=pulse-article_more-articles_related-content-card.
- Commonwealth of Australia (2013). *Core Skills for Work: Developmental Framework*.
- Daniels, R. C. (2007). Skills shortages in South Africa: A literature review. Development Policy Research Unit, Working Paper 07/121. Available at: https://open.uct.ac.za/bitstream/item/7377/DPRU_WP07-121.pdf?sequence=1.
- Deloitte (2018). *The Industry 4.0 Paradox: Overcoming Disconnects on the Path to Digital Transformation*. Available at: <https://www2.deloitte.com/xe/en/pages/energy-and-resources/articles/the-industry-4-0-paradox.html>.
- Deloitte (2020). *Global Human Capital Trends 2020: The Social Enterprise at Work—Paradox as a Path Forward*.
- Department of Higher Education (DHET). *National Skills Development Strategy III*. Available at: https://www.gov.za/sites/default/files/gcis_document/201409/national-skills-development-strategyiii.pdf.
- Department of Labour. Available at: <https://www.labour.gov.za/>.
- DHET (2013). White Paper on Post School Education and Training.
- DHET (2019). *Post-School Education and Training Monitor: Macro-Indicator Trends*. Available at: https://www.dhet.gov.za/SiteAssets/Post-School%20Education%20and%20Training%20Monitor%20Report_March%202019.pdf.
- DHET (2019). *National Skills Development Plan 2030*. Available at: <https://www.merseta.org.za/wp-content/uploads/2021/04/Promulgation-of-the-National-Skills-Development-Plan.pdf>.
- DHET (2019). *Skills Supply and Demand in South Africa*.
- DHET (2022). *Skills Imbalances in the South African Labour Market*.
- Du Toit, A. & Visser, K. (2017). Skills shortages in South Africa: A literature review. *Development Southern Africa*, 34(5), pp. 541–557.
- Eresia-Eke, C. & Pillay, P. (2016). Soft skills gaps among undergraduate students: Case of a South African university. *South African Journal of Higher Education*, 30(1), pp. 125–145.

- European Centre for the Development of Vocational Training (2019). *Skills Gaps and Surpluses in Europe: A Synthesis Report*.
- Gallup (2019). Your company's approach to learning is all wrong.
- Gideon, J. (2017). The effect of brain drain on South Africa's human capital and skills base. *Southern African Journal of Policy and Development*, 4(1), pp. 56–75.
- Hanushek E., & Woessmann L. (2022). The basic skills gap. Available at: <https://www.imf.org/en/Publications/fandd/issues/2022/06/basic-skills-gap-hanushek-woessmann>.
- Human Science Research Council (HSRC) (2022). State of youth unemployment in South Africa.
- International Labour organization (ILO) (1975). C 142—Human resources development convention. Available at: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C142.
- ILO (1975). R150—Human resources development recommendation. Available at: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_INSTRUMENT_ID:312488:NO.
- ILO (2004). R195—Human resources development recommendation, (2004) (No. 195). Available at: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:R195.
- ILO (2017). Resource page on recommendation no. 205. Available at: [https://www.ilo.org/global/topics/employment-promotion/recovery-and-reconstruction/r205/WCMS_648752/lang-en/index.htm#:~:text=A-,Recommendation%20No.,War%20to%20Peace\)%20of%201944](https://www.ilo.org/global/topics/employment-promotion/recovery-and-reconstruction/r205/WCMS_648752/lang-en/index.htm#:~:text=A-,Recommendation%20No.,War%20to%20Peace)%20of%201944).
- ILO (2019). *Work for a Brighter Future: Global Commission on the Future of Work*. Geneva.
- ILO (2020). Skills challenge innovation call: Finding solutions to skills mismatch. Available at: https://www.ilo.org/skills/projects/innovation-facility/WCMS_733982/lang-en/index.htm.
- ILO (2021a). *ILO Monitor: COVID-19 and the World of Work. 8th Edition*. Available at: https://www.ilo.org/global/topics/coronavirus/impacts-and-responses/WCMS_824092/lang-en/index.htm.
- ILO (2021b). *Global Framework on Core Skills for Life and Work in the 21st Century*. Geneva.
- ILO (2022). *World Employment and Social Outlook, Trends 2022*. Geneva.
- International Monetary Fund (2017). World Economic Outlook Database.
- Isaac, M. (2021). SA graduates may get the job but lack the skills. IOL. Available at: <https://www.iol.co.za/education/sa-graduates-may-get-the-job-but-lack-the-skills-d9f95655-700c-4237-abb9-55dac76d940d>.
- Khuzwayo, Z. & Khuzwayo, M. (2018). The challenge of skills shortage in South Africa: A critical analysis. *Journal of Economics and Behavioral Studies*, 10(1), pp. 144–153.
- Local Government Sector Education and Training (LGSETA) (2020). *Skills Shortages and Skills Gaps Guide 2020 & 2021*. Available at: [https://cdn.lgseta.co.za/resources/skills_programmes/LG%20Skills%20Shortages%20&%20Skills%20Gaps%20202021%20Final%20\(CMPRSSD\).pdf](https://cdn.lgseta.co.za/resources/skills_programmes/LG%20Skills%20Shortages%20&%20Skills%20Gaps%20202021%20Final%20(CMPRSSD).pdf).
- Makiel, M. (2023). More than half of finance professionals are considering changing jobs to boost career development, according to a new study. Available at: <https://www.aicpa-cima.com/news/article/more-than-half-of-finance-professionals-are-considering-changing-jobs-to>.
- Martin, G. (2014). The impact of employee turnover on the efficiency of a healthcare organization: Empirical analysis and modelling. *Procedia Computer Science*, 32, pp. 742–749.
- Maxontana, M. (2022). Solving the skills gap in the renewable energy sector. <https://www.adcorpgroup.com/stories/news/solving-the-skills-gap-in-the-renewable-energy-sector/>.

- McKinsey and Company (2019). *The Future of Work in America: People and Places, Today and Tomorrow*.
- Mncayi P. & Dunga S. H. (2016). Career choice and unemployment length: A study of graduates from a South African university. *Industry and Higher Education*, 30(6), pp. 413–423.
- Mncayi, N. C. & Stanz, K. (2019). Soft skills gaps and employability: A comparative analysis of higher education graduates in South Africa. *Journal of Social Sciences*, 57(1), pp. 23–33.
- Morris, M. & Reed, L. (2008). A sectoral analysis of skills gaps and shortages in the clothing and textile industry in South Africa. Human Sciences Research Council. Available at: https://humanities.uct.ac.za/sites/default/files/content_migration/humanities_uct_ac_za/1380/files/HSRC%2520C%2526T%2520Skills%2520Final%2520Revised%2520Report%252028%2520Mar%25202008.pdf.
- Organisation for Economic Co-operation and Development (OECD) (2019). *Bridging the Skills Gap: OECD Skills Outlook 2019*. Available at: <https://www.oecd-ilibrary.org/sites/e98f82d2-en/index.html?itemId=/content/component/e98f82d2-en>.
- OECD (2022). *OECD Economic Surveys: South Africa 2022*. Available at: https://www.oecd-ilibrary.org/economics/oecd-economic-surveys-south-africa-2022_d6a7301d-en.
- OECD (2023). How we work. Available at: <https://www.oecd.org/about/how-we-work/>.
- OECD (2023). *OECD Learning Campus 2030*. Available at: <https://www.oecd.org/education/2030-project/teaching-and-learning/learning/>.
- Osterman, P. (2019). Skill gaps, skill shortages, and skill mismatches: Evidence and arguments for the United States. *The Russell Sage Foundation Journal of the Social Sciences*, 5(5), pp. 19–37.
- Platts C. (2020). Skills gap: How to understand and use it to your advantage. ThriveMap. Available at: <https://thrivemap.io/skills-gap>.
- Pillay Y. (2023). South Africa faces a hydrogen skills crises. Cape Business News. Available at: <https://www.cbn.co.za/industry-news/skills-training-development/south-africa-faces-a-hydrogen-skills-crisis/>.
- Rasool, H. (2021). *New Form of Work: Skills Demand and Supply in the Changing World of Work*. Department of Employment and Labour. Available at: <https://www.labour.gov.za/DocumentCenter/Research%20Documents/2021/New%20Forms%20of%20Work,%20Skills%20demand%20and%20supply%20in%20the%20changing%20world%20of%20work.pdf>.
- Reddy, C. & Klopper, H. B. (2017). Soft skills development for engineering students at a South African university of technology. *South African Journal of Industrial Engineering*, 28(4), pp. 43–54.
- Renner, B., Betts, K., Cook, J. & Upadhyaya, J. (2021). Future of work: Digital skills in the food industry. Deloitte Insights. Available at: <https://www2.deloitte.com/us/en/insights/industry/retail-distribution/digital-skills-food-industry.html>.
- Rogan, M. (2022). *Analysis of the Responsiveness of TVET College Programme Qualifications (PQMs) to the World of Work*. DHET. Available at: <https://www.dhet.gov.za/ResearchNew/TVET%20Research%20Programme/Analysis%20of%20the%20responsiveness%20of%20TVET%20College%20Programme%20Qualifications%20-%20PQMs.pdf>.
- Rutashobya, L. K., Chiwona-Karlun, L., Wilson, M., Ilomo, M. & Semkunde, M. (2021). Gender and rural entrepreneurship in digitizing Sub-Saharan Africa. In Abugre, J.B., Osabutey, E. & Sigure, S. (eds.), *Business in Africa in the Era of Digital Technology: Advances in Theory and Practice of Emerging Markets*. New York: Springer.
- South African Government (1998). Skills Development Act 97 of 1988. Available: <https://www.gov.za/documents/skills-development-act>.

