2023

# Identification of Skills Gaps in South Africa

A Popular Research Report

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DPRU
DEVELOPMENT POLICY RESEARCH UNIT

Department of Higher Education and Training
Private Bag X174
Pretoria 0001
www.dhet.gov.za

ISBN: 978-1-77018-970-6

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## Acknowledgements

The authors would like to thank everyone who assisted with and contributed to this technical report. We extend our gratitude to the Department of Higher Education and Training (DHET), the Department of Home Affairs (DHA) and the Development Policy Research Unit (DPRU) for their guidance and input throughout the process.

## Author

Binaben Akoobhai , SSACI

## Citation

Swiss South African Cooperation Initiative (SSACI) (2024). *Identification of Skills Gaps in South Africa: A Popular Research Report*. Produced for the Department of Higher Education and Training as part of the Labour Market Intelligence research programme.

ISBN: 978-1-77018-970-6

# Table of Contents

# List of Figures



# List of Tables

# 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 |
| COVID-19 | Coronavirus disease |
| CSfW | Core skills for work |
| DHET | Department of Higher Education and Training |
| ERRP | Economic Reconstruction and Recovery Plan |
| ESCO | European Skills, Competences, Qualifications and Occupations |
| GDP | Gross domestic product |
| HR | Human resources |
| ICT | Information and communication technology |
| ILO | International Labour Organization |
| JET | Just energy transition |
| O*NET | Occupational Information Network |
| OECD | Organisation for Economic Co-operation and Development |
| QLFS | Quarterly Labour Force Survey |
| 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 |
| UNICEF | United Nations International Children's Emergency Fund |
| 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 |

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 skills 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, 2023). According to the Global Competitiveness Index for 2017–2018, South Africa ranks 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.

In identifying the skill gaps in South Africa, the following research activities were undertaken (see Figure 1):

**FIGURE 1:** Research activities

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 organisations can be found in the technical report.

The organisations reviewed include:

- The African Union (AU)
- The International Labour Organization (ILO)
- The Organisation for Economic Co-operation and Development (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)
- 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 (see Figure 2) and to bridge skills gaps in the country (see the technical report for details). These interventions include:

**FIGURE 2:** South African policies, strategies, and initiatives in skills development


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.

PART 3

# Skills Classification

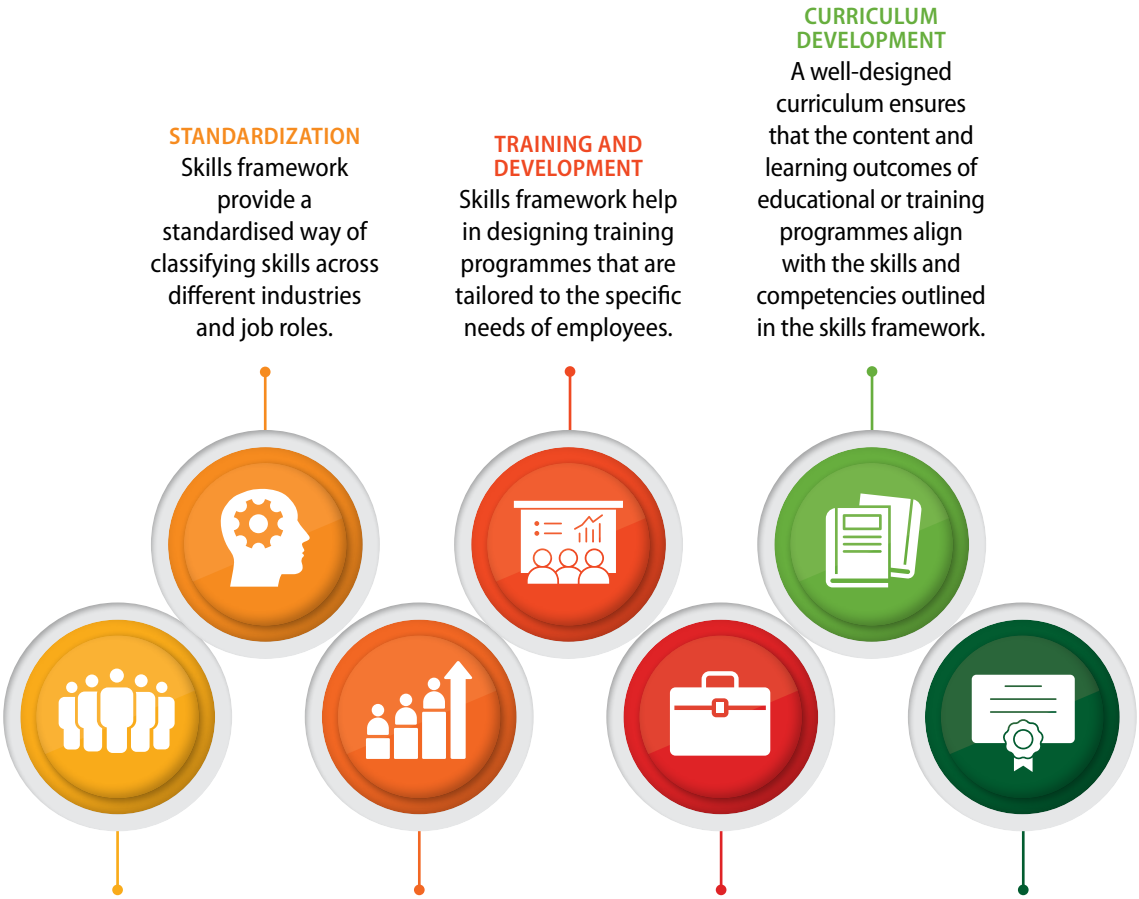
As defined by the international group of stakeholders involved in the OECD Future of Education and Skills 2030 project, skills are the ability and capacity to carry out processes and to be able to use one's knowledge in a responsible way to achieve a goal. Skills are part of a holistic concept of competency,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

## 3.1 Why Skills Frameworks Are Important

Skills frameworks are essential for several reasons (see Figure 3):

**FIGURE 3:** The importance of skills frameworks




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 (see Figure 4):

**FIGURE 4:** Why we need to classify skills

### EFFECTIVE COMMUNICATION

Classification of skills helps in effective communication between employers and employees. It helps to clearly define job requirements and employee qualifications.

### CAREER DEVELOPMENT

Classifying skills helps individuals identify the skills they need to develop to progress in their careers. It also helps in identifying the skills required for different job positions.

### SKILLS PLANNING

Classifying skills helps organisations plan their workforce by identifying the skills they need to achieve their goals. It helps in identifying skill gaps and developing strategies to address them. In South Africa, SETAs identify skills gaps as part of their sector skills plans to guide them on the kinds of education and training programmes that they should fund.

### TRAINING AND DEVELOPMENT

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

### PERFORMANCE EVALUATION

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

## 3.3 Skills Frameworks

In the pursuit of fostering comprehensive skill development and aligning the workforce with the evolving demands of the modern era, this review delves into the examination of several prominent skills frameworks. With a specific focus on tailoring these frameworks to the context of South Africa, this analysis seeks to construct an integrated and adaptive skills framework that can effectively guide educational curricula, technical and vocational training programmes, and workforce development strategies. By amalgamating the strengths of various frameworks while considering the unique socioeconomic landscape of South Africa, the aim is to create a versatile and robust framework that empowers individuals and accelerates the nation's progress towards a prosperous future.

Table 1 summarises the merit and critique of each of the skills frameworks reviewed. The description of each framework is detailed in Annexure A, with a comprehensive review in the technical report.

**TABLE 1:** Skills frameworks

| | |
|---|---|
| THE OCCUPATIONAL INFORMATION NETWORK (O*NET) | The O*NET provides a standardised way of classifying skills across varied industries and job roles in the US, ensuring consistency in the way skills are defined and assessed. The O*NET's substantive scope is impressive. It provides a comprehensive list of skills required for different roles, making it a valuable resource for the public (Tsacoumis and Willison, 2009). However, 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". |
| EUROPEAN SKILLS, COMPETENCES, QUALIFICATIONS AND OCCUPATIONS (ESCO) | 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. |
| THE ILO'S GLOBAL FRAMEWORK ON CORE SKILLS FOR LIFE AND WORK IN THE 21ST CENTURY | 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. |
| CANADA'S 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. |
| AUSTRALIA'S CORE SKILLS FOR WORK DEVELOPMENTAL FRAMEWORK (CSFW) | The CSfW (2013) 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. |