- South African Government (2023). National Development Plan 2030. Available at: <https://www.gov.za/issues/national-development-plan-2030>.
- South African Qualifications Authority (SAQA) (2011). National Planning Commission diagnostic overview: National Quality Framework (NQF). Available at: <https://www.saqa.org.za/>.
- South African Nation Energy Association (2023). South African Energy Skills Roadmap 2023. Available at: <https://southafricanenergyassociation.site-ym.com/page/EnergySkillsRoadmap>.
- Scullion, H. & Collings, D. G. (2011). *Global Staffing*. Routledge.
- Society for Human Resource Management (SHRM) (2019). *The skills gap in the U.S. workforce: Trends, causes, and solutions*.
- SHRM (2019). *The cost of hiring and onboarding talent*.
- SkillsFuture (2023). *Skills Framework for Human Resource*. Singapore. Available at: <https://www.skillsfuture.gov.sg/skills-framework/hr>.
- Social Research and Demonstration Corporation (2021). *Research Report to Support the Launch of Skills for Success: Structure, Evidence, and Recommendations*. Vancouver. Available at: <https://srdc.org/project/research-report-to-support-the-launch-of-skills-for-success-structure-evidence-and-recommendations-final-report/>.
- Statistics South Africa (2023). Available at: <http://www.statssa.gov.za/>.
- Talent Education Toolkit for Teachers (2023). *What are metacognitive skills*. Available at: <http://www.talenteducation.eu/toolkitforteachers/metacognitalskills/what-are-metacognitive-skills/>.
- Tippins, N. T. & Hilton, M. L. (2010). *A Database for a Changing Economy: Review of the Occupational Information Network (O*NET)*. National Research Council.
- The Conference Board (2017). *Closing the Skills Gap*.
- Tsacoumis, S. & Willison, S. (2010). *O*NETO® Analyst Occupational Skill Ratings: Procedures*. National Center for O*NET Development. North Carolina. Available at: https://www.onetcenter.org/dl_files/AOSkills_Proc.pdf.
- United Nations International Children's Emergency Fund (2019). *Global Framework on Transferable skills*.
- U.S. Bureau of Labor Statistics. *Occupation Outlook Handbook*. Available at: <https://www.bls.gov/ooh/>.
- U.S. Chamber of Commerce Foundation (2017). *Workforce of Today, Workforce of Tomorrow: The Business Case for High-Quality Childcare*.
- United Nations (2023). *Sustainable Development Goals*. Available at: <https://sdgs.un.org/goals>.
- United Nations Educational, Scientific and Cultural Organization (UNESCO) (2015). *Education 2030 Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4*. Paris. Available at: https://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf.
- Meinck, S., Fraillon J. & Strietholt R. (2022). *The Impact of the COVID-19 Pandemic on Education: International Evidence from the Responses to Educational Disruption Survey (REDS)*. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000380398>.
- Visser, M. & Jansen, A. (2016). Soft skills, hard skills, and graduate employment in South Africa: a conceptual and practical critique. *Higher Education, Skills and Work-Based Learning*, 6(3), pp. 284–297.
- WalkMe The Change Management Blog (2022). *The skills gap: Understanding the causes and making plans for improvement*. Available at: <https://change.walkme.com/skills-gap/#:~:text=Within%20>

a%20company%2C%20a%20skills,lead%20to%20a%20skills%20gap.

Waltower, S. (2023). The skills gap is costing businesses. *Business News Daily*. Available at: <https://www.businessnewsdaily.com/6038-skills-gaps-cost-companies-thousands.html>.

World Economic Forum (WEF) (2018). *The Future of Jobs Report 2018*. Available at: <https://www.weforum.org/reports/the-future-of-jobs-report-2018>.

WEF (2020). *The Future of Jobs Report 2020*. Available at: www.weforum.org/reports/the-future-of-jobs-report-2020.

WEF (2023). *The Future of Jobs Report 2023*. Available at: <https://www.weforum.org/reports/the-future-of-jobs-report-2023/in-full/5-workforce-strategies/>.

Whittaker, J.G. & Williams, G. (2016). Skills gap—A strategy for increasing knowledge worker supply & demand. *Journal of Business*, 1(4), pp. 13–24.

Wiseman, M. (2022). The skills gap is real. Here's what to do about it. Big Think. Available at: <https://bigthink.com/plus/skills-gap/#:~:text=It's%20possible%20that%20the%20skills,anticipated%20as%20the%20company%20grows.>

World Bank (2023). The World Bank in South Africa. Available at: <https://www.worldbank.org/en/country/southafrica/overview>.

PART 9

Annexures



Annexure A: Summary of international organisations

1. United Nations' Sustainable Development Goals

The United Nations' Sustainable Development Goals (SDGs) recognise the crucial role of skills development in achieving sustainable development globally (UNESCO, 2015). The SDGs provide a comprehensive framework comprising 17 goals and 169 targets to address various social, economic, and environmental challenges. The goals relating to skills are as follows:

- **Goal 4: Quality education:** SDG 4 focuses on ensuring inclusive and equitable quality education for all. Target 4.4 specifically highlights the need to “substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship.”
- **Goal 8: Decent work and economic growth:** SDG 8 aims to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. Target 8.6 emphasises the importance of reducing the proportion of young people who are not in employment, education, or training by equipping them with relevant skills for employment and entrepreneurship.
- **Goal 9: Industry, innovation, and infrastructure:** SDG 9 focuses on building resilient infrastructure, promoting inclusive and sustainable industrialisation, and fostering innovation. Target 9.2 highlights the need to promote inclusive and sustainable industrialisation by increasing access to financial services, enhancing research and development, and upgrading technological capabilities.
- **Goal 12: Responsible consumption and production:** SDG 12 aims to ensure sustainable consumption and production patterns. Target 12.8 emphasises the importance of promoting the development, transfer, and dissemination of environmentally sound technologies and the corresponding skills to developing countries.
- **Goal 17: Partnerships for the goals:** SDG 17 underscores the significance of global partnerships and cooperation to achieve the SDGs. Target 17.9 focuses on enhancing international support for implementing effective and targeted capacity-building initiatives to support developing countries in developing their skills and productive capacities.

2. UNESCO's Education 2030 Framework for Action

UNESCO's Education 2030 Framework for Action (UNESCO, 2015), also known as Education 2030 (for the implementation of SDG 4), provides guidance and priorities for global education development. It emphasises the importance of skills development as a core component of education systems and lifelong learning. Here's what Education 2030 says about skills:

- **Holistic approach to learning:** Education 2030 promotes a holistic approach to learning that encompasses cognitive, social, emotional, and physical development. It recognises the need to develop a broad range of skills that go beyond academic knowledge, including critical thinking, creativity, problem-solving, communication, collaboration, and socioemotional skills.
- **Lifelong learning:** Education 2030 highlights the importance of lifelong learning, recognising that skills development is not limited to formal education but extends throughout a person's life. It calls for the provision of learning opportunities at all stages, including early childhood, primary, secondary, tertiary, and adult education, as well as non-formal and informal learning contexts.
- **Quality and relevance of education:** Education 2030 emphasises the need for quality education that is relevant to the needs of individuals, communities, and societies. It encourages the alignment of education systems with labour market demands, technological advancements, and the evolving needs of a sustainable and inclusive world.

- **Education–work transitions:** Education 2030 underscores the importance of smooth and effective transitions between education and the world of work. It emphasises the role of education in equipping learners with the skills, knowledge, and competencies required for employment, entrepreneurship, and active citizenship.
- **Education for sustainable development:** Education 2030 promotes education for sustainable development, aiming to foster the knowledge, skills, values, and attitudes necessary for individuals to contribute to sustainable development and address global challenges. This includes developing skills related to environmental awareness, sustainable practices, and responsible citizenship.
- **Inclusion and equity:** Education 2030 highlights the importance of inclusive and equitable education that addresses disparities and ensures that all individuals have access to quality learning opportunities. It emphasises the need to reach marginalised and vulnerable populations, providing them with skills development opportunities that promote social inclusion and empowerment.
- **Education governance and monitoring:** Education 2030 encourages countries to strengthen education governance and monitoring mechanisms to ensure the effective implementation of skills development policies. This includes setting targets, monitoring progress, and regularly assessing the relevance and effectiveness of education and skills policies and programmes.

Overall, Education 2030 recognises the transformative power of skills development and highlights the need for education systems to equip individuals with a broad range of skills, promote lifelong learning, and contribute to sustainable development and social inclusion.

3. UNESCO–UNEVOC Centre

The UNESCO–UNEVOC International Centre for Technical and Vocational Education and Training (TVET) is a specialised UNESCO institute that focuses on promoting and supporting TVET worldwide. UNEVOC’s perspective on skills aligns with its mission to advance TVET as a key component of education and training systems. Areas of UNEVOC’s work on skills include:

- **TVET as a pathway to skills development:** UNEVOC emphasises the central role of TVET in developing the skills needed for individuals to succeed in the world of work. It recognises that TVET equips learners with both technical skills and broader employability skills, enabling them to meet the demands of various industries and sectors.
- **Skills for employment and sustainable development:** UNEVOC acknowledges that skills development through TVET is crucial for promoting employment, decent work, and sustainable development. It emphasises the need to align TVET programmes with the needs of the labour market, ensuring that learners acquire skills that are relevant and in demand.
- **Inclusive and equitable skills development:** UNEVOC advocates for inclusive and equitable skills development opportunities through TVET. It highlights the importance of providing equal access to quality TVET for all individuals, regardless of gender, socioeconomic background, or geographic location.
- **Skills for lifelong learning:** UNEVOC recognises the need for lifelong learning in a rapidly changing world. It promotes the idea that TVET should provide individuals with the skills, knowledge, and competencies not only for immediate employment but also for continuous learning and adaptability throughout their lives.
- **Industry-engaged skills development:** UNEVOC emphasises the importance of strong partnerships between TVET institutions, the industry, and other stakeholders. It advocates for industry engagement in curriculum development, work-based learning opportunities, and the provision of up-to-date and relevant skills training to ensure the employability of TVET graduates.

- **Research and knowledge sharing:** UNEVOC promotes research and knowledge sharing to improve the quality and effectiveness of skills development through TVET. It facilitates networks, conferences, and collaborative initiatives to share best practices, innovative approaches, and research findings in the field of TVET and skills development.
- **Policy advice and capacity-building:** UNEVOC provides policy advice and capacity-building support to its member countries to strengthen their TVET systems and enhance skills development. It assists in the development of TVET policies, the establishment of quality assurance mechanisms, and the enhancement of teacher training and professional development.

UNEVOC's perspective on skills development through TVET aligns with UNESCO's broader objectives of promoting inclusive and quality education, fostering lifelong learning opportunities, and addressing the skills needs of individuals and societies.

4. International Labour Organisation

The International Labour Organisation (ILO) has several conventions, recommendations, and guidelines that are related to skills development and vocational training. They highlight the importance of skills, training, and education for decent work, social justice, and economic development. Here are some relevant conventions and recommendations:

- **ILO convention no. 142:** Human resources development: Vocational guidance and vocational training in the development of human resources (1975): This convention emphasises the need for comprehensive human resources development, including vocational guidance and vocational training, to facilitate the adjustment of individuals to the world of work and enhance their employability.
- **ILO recommendation no. 195:** Human resources development: Education, training, and lifelong learning (2004): This recommendation provides guidance on the development and implementation of comprehensive policies and strategies for human resources development, including education, training, and lifelong learning. It emphasises the importance of promoting employability, productivity, and social inclusion through skills development.
- **ILO recommendation no. 150:** Human resources development: Vocational guidance and vocational training (1975): This recommendation provides guidance on establishing and improving systems of vocational guidance and training. It highlights the importance of developing a skilled and adaptable workforce, ensuring access to vocational training, and promoting equality of opportunity in vocational education and training.
- **ILO recommendation no. 205:** Employment and decent work for peace and resilience (2017): This recommendation emphasises the importance of skills development and lifelong learning in promoting employment and decent work, particularly in fragile and conflict-affected situations. It calls for the provision of accessible, relevant, and quality education and training opportunities for all individuals.

These conventions and recommendations, along with other ILO instruments, provide guidance to member states on the development and implementation of policies and programmes related to skills development, vocational training, and human resources development. They highlight the significance of skills for decent work, equitable opportunities, and sustainable economic development.

5. Organisation for Economic Co-operation and Development

The Organisation for Economic Co-operation and Development (OECD) is an international organisation that works to build better policies for better lives. It places significant emphasis on skills development and its role in driving economic growth, social wellbeing, and individual success. The OECD's perspective on skills encompasses a range of dimensions including education, labour markets, policy development, and international comparisons. Here are key areas of OECD's work on skills:

- **Skills as a key driver of economic success:** The OECD recognises that skills are a critical determinant of economic success at the individual, national, and global levels. It highlights the role of skills in fostering productivity, innovation, and competitiveness, and stresses the need for countries to develop and utilise a skilled workforce to drive sustainable economic growth.
- **Skills for the future of work:** The OECD acknowledges the evolving nature of work and the impact of technological advancements, automation, and globalisation on skills requirements. It emphasises the importance of developing a wide range of skills, including cognitive, social, and emotional skills, to enable individuals to adapt to changing work environments and thrive in the digital age.
- **Skills for inclusive societies:** The OECD emphasises the significance of skills in promoting inclusive societies and reducing inequalities. It highlights the need for equitable access to quality education and training, ensuring that individuals from all backgrounds have opportunities to acquire the skills necessary for economic and social participation.
- **Skills and education systems:** The OECD provides insights into effective education and training systems that promote the acquisition and utilisation of skills. It focuses on issues such as early childhood education, school curricula, vocational education and training, higher education, lifelong learning, and the alignment of education systems with labour market needs.
- **Skills assessment and measurement:** The OECD is renowned for its Program for International Student Assessment and other assessments that benchmark student performance and skills across countries. The organisation emphasises the importance of robust skills assessment frameworks and measurement tools to inform evidence-based policymaking and monitor progress in skills development.
- **Skills policies and governance:** The OECD provides guidance on skills policies and governance including policy design, implementation, and evaluation. It promotes evidence-based policymaking, cross-sectoral collaboration, stakeholder engagement, and effective governance structures to address skills gaps, enhance labour market outcomes, and support economic development.
- **International comparisons and peer learning:** The OECD facilitates international comparisons of skills outcomes, policies, and practices to support peer learning among member countries. It provides platforms for sharing best practices, policy dialogue, and cooperation to enable countries to learn from one another and improve their skills development strategies.

Through its research, analysis, and policy recommendations, the OECD plays a significant role in shaping national and international approaches to skills development, highlighting its importance for economic growth, social inclusion, and the wellbeing of individuals and societies.