| | |
|---|---|
| UNICEF'S GLOBAL FRAMEWORK ON TRANSFERABLE SKILLS | The UNICEF global framework (2019) 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. |
| SINGAPORE'S SKILLS FRAMEWORK | 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 has been developed—categorised into four distinct yet complementary skill sets, namely foundational, technical, soft, and cognitive skills (see Table 2). Each category plays a crucial role in defining a holistic approach to an individual's development and professional growth.

**TABLE 2:** Categories of skills for the South African skills framework

| | |
|---|---|
| FOUNDATIONAL (OR BASIC) SKILLS | 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 included in 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 SKILLS | Technical skills (or hard skills) are specific competencies required to perform tasks and duties related to a particular job or profession. These skills are typically learned through formal education, on-the-job training, certifications, or specialised courses. They vary greatly depending on the industry and the nature of the job. Digital and AI skills are included in this category as these are essential skills that are required in the modern workplace. |
| SOFT SKILLS | Soft skills (or transverse skills) encompass both interpersonal skills, which involve how individuals interact with others, and intrapersonal skills, which relate to self-awareness and self-management. |
| COGNITIVE SKILLS | Cognitive skills refer to the mental processes and capabilities that enable individuals to think, reason, learn, and solve problems effectively. These skills are critical for acquiring knowledge, understanding complex concepts, and adapting to new situations. |

This framework (see Table 3) 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, employers, 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.

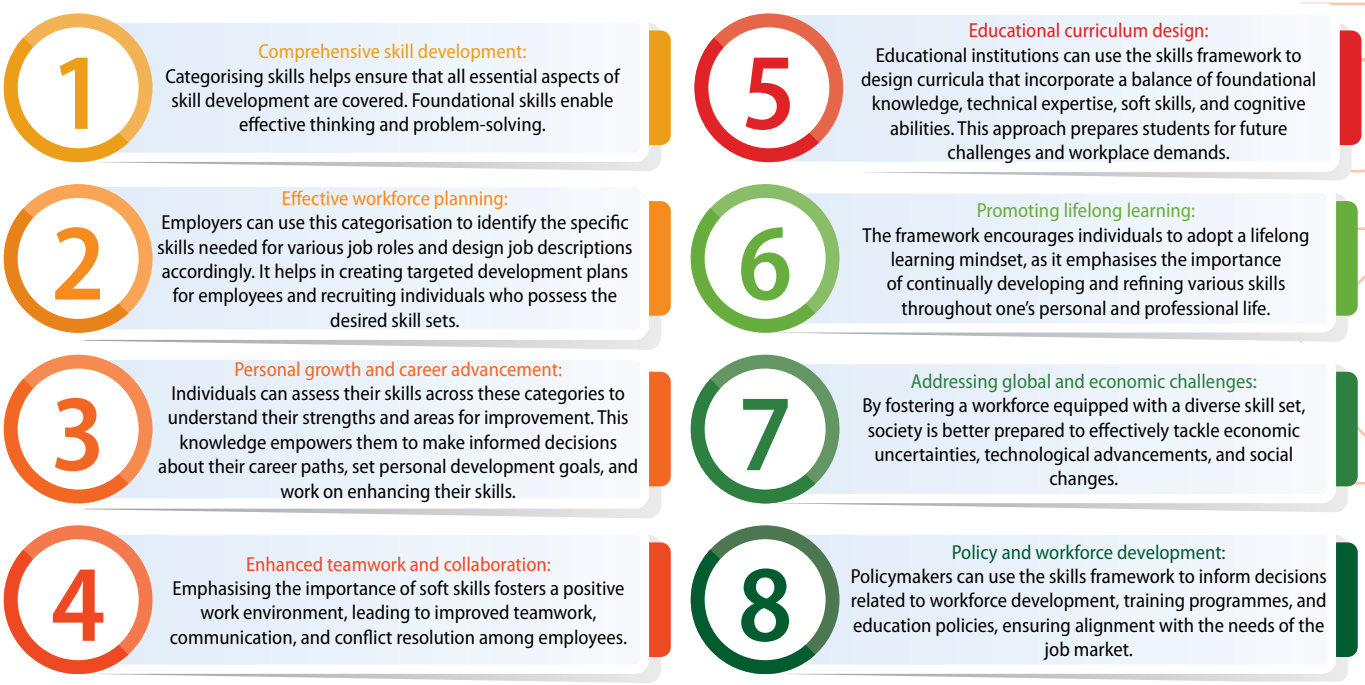
**TABLE 3:** The South African skills framework