6. World Economic Forum

The World Economic Forum (WEF) plays a significant role in shaping global economic policies and perspectives, including those related to skills. The WEF's perspective on skills is grounded in its commitment to addressing the challenges and opportunities presented by 4IR and the evolving world of work. Key aspects of the WEF's policy and perspectives on skills include:

- **Reskilling and upskilling for the future of work:** The WEF emphasises the need for reskilling and upskilling programmes to prepare individuals for the changing nature of work. It recognises that technological advancements, automation, and digitisation are transforming job roles and creating a demand for new skill sets.
- **Future-oriented skills:** The WEF highlights the importance of developing future-oriented skills to thrive in the digital economy. This includes skills such as critical thinking, creativity, complex problem-solving, adaptability, digital literacy, and socioemotional intelligence.
- **Lifelong learning:** The WEF advocates for a culture of lifelong learning to keep pace with rapidly evolving skills requirements. It promotes continuous learning throughout individuals' careers to ensure their skills remain relevant and adaptable in the face of technological advancements and market disruptions.
- **Public–private collaboration:** The WEF emphasises the need for collaboration between governments, businesses, educational institutions, and civil society to address skills challenges. It calls for public–private partnerships to develop and implement innovative solutions, share best practices, and leverage resources for effective skills development.
- **Skills for inclusive growth:** The WEF recognises that skills development is crucial for achieving inclusive economic growth and reducing inequalities. It emphasises the importance of providing equal access to quality education and training, particularly for marginalised and disadvantaged populations.
- **Digital skills and digital transformation:** The WEF highlights the significance of digital skills in driving digital transformation and economic competitiveness. It emphasises the need to equip individuals with digital literacy, coding skills, data analysis capabilities, and an understanding of emerging technologies.
- **Skills measurement and future readiness:** The WEF promotes the measurement and assessment of skills to inform policymaking and track progress. It calls for comprehensive skills measurement frameworks and tools that capture both technical and non-technical skills, enabling individuals and organisations to gauge their future readiness.
- **Skill-based talent mobility:** The WEF recognises the importance of talent mobility and the need to remove barriers to the cross-border movement of skilled workers. It advocates for the recognition of skills and qualifications to facilitate global talent mobility and address skills shortages in different regions.

The WEF produces several reports regularly, including The Future of Jobs Report, The Future of Work, The Global Competitiveness Report, and The Human Capital Report.

Through its reports, initiatives, and collaborations, the WEF contributes to shaping policies, fostering public–private cooperation, and promoting innovative approaches to skills development that address the challenges and opportunities of the changing world of work.

7. African Union

The African Union (AU) recognises the critical role of skills development in promoting economic growth, social development, and continental integration. The AU's perspective on skills aligns with its Agenda 2063, which outlines the vision for Africa's development over the next few decades. Here are key aspects of the AU's perspective on skills:

Continental skills development strategy: The AU has developed the Continental Skills Development Strategy (CSDS), which provides a framework for skills development across Africa. The CSDS aims to promote quality education and training, enhance technical and vocational skills, and improve employability and entrepreneurship.

Skills for economic transformation: The AU emphasises the importance of skills development in driving economic transformation in Africa. It recognises that a skilled workforce is essential for attracting investments, fostering innovation, and diversifying economies for sustainable development.

Addressing youth unemployment: The AU acknowledges the challenge of youth unemployment in Africa and the need to equip young people with the skills required for employment and entrepreneurship. It emphasises the importance of providing relevant, quality, and inclusive education and training opportunities to empower the continent's youth.

Technical and vocational education and training (TVET): The AU places significant emphasis on TVET as a key component of skills development. It recognises the importance of TVET in equipping individuals with practical and technical skills that meet the demands of industries and support economic growth and job creation.

Partnership and collaboration: The AU promotes partnerships and collaboration among African countries, regional economic communities, and international stakeholders to enhance skills development. It encourages sharing best practices, exchanging knowledge and experiences, and leveraging resources for effective skills development initiatives.

Harmonization of education and training systems: The AU recognises the need for the harmonisation and standardisation of education and training systems across Africa. It aims to promote the recognition of qualifications, the transferability of skills, and the mobility of students and skilled workers within the continent.

Skills for sustainable development goals: The AU emphasises the alignment of skills development with the United Nations' SDGs. It recognizes that developing the skills necessary for sustainable development, such as green skills, digital literacy, and entrepreneurial skills, is vital for achieving the SDGs in Africa.

The AU's perspective on skills development reflects its commitment to advancing human capital development, fostering inclusive growth, and harnessing the potential of Africa's youth. Implementation of the CSDS and collaboration among member states and stakeholders are key to realising Africa's vision for skills development and building a skilled and competitive workforce.

Annexure B: O*NET skills and abilities framework with definitions

O*NET BASIC AND CROSS-FUNCTIONAL SKILLS FRAMEWORK

BASIC SKILLS		CROSS-FUNCTIONAL SKILLS				
Content	Process	Social	Problem-solving	Technical	Systems	Resource management
Reading comprehension	Critical thinking	Social perceptiveness	Complex problem-solving	Operations analysis	Judgement and decision-making	Time management
Active listening	Active learning	Coordination		Technology design	Systems analysis	Management of financial resources
Writing	Learning strategies	Persuasion		Equipment selection	Systems evaluation	Management of material resources
Speaking	Monitoring	Negotiation		Installation		Management of personnel resources
Mathematics		Instructing		Programming		
Science		Service orientation		Operations monitoring		
				Operation and control		
				Equipment maintenance		
				Troubleshooting		
				Repairing		
				Quality control analysis		

O*NET ABILITIES FRAMEWORK

COGNITIVE ABILITIES	PSYCHOMOTOR ABILITIES	PHYSICAL ABILITIES	SENSORY ABILITIES
Verbal	Fine manipulative	Physical strength	Visual
Idea generation and reasoning	Control movement	Endurance	Auditory and speech
Quantitative	Reaction time and speed	Flexibility, balance, and coordination	
Memory			
Perceptual			
Spatial			
Attentiveness			

A. BASIC SKILLS
DEVELOPED CAPACITIES THAT FACILITATE LEARNING
OR THE MORE RAPID ACQUISITION OF KNOWLEDGE

1. CONTENT SKILLS
BACKGROUND STRUCTURES NEEDED TO WORK WITH AND
ACQUIRE MORE SPECIFIC SKILLS IN A VARIETY OF DIFFERENT DOMAINS

Reading comprehension	Understanding written sentences and paragraphs in work-related documents.
Active listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
Writing	Communicating effectively in writing as appropriate for the needs of the audience.
Speaking	Talking to others to convey information effectively.
Mathematics	Using mathematics to solve problems.
Science	Using scientific rules and methods to solve problems.

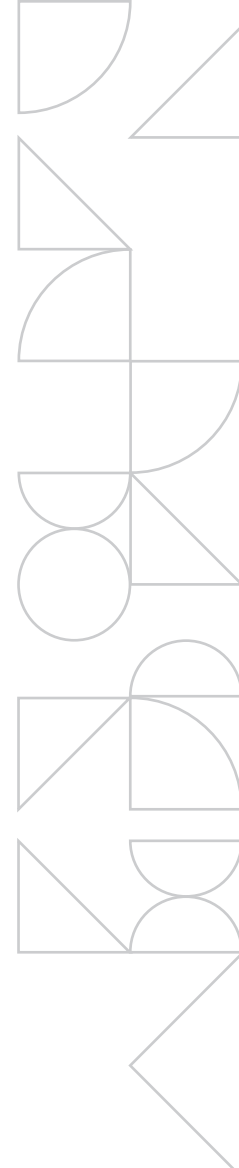
2. PROCESS SKILLS
PROCEDURES THAT CONTRIBUTE TO THE MORE RAPID
ACQUISITION OF KNOWLEDGE AND SKILL ACROSS A VARIETY OF DOMAINS

Critical thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.
Active learning	Understanding the implications of new information for both current and future problem-solving and decision-making.
Learning strategies	Selecting and using training or instructional methods and procedures that are appropriate for the situation when learning or teaching new things.
Monitoring	Assessing the performance of yourself, other individuals, or organisations to make improvements or take corrective action.

B. CROSS-FUNCTIONAL SKILLS
DEVELOPED CAPACITIES THAT FACILITATE PERFORMANCE OF ACTIVITIES THAT OCCUR ACROSS JOBS

1. SOCIAL SKILLS
DEVELOPED CAPACITIES USED TO WORK WITH PEOPLE TO ACHIEVE GOALS

Social perceptiveness	Being aware of others' reactions and understanding why they react as they do.
Coordination	Adjusting actions in relation to others' actions.
Persuasion	Persuading others to change their minds or behaviour.
Negotiation	Bringing others together and trying to reconcile differences.
Instructing	Teaching others how to do something.
Service orientation	Actively looking for ways to help people.



**2. COMPLEX PROBLEM-SOLVING SKILLS
DEVELOPED CAPACITIES USED TO SOLVE NOVEL,
ILL-DEFINED PROBLEMS IN COMPLEX, REAL-WORLD SETTINGS**

Complex problem-solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
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**3. TECHNICAL SKILLS
DEVELOPED CAPACITIES USED TO DESIGN, SET UP, OPERATE, AND CORRECT MALFUNCTIONS
INVOLVING THE APPLICATION OF MACHINES OR TECHNOLOGICAL SYSTEMS**

Operations analysis	Analysing needs and product requirements to create a design.
Technology design	Generating or adapting equipment and technology to serve user needs.
Equipment selection	Determining the kind of tools and equipment needed to do a job.
Installation	Installing equipment, machines, wiring, or programmes to meet specifications.
Programming	Writing computer programmes for various purposes.
Operations monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.
Operation and control	Controlling the operations of equipment or systems.
Equipment maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
Troubleshooting	Determining causes of operating errors and deciding how to address them.
Repairing	Repairing machines or systems using the needed tools.
Quality control analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

**4. SYSTEMS SKILLS
DEVELOPED CAPACITIES USED TO UNDERSTAND,
MONITOR, AND IMPROVE SOCIOTECHNICAL SYSTEMS**

Judgment and decision-making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.
Systems analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.
Systems evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.

**5. RESOURCE MANAGEMENT SKILLS
DEVELOPED CAPACITIES USED TO ALLOCATE RESOURCES EFFICIENTLY**

Time management	Managing one's own time and the time of others.
Management of financial resources	Determining how money will be spent to get the work done, and accounting for these expenditures.

Management of material resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.
Management of personnel resources	Motivating, developing, and directing people as they work, identifying the best people for the job.

ABILITIES: THE ENDURING ATTRIBUTES OF AN INDIVIDUAL THAT INFLUENCE PERFORMANCE

COGNITIVE ABILITIES: ABILITIES THAT INFLUENCE THE ACQUISITION AND APPLICATION OF KNOWLEDGE IN PROBLEM-SOLVING

Verbal abilities	Abilities that influence the acquisition and application of verbal information in problem-solving.
Generation and reasoning abilities	Abilities that influence the application and manipulation of information in problem-solving.
Quantitative abilities	Abilities that influence the solution of problems involving mathematical relationships.
Memory	Abilities related to the recall of available information.
Perceptual abilities	Abilities related to the acquisition and organisation of visual information.
Spatial abilities	Abilities related to the manipulation and organisation of spatial information.
Attentiveness	Abilities related to the application of attention.

PSYCHOMOTOR ABILITIES: ABILITIES THAT INFLUENCE THE CAPACITY TO MANIPULATE AND CONTROL OBJECTS

Fine manipulative abilities	Abilities related to the manipulation of objects.
Control movement abilities	Abilities related to the control and manipulation of objects in time and space.
Reaction time and speed abilities	Abilities related to the speed at which objects are manipulated or tasks conducted.

PHYSICAL ABILITIES: ABILITIES THAT INFLUENCE STRENGTH, ENDURANCE, FLEXIBILITY, BALANCE, AND COORDINATION

Physical strength abilities	Abilities related to the capacity to exert force.
Endurance	The ability to exert oneself physically over long periods without getting out of breath.
Flexibility, balance, and coordination	Abilities related to the control of gross body movements.

SENSORY ABILITIES: ABILITIES THAT INFLUENCE VISUAL, AUDITORY, AND SPEECH PERCEPTION

Visual abilities	Abilities related to visual sensory input.
Auditory and speech abilities	Abilities related to auditory and oral input.

Annexure C: ESCO framework with categories and subcategories of skills and transverse skills

ESCO SKILLS FRAMEWORK

SKILLS	TRANSVERSE SKILLS	
S1. Communication, collaboration, and creativity	T1-Core skills and competences	T1.1-Mastering languages T1.2-Working with numbers and measures T1.3-Working with digital devices and applications
S2. Information skills	T2-Thinking skills and competences	T2.1-Processing information, ideas, and concepts T2.2-Planning and organising T2.3-Dealing with problems T2.4-Thinking creatively and innovatively
S3. Assisting and caring	T3-Self-management skills and competences	T3.1-Working efficiently T3.2-Taking a proactive approach T3.3-Maintaining a positive attitude T3.4-Demonstrating the willingness to learn
S4. Management skills	T4-Social and communication skills and competences	T4.1-Communicating T4.2-Supporting others T4.3-Collaborating in teams and networks T4.4-Leading others T4.5-Following an ethical code of conduct
S5. Working with computers	T5-Physical and manual skills and competences	T5.1-Manipulating and controlling objects and equipment T5.2-Responding to physical circumstances
S6. Handling and moving	T6-Life skills and competences	T6.1-Appling health-related skills and competencies T6.2-Appling environmental skills and competences T6.3-Appling civic skills and competences T6.4-Appling cultural skills and competences T6.5-Appling entrepreneurial and financial skills and competences
S7. Constructing		
S8. Working with machinery and specialised equipment		

ESCO SKILLS

S1. Communication, collaboration, and creativity	<ul style="list-style-type: none"> S1.1-Negotiating S1.2-Liaising and networking S1.3-Teaching and training S1.4-Presenting information S1.5-Advising and consulting S1.6-Promoting, selling, and purchasing S1.7-Obtaining information verbally S1.8-Working with others S1.9-Solving problems S1.10-Designing systems and products S1.11-Creating artistic, visual, or instructive materials S1.12-Writing and composing
S2. Information skills	<ul style="list-style-type: none"> S2.0-Information skills S2.1-Conducting studies, investigations, and examinations S2.2-Documenting and recording information S2.3-Managing information S2.4-Processing information S2.5-Measuring physical properties S2.6-Calculating and estimating S2.7-Analysing and evaluating information and data S2.8-Monitoring, inspecting, and testing S2.9- Monitoring developments in an area of expertise
S3. Assisting and caring	<ul style="list-style-type: none"> S3.0-Assisting and caring S3.1-Counselling S3.2-Providing health care or medical treatments S3.3-Protecting and enforcing S3.4-Providing information and support to the public and clients S3.5-Preparing and serving food and drinks S3.6-Providing general personal care
S4. Management skills	<ul style="list-style-type: none"> S4.0-Management skills S4.1-Developing objectives and strategies S4.2-Organising, planning, and scheduling work and activities S4.3-Allocating and controlling resources S4.4-Performing administrative activities S4.5-Leading and developing teams S4.6-Building and developing teams S4.7-Recruiting and hiring S4.8-Supervising people S4.9-Making decisions
S5. Working with computers	<ul style="list-style-type: none"> S5.0-Working with computers S5.1-Programming computer systems S5.2-Setting up and protecting computer systems S5.3-Accessing and analysing digital data S5.4-Using digital tools for collaboration, content creation, and problem-solving S5.5-Using digital tools to control machinery
S6. Handling and moving	<ul style="list-style-type: none"> S6.0-Handling and moving S6.1-Sorting and packaging goods and materials S6.2-Moving and lifting S6.3-Transforming and blending materials S6.4-Tending plants and crops S6.5-Assembling and fabricating products S6.6-Making moulds, casts, models, and patterns

ESCO SKILLS	
S6. Handling and moving <i>(continued)</i>	S6.7-Using hand tools S6.8-Positioning materials, tools, or equipment S6.9-Handling animals S6.10-Clearing S6.11-Washing and maintaining textiles and clothing S6.12-Handling and disposing of waste and hazardous material
S7. Constructing	S7.0-Constructing S7.1-Building and repairing structures S7.2-Installing the interior or exterior of infrastructure S7.3-Finishing the interior or exterior of structures
S8. Working with machinery and specialised equipment	S8.0-Working with machinery and specialised equipment S8.1-Operating a mobile plant S8.2-Driving vehicles S8.3-Operating watercraft S8.4-Operating machinery for the extraction and processing of raw materials S8.5-Operating machinery for the manufacturing of products S8.6-Using precision instrumentation and equipment S8.7-Installing, maintaining, and repairing mechanical equipment S8.8-Installing, maintaining, and repairing electrical, electronic, and precision equipment S8.9-Operating aircraft