| 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) |
| | 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 the technical report.

The overall rationale for categorising skills depending on if they are foundational, technical, soft, or 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 in the following ways (see Figure 5):

**FIGURE 5:** The benefits of skills framework




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.

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 stated 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". Whittaker and Williams (2016:13) define skills gaps 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 (2020) 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" (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).

**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 (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.

**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 (WEF, 2018).

Other terms associated with skills are included in the Glossary.

## 4.2 An Analysis of Skills Gaps in South Africa

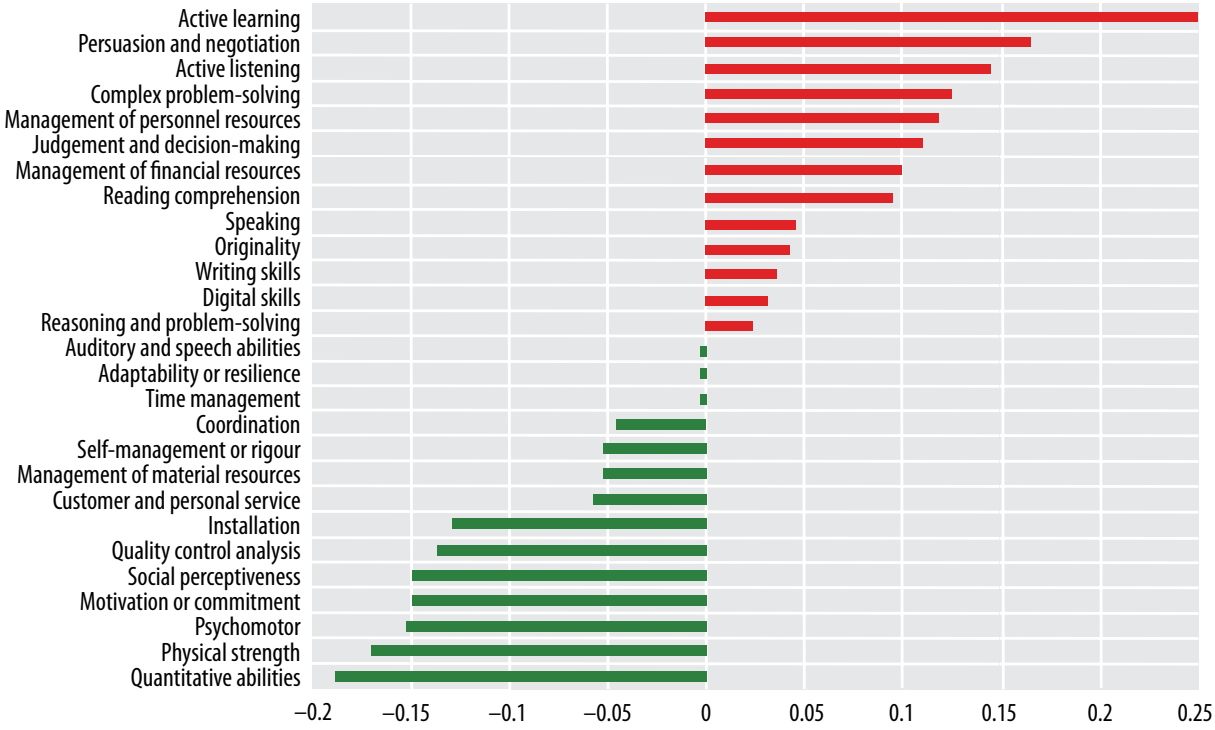
This section of the report analyses skills gaps in South Africa based mainly on secondary data sources. To identify skills gaps, a review of the WEF report and previous OECD reports on South Africa was undertaken along with an analysis of the 2022 SETA employer interviews and the current OECD Skills 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 the O*NET framework). Table 4 indicates the skills gaps within the South African labour force from various data sources and analyses.