ESCO TRANSVERSE SKILLS	
T1-Core skills and competences	T1.1-Mastering languages T1.2-Working with numbers and measures T1.3-Working with digital devices and applications
T2-Thinking skills and competences	T2.1-Processing information, ideas, and concepts T2.2-Planning and organising T2.3-Dealing with problems T2.4-Thinking creatively and innovatively
T3-Self-management skills and competences	T3.1-Working efficiently T3.2-Taking a proactive approach T3.3-Maintaining a positive attitude T3.4-Demonstrating the willingness to learn
T4-Social and communication skills and competences	T4.1-Communicating T4.2-Supporting others T4.3-Collaborating in teams and networks T4.4-Leading others T4.5-Following an ethical code of conduct
T5-Physical and manual skills and competences	T5.1-Manipulating and controlling objects and equipment T5.2-Responding to physical circumstances
T6-Life skills and competences	T6.1-Appling health-related skills and competencies T6.2-Appling environmental skills and competencies T6.3-Appling civic skills and competences T6.4-Appling cultural skills and competences T6.5-Appling entrepreneurial and financial skills and competences

Annexure D: ILO global framework for core skills definitions

1. SOCIAL AND EMOTIONAL SKILLS	
Communication	The ability to listen effectively in order to decipher meaning, articulate thoughts and ideas effectively, exchange information, and express opinions, desires, needs, and fears using oral, written, and non-verbal skills in diverse environments for a range of purposes.
Collaboration and teamwork	The ability to work in diverse teams effectively and respectfully, assuming shared responsibility for outputs and demonstrating willingness and flexibility. The ability to identify and acknowledge the feelings, experiences, and viewpoints of others, showing care, compassion, and kindness.
Conflict resolution and negotiation	The ability to reach a consensus between divergent interests by employing logical argument and influencing others to cooperate, thereby resolving disagreements or disputes.
Emotional intelligence	The ability to identify, understand, and manage one's own emotions as well as to help others do the same. It can comprise four domains: self-awareness, self-management, social awareness, and relationship management, which together have 12 competencies including empathy, adaptability, achievement orientation, and positive outlook.
2. COGNITIVE AND METACOGNITIVE SKILLS	
Foundational literacies	<ul style="list-style-type: none"> • Literacy: The ability to understand, identify, interpret, create, and communicate effectively using inscribed, printed, or electronic signs or symbols for representing language. • Numeracy: The ability to understand and have the confidence and skill to work with numbers and mathematical approaches in all aspects of life. • Health literacy: The ability to gain access to, understand, and utilise information in ways that promote and maintain good health. • Financial literacy: The ability to understand and apply financial management skills appropriately and to be able to make a financial plan, manage debt, calculate interest, and understand the value of money in order to make informed and effective decisions about personal financial resources. • Scientific literacy: The ability to understand those scientific concepts and processes required for personal decision-making, participation in civic and cultural affairs, and economic productivity. • Cultural literacy: The ability to understand the perspectives of people from diverse backgrounds instead of considering one's cultural beliefs and practices as the only or most acceptable ones. • Civic literacy: The ability to participate effectively in civic life by knowing the rights and obligations of residents at local, state, and national levels.
Analytical and critical thinking	The ability to assess issues appropriately and adequately and analyse relevant information to form an opinion or take an individual or a collective decision. The ability to think clearly, logically and rationally, to evaluate and interpret information, and to objectively analyse and evaluate an issue to make a judgement.
Creative and innovative thinking	The ability to utilise a wide range of idea creation techniques, so as to generate, articulate, and apply inventive and original ideas and perspectives, thereby solving complex tasks and life issues through original ideas.

2. COGNITIVE AND METACOGNITIVE SKILLS

Strategic thinking	The ability to think conceptually, imaginatively, systematically, and opportunistically, leading to a clearly defined set of goals, plans, and the new ideas required to survive and thrive in competitive and changing environments.
Problem-solving and decision-making	The ability to identify and assess issues and problems, utilise available resources to generate and 'brainstorm' potential solutions, evaluate the pros and cons of solutions, and decide on a solution.
Self-reflection and learning to learn	Self-reflection is the ability to apply reason to thought and behaviour, reflecting upon personal characteristics, assessing progress, and identifying areas for self-improvement. Learning to learn is the ability to apply the cognitive process of personal learning (what and how we learn) and to make use of guidance to continuously pursue learning new knowledge and skills and to strive for improvement.
Collect, organise, and analyse information	The ability to search, select, evaluate, and organise information in order to effectively and efficiently employ the relevant information, as well as the ability to re-structure and model sourced information to produce personal interpretations of data.
Planning and organising	The ability to plan and organise tasks in order to fulfil the job responsibilities satisfactorily within a given time frame and appropriately for a complex environment and situation.
Career management	The ability to establish, plan, and work towards the achievement of short- and long-term goals having both tangible and intangible success criteria. The ability to exchange information and ideas with individuals and groups that share a common interest, developing relationships for mutual benefit. The ability to use labour market information and intelligence to help identify work opportunities, understand work contexts and work conditions, and apply job-search skills.

3. BASIC DIGITAL SKILLS

Use basic hardware	The ability to operate a personal computer, tablet, mobile phone, or other digital device using hardware functionalities such as a keyboard, mouse, navigation buttons, and touchscreen technology, where appropriate.
Use basic software	The ability to use and troubleshoot basic programmes and applications, and to be able to Word process, manage files, and access and adjust privacy settings.
Operate safely in an online environment	The ability to safely use basic online functions, applications, digital learning and communication platforms, and media to explore, analyse, and share information safely and ethically.

4. BASIC SKILLS FOR GREEN JOBS

Environmental awareness	The ability to understand and demonstrate an awareness of the physical environment and the need for it to be protected.
Waste reduction and waste management	The ability to use, manage, and dispose of resources in ways that sustain the natural and physical environment.
Energy and water efficiency	The ability to use energy and water efficiently in ways that sustain the natural and physical environment.

Annexure E: Australian CSfW framework: Definitions of skills areas

GENERIC DESCRIPTIONS OF THE STAGES OF PERFORMANCE

1. NOVICE PERFORMER	2. ADVANCED BEGINNER	3. CAPABLE PERFORMER	4. PROFICIENT PERFORMER	5. EXPERT PERFORMER
<p>Has little or no experience of the skill area on which to base actions.</p> <p>Is highly reliant on explicit 'rules' (e.g., instructions, processes, procedures, models); guidance, support, and priorities determined by others to guide their own activities.</p>	<p>Has some practical experience of the skill area and is beginning to recognise patterns (e.g., routines, regular responses, links, and connections) that help their understanding and influence their action.</p> <p>Is still reliant on explicit rules and on assistance to identify priorities, but can apply these more autonomously in familiar, routine situations.</p>	<p>Has sufficient practical experience of the skill area to identify patterns and organising principles and establish priorities for action.</p> <p>Can comfortably apply the explicit and implicit rules associated with familiar situations.</p> <p>Adopts a systematic, analytical approach to tasks, especially in unfamiliar situations.</p>	<p>Has considerable practical experience of the skill area in a range of contexts and is moving from reliance on externally prescribed rules to recognition of principles that guide actions.</p> <p>Organises knowledge and practical experience as patterns, concepts, and principles, which makes it possible to assess and respond to situations in an increasingly intuitive and flexible way.</p> <p>Reverts to analysis and seeks guidance when making important decisions.</p>	<p>Has extensive practical experience of the skill area, with both a big picture understanding and an eye for the relevant fine detail.</p> <p>Operates fluidly, intuitively, and flexibly in highly complex situations, drawing on knowledge and practical experience organised into highly refined patterns, concepts, and principles.</p> <p>Uses a combination of informed intuition and analysis in different situations, recognising that 'it all depends'.</p> <p>Will often reconceptualise approaches and practices to produce more effective outcomes, while also recognising which rules and principles are always applicable.</p>