**TABLE 4:** Skills gaps in South Africa, from various sources and analyses

| DATA SOURCE | SKILLS GAPS |
|---|---|
| WEF Future of Jobs Report (2018) | Analytical thinking and innovation<br>Creativity, originality, and initiative<br>Active learning and learning strategies<br>Technology design and programming<br>Complex problem-solving<br>Leadership and social influence<br>Reasoning, problem-solving, and ideation<br>Critical thinking and analysis<br>Resilience, stress tolerance, and flexibility<br>Emotional intelligence |
| QLFS data for South Africa for 2008–2019 (DHET, 2022)<br><br>(Refer to the 2022 skills imbalances in the South African labour market survey by the DHET) | Reading comprehension<br>Writing<br>Speaking<br>Active listening<br>Critical thinking<br>Learning strategies<br>Active learning<br>Monitoring<br>Social perceptiveness<br>Judgement and decision-making |
| OECD Skills for Jobs database (time stamped 11 September 2022)<br><br>(see Figure 6) | Active learning<br>Persuasion and negotiation<br>Active listening<br>Complex problem-solving<br>Management of personnel resources<br>Judgement and decision-making<br>Management of financial resources<br>Reading comprehension<br>Speaking<br>Originality<br>Writing<br>Digital skills<br>Reasoning and problem-solving |
| 2022 SETA employer interviews (DHET supplied the data to the researcher)<br><br>(For high, mid, and low-level occupations) | Leadership<br>Communication<br>Project management<br>ICT skills<br>Financial management<br>Technical (job-specific)<br>People management<br>Problem-solving<br>Accountability<br>Customer service<br>Literacy and numeracy |

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

**FIGURE 6:** Skills shortage index by skills and abilities (South Africa, 2022)




Note:
Positive values indicate shortages; negative values indicate surplus.

Based on a composite review of all available secondary information sources on skills imbalances in south Africa, the analysis of the OECD Skills of Jobs database (2022), and 2022 SETA employer interviews, as well as a review of other research studies conducted on skills gaps in South Africa, Table 5 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 5:** 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 |

| FOUNDATIONAL OR BASIC SKILLS | JOB-RELATED SKILLS (TECHNICAL SKILLS) | SOFT SKILLS | | COGNITIVE SKILLS |
|---|---|---|---|---|
| | | INTER-PERSONAL | INTRA-PERSONAL | |
| 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 |
| | Maintenance | | Ethical practices (integrity) | |
| | Troubleshooting | | Self-awareness | |
| | Conflict resolution (negotiation) | | Cultural awareness (functioning in a diverse environment) | |
| | Digital and artificial intelligence (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 future recruitment of 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 and Reed, 2008). 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, 2019). 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.

## 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) reveal that the major change drivers for skills gaps in South Africa are technological advancement followed by Covid-19 and economic performance. However, there are numerous other factors (see Figure 7) that contribute towards skills gaps in South Africa. Each of these factors is discussed in detail in Annexure B.

**FIGURE 7:** Why skills gaps exist or arise


## 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, Bahbahani (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 systemic impacts of skills gaps are presented herewith (see Figure 8), with detailed descriptions of each impact in Annexure C.