CSFW FRAMEWORK

	SKILL CLUSTER	SKILL AREA	FOCUS AREA	NOVICE	ADVANCED BEGINNER	CAPABLE	PROFICIENT	EXPERT
1	Navigate the world of work	a. Manage career and work life	Identify work options Gain work Develop relevant skills and knowledge	See relevant Performance Features tables for details				
		b. Work with roles, rights, and protocols	Work with roles and responsibilities Operate within legal rights responsibilities Recognise and respond to protocols					
2	Interact with others	a. Communicate for work	Recognise communication systems, practices, and protocols Speak and listen, understand, interpret, and act Get the message across	See relevant Performance Features tables for details				
		b. Connect and work with others	Understand self Build rapport Cooperate and collaborate					
		c. Recognise and utilise diverse perspectives	Recognise different perspectives Respond to and utilise diverse perspectives Manage conflict					

	SKILL CLUSTER	SKILL AREA	FOCUS AREA	NOVICE	ADVANCED BEGINNER	CAPABLE	PROFICIENT	EXPERT
3	Get the work done	a. Plan and organise	Plan and organise workload and commitments Plan and implement tasks	See relevant Performance Features tables for details				
		b. Make decisions	Establish decision-making scope Apply decision-making processes Review impact					
		c. Identify and solve problems	Identify problems Apply problem-solving processes Review outcomes					
		d. Create and innovate	Recognise opportunities to develop and apply new ideas Generate ideas Select ideas for implementation					
		e. Work in a digital world	Use digitally based technologies and systems Connect with others Access, organise, and present information Manage risk					
	Influencing factors	Existing skills and knowledge Familiarity with context Complexity of tasks Nature and degree of support Level of autonomy	Degree of motivation Self-belief and resilience Cultural and value-based factors External factors					



1. NAVIGATE THE WORLD OF WORK	2. INTERACT WITH OTHERS	3. GET THE WORK DONE
<p>a. Manage career and work life This skill area is about managing decisions throughout life about how, when, and where to work. It involves the capacity to identify work and career options, to gain work or career advancement, and to undertake the learning that is appropriate to work needs and goals.</p> <p>b. Work with roles, rights, and protocols This skill area is about understanding work roles and workplace rights and expectations. It involves the capacity to identify and manage responsibilities, recognise and respond to legal rights and responsibilities, and to recognise and respond to expectations and accepted practices of work situations.</p>	<p>a. Communicate for work This skill area is about using communication skills to achieve work outcomes. It involves the capacity to recognise communication protocols and etiquette, use communication systems and processes, understand messages, and get messages across to others.</p> <p>b. Connect and work with others This skill area is about building the work-related relationships needed to achieve an outcome within a workgroup, or achieve goals through team-based collaborations. It involves the capacity to understand others and build rapport, which in turn involves understanding one's own values, goals, expectations, and emotions, and making choices about regulating one's own behaviour, taking the needs of others (and the often-implicit social rules of the context) into account.</p> <p>c. Recognise and utilise diverse perspectives This skill area is about the capacity to recognise and respond to differing values, beliefs, and behaviours, to draw on diverse perspectives for work purposes, and to manage conflict when it arises.</p>	<p>a. Plan and organise This skill area is about identifying and completing the steps needed to undertake tasks and manage workloads. This involves the capacity to organize the self and information, plan and implement tasks, and plan and organise workloads.</p> <p>b. Make decisions This skill area is about making a choice from a range of possibilities. It involves the capacity to use different decision-making approaches and to reflect on the outcomes of decisions.</p> <p>c. Identify and solve problems This skill area is about identifying and addressing routine and non-routine problems in order to achieve work objectives. This involves the capacity to anticipate or identify problems, take steps to solve problems, and reflect on the outcomes.</p> <p>d. Create and innovate This skill area is about creating, applying, and recognising the value of new ideas to solve problems, improve or develop new processes, products, or strategies, or deliver new benefits. It involves the capacity to challenge perceptions of how things are and how they might be, and to recognise a potential opportunity. It also involves the use of formal processes to challenge and extend initial perceptions of a situation, and to generate and select from a range of new ideas.</p> <p>e. Work in a digital world This skill area refers to the capacity to connect to other people, information, and contexts for work-related purposes using digital systems and technology. It involves understanding concepts and language (jargon) associated with the digital world and the capacity to understand and work with emerging or accepted etiquette and risks relating to online environments. It also involves identifying how digital technology and digitally based systems can extend, enhance, or make possible specific aspects of a role or task, and create new opportunities.</p>

Annexure F: South African skills framework: Definitions of skills

Basic or foundational skills: Developed capacities that facilitate learning or the more rapid acquisition of knowledge	
Reading	The process of looking at a series of written symbols and getting meaning from them.
Writing	Communicating effectively in writing as appropriate for the needs of the audience.
Numeracy	The ability to understand and have the confidence and skill to work with numbers and mathematical approaches in all aspects of life.
Speaking	Talking to others to convey information effectively.
Oral and written comprehension (active listening)	The ability to listen to and write down information and ideas presented through spoken words and sentences.
Basic computer skills	Essential skills needed to make use of a computer.
Media literacy	The ability to access and analyse media messages as well as create, reflect, and take action, using the power of information and communication
Leadership	Developed capacities used to guide individuals, teams, or organisations to achieve a common goal or objective.
Administration and management (such as HR, finance, project, operations, marketing, business)	Administration is the qualities that help you complete tasks related to managing a business. Management denotes the abilities and traits needed to perform certain duties.
Planning	The ability to plan tasks to fulfil the job responsibilities satisfactorily within a given time and appropriately for a complex environment and situation.
Organising	The ability to organise tasks to fulfil the job responsibilities satisfactorily within a given time and appropriately for a complex environment and situation.
Designing (technology design)	The ability to solve problems with creative and innovative strategies.
Selecting relevant equipment, tools, machinery, methodology, or technology	Determining the kind of tools, equipment, machinery, methodology, or technology needed to do a job.
Using appropriate equipment, tools, machinery, methodology, or technology (operations and control)	The skills required to use the appropriate equipment, tools, machinery, methodology, or technology (operations and control) to do a specific job.
Analysing (operations, data, information, policy, quality control, etc.)	Analyse data and information and conduct tests and inspections of products, services, or processes to evaluate quality or performance.
Installation	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

Repairing	Repairing machines or systems using the needed tools.
Maintenance	Performing routine maintenance on tools, equipment, and machinery and determining when and what kind of maintenance is needed.
Troubleshooting	Determining causes of operating errors and deciding how to resolve them.
Conflict resolution (negotiation)	The ability to reach a consensus between divergent interests by utilising logical argument and influencing others to cooperate, thereby resolving disagreements or disputes.
Digital and AI	The ability to use digital devices, communication applications, and networks to access and manage information.
Physical strength	The abilities related to the capacity to exert force.

Soft skills: Personal attributes that enable someone to interact effectively and harmoniously with other people

Inter-personal soft skills: Skills required to communicate effectively with other people

Customer care (service orientation)	The traits and practices that equip you to address customer needs and foster a positive experience.
Communication	The ability to listen effectively in order to decipher meaning, articulate thoughts and ideas effectively, exchange information, and express opinions, desires, needs, and fears using oral, written, and non-verbal skills in diverse environments for a range of purposes.
Collaboration and teamwork	The ability to work in diverse teams effectively and respectfully, assuming shared responsibility for outputs and demonstrating willingness and flexibility. The ability to identify and acknowledge the feelings, experiences, and viewpoints of others, showing care, compassion, and kindness.
Resource management (finances, HR, water, energy, waste)	Developed capacities used to allocate resources efficiently.
Public speaking	Developed capacities to maintain a positive presence, engage with the audience, and communicate clearly to convey ideas.
Active citizenry	Developed capacities to become good responsible citizens that participate fully in democratic societies.

Intra-personal soft skills: Internal abilities and behaviours that help you manage emotions, cope with challenges, and learn new information

Proactiveness	A person's ability to think about the future, planning and preparing for what lies ahead.
Flexibility	The ability to adapt successfully to changing situations and environments.
Time management	Managing one's own time and the time of others.
Adaptability	Developed competencies of an individual to change their actions, course, or manner of getting things done to suit another circumstance.
Discipline	The ability to control and regulate one's behaviour, actions, and emotions to achieve specific goals or maintain a certain standard of performance.

Strong work ethic	The ability of determination and dedication towards one's job.
Managing your money	The ability to budget, save, invest, and spend, based on one's income.
Reliability	The ability to complete tasks on time, every time with the same high quality of work.
Accountability	Taking ownership of one's actions.
Positive attitude	The ability to approach situations, challenges, and interactions with optimism, enthusiasm, and a constructive mindset.
Ethical practices (integrity)	The ability to tell right from wrong, treat people with respect, and make ethical choices.
Self-awareness	The ability to tune in to your own feelings, thoughts, and actions.
Cultural awareness (functioning in a diverse environment)	The ability to understand and respect values, attitudes, beliefs that differ across cultures, and to consider and respond appropriately.
Social perceptiveness (empathy)	The ability to recognise emotions in others, and to understand other people's perspectives on a situation.
Environmental awareness	Having an understanding of the environment, the impacts of human behaviours on it, and the importance of its protection.
Problem-solving	Identifying problems and reviewing related information to develop and evaluate options and implement solutions.
Analytical (critical) thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.
Decision-making	The ability to consider the relative costs and benefits of potential actions and choose the most appropriate one.
Creative thinking	The ability to come up with unique, original solutions.
Analytical thinking	The ability to process and break down complex problems and find a solution.
Logical reasoning	The ability to study a situation objectively and come up with a sensible solution.
Memory	The abilities related to the recall of available information.
Learning to learn (active learning)	The ability to apply the cognitive process of personal learning (what and how we learn) and to make use of guidance to continuously pursue learning new knowledge and skills and strive for improvement.
Self-reflection	The ability to apply reason to thought and behaviour, reflecting upon personal characteristics, assessing progress, and identifying areas of self-improvement.

Annexure G: The three most common skills gaps within a sector (SETAs 2022)

SETA	HIGH-LEVEL OCCUPATIONS (MANAGERS AND PROFESSIONALS)			MID-LEVEL OCCUPATIONS (TECHNICIANS, ASSOCIATES, ARTISANS, AND CLERICAL WORKERS)			LOWER-LEVEL OCCUPATIONS (PLANT OPERATORS AND ELEMENTARY WORKERS)		
	1	2	3	1	2	3	1	2	3
MQA	Leadership	Communication	Project management	Supervisory skills	Digital or software	Strategic thinking	Accountability	Team leadership	Digital literacy
ETDP SETA	Leadership and change management	Critical thinking	Application of the POPIA and PAIA legislations in the workplace	Emotional intelligence	Technology and data systems	Report-writing	Computer skills	Customer Service	Administration
FoodBev SETA	Leadership skills	Business knowledge skills or business operations value chain	Product knowledge	Teamwork	Communication	Advanced computer skills and technical skills	Lack of knowledge in company-specific processes and equipment	Computer literacy	Literacy skills
LGSETA	Project management	Supply chain management	Financial management or municipal financial management and reporting	Project management including monitoring and evaluation	IT skills	Mentoring and coaching	First aid in the workplace	Occupational health and safety	Environment management or practice

SETA	HIGH-LEVEL OCCUPATIONS (MANAGERS AND PROFESSIONALS)			MID-LEVEL OCCUPATIONS (TECHNICIANS, ASSOCIATES, ARTISANS, AND CLERICAL WORKERS)			LOWER-LEVEL OCCUPATIONS (PLANT OPERATORS AND ELEMENTARY WORKERS)		
	1	2	3	1	2	3	1	2	3
HWSETA	Leadership	People management and industrial relations	Communication skills	Communication skills	Emotional intelligence (i.e., good self-awareness, self-regulation, motivation, empathy, and social or people skills)	Computer skills	Soft skills such as communication, time management, and work ethics	Computer skills	Customer or client service skills
CHIETA	Emotional intelligence	Leadership skills	Decision-making skills	Project management skills	Technical skills	Problem-solving skills	Basic computer skills	Communication skills	Numerical skills
EWSETA	Leadership	Financial management	Technical (job-specific)	Technical (job-specific)	Office administration	Computer literacy	Communication	Computer literacy	General literacy (numeracy and written)
TETA	Problem-solving	Digital marketing	Communication	IT skills	Problem-solving	People management	Time management	Customer service	Computer skills
CETA	Project management	Civil engineering	Construction management	Site foreperson skills	Technical skills	Artisanship	Painters	Certified health and safety officers	Plant operators



SETA	HIGH-LEVEL OCCUPATIONS (MANAGERS AND PROFESSIONALS)			MID-LEVEL OCCUPATIONS (TECHNICIANS, ASSOCIATES, ARTISANS, AND CLERICAL WORKERS)			LOWER-LEVEL OCCUPATIONS (PLANT OPERATORS AND ELEMENTARY WORKERS)		
	1	2	3	1	2	3	1	2	3
Fasset	Autonomy (managers do not like the rules and hierarchical structure. They need to develop the skills to accept rules.)	Business management (the gap between directors and general managers should be smaller)	Technological innovation	Teamwork (interacting and working as part of a team)	Planning (critical thinking), identifying goals, and taking responsibility	Business acumen	Technical skills (limited knowledge of systems, e.g., Excel and accounting software)	Time management (late-coming and absenteeism)	Income management (running out of money and asking for loans)
MICT SETA	Leadership skills	Emotional intelligence	Project management	Technical skills	Leadership skills	Digital and behavioural competencies	Soft skills (communication skills)	Customer service skills	Business English (language skills)
PSETA	Strategic management	Leadership skills	Monitoring and evaluation skills	Management development and change management	Data analytics and digital skills	Performance management	Customer care or service: the Batho Pele way	Computer literacy	Lack of education
Inseta	Management and leadership, emotional intelligence	Mentoring and coaching	Advanced IT and software skills	Problem-solving	Planning and organising	Legal, governance, and risk	Basic computer skills	Communication skills	Teamwork
SASSETA	Communication	Digital literacy	Project management	Advanced computer skills	Time management	People skills	Computer skills	Communication skills	Time management

SETA	HIGH-LEVEL OCCUPATIONS (MANAGERS AND PROFESSIONALS)			MID-LEVEL OCCUPATIONS (TECHNICIANS, ASSOCIATES, ARTISANS, AND CLERICAL WORKERS)			LOWER-LEVEL OCCUPATIONS (PLANT OPERATORS AND ELEMENTARY WORKERS)		
	1	2	3	1	2	3	1	2	3
FP&M SETA	Leadership, experience, legal	Research	Business, financial, and entrepreneurial skills	Productivity enhancement systems, operational diagnosis, development of effective operational systems, manufacturing excellence, human capital optimisation	Data analysis		Multiskilling, quality, productivity	Multiskilling and compatibility with changing technologies, low engagement	CAD knowledge (software design skills)
W&R SETA	Critical communication skills	How to manage Hybrid*3	Technology (ICT skills)	Technology (ICT skills)	Critical communication skills		Self-management	Communication	Self-motivation
CATHSETA	Legal, governance, and risk	People management	Leadership	Emotional intelligence	Technological skills		Computer literacy	Communication	Emotional intelligence
merSETA	Skills for new technologies and processes	Multiskills and problem-solving	Specialised technical skills (as the organisation grows)	4IR	Upskilling for new job roles		Skills for new technologies and processes	Upskilling to take on multiple tasks	Leadership and interpersonal skills



SETA	HIGH-LEVEL OCCUPATIONS (MANAGERS AND PROFESSIONALS)			MID-LEVEL OCCUPATIONS (TECHNICIANS, ASSOCIATES, ARTISANS, AND CLERICAL WORKERS)			LOWER-LEVEL OCCUPATIONS (PLANT OPERATORS AND ELEMENTARY WORKERS)		
	1	2	3	1	2	3	1	2	3
SSETA	Technical skills including web development, digital skills, etc.	Leadership skills	Strategic management skills	Complex problem-solving	Digital skills		Communication skills	Basic computer Skills	Literacy and numeracy
BANKSETA	Leadership exposure	Understanding of relevant legislation	Decision-making	Effective communication	Effective presentation skills		Customer service orientation	Time management	Self-management



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