**FIGURE 8:** The impact of skills gaps


## 4.6 Challenges in Identifying Skills Gaps

UNICEF (2019) identified 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

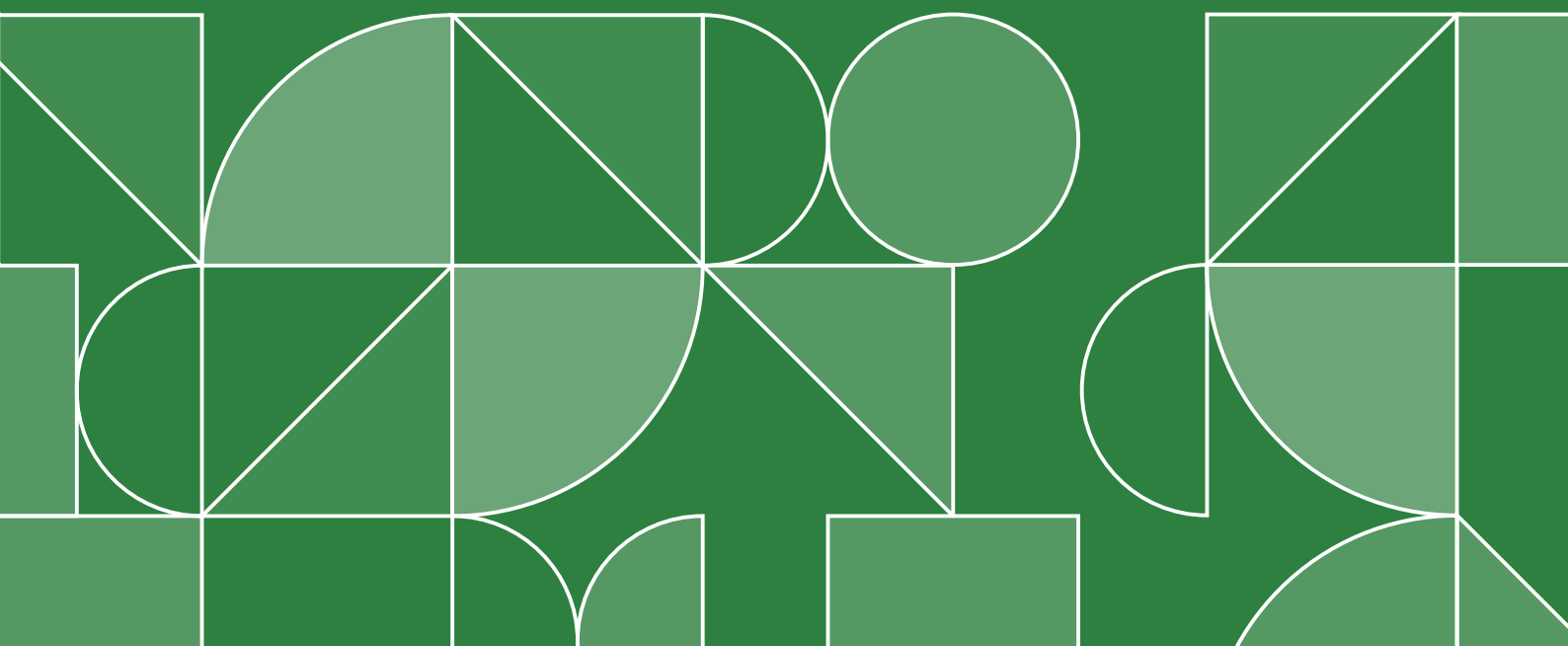
An analysis of skills gaps in South Africa, in a rapidly changing world of work, highlights the lack of foundational, soft, and cognitive skills in the South African labour force. It points to a pressing need for strategic and comprehensive interventions to address this critical issue. The findings indicate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

# Recommendations



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 (2020) and the South African Economic Reconstruction and Recovery Plan strategy:

**Education and training:**

- Focus on improving the quality of primary, secondary, and post-school 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.
- Develop soft skills training programmes for the current workforce.
- Promote a culture of continuous learning and upskilling among the workforce to adapt to evolving job requirements.

**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.

**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.

**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.

**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.

**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.

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.

PART 7

# Glossary

| | |
|---|---|
| **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. |

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| **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

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PART 9

# Annexures

# Annexure A: A review of skills frameworks

## 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, 2009). 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 definition 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 of the technical report.

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. However, 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".

## 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 European Union languages plus Arabic, Icelandic, Norwegian, and Ukrainian). The skills and competences pillar is structured in a hierarchy that contains four sub-classifications:

- 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 of the technical report.

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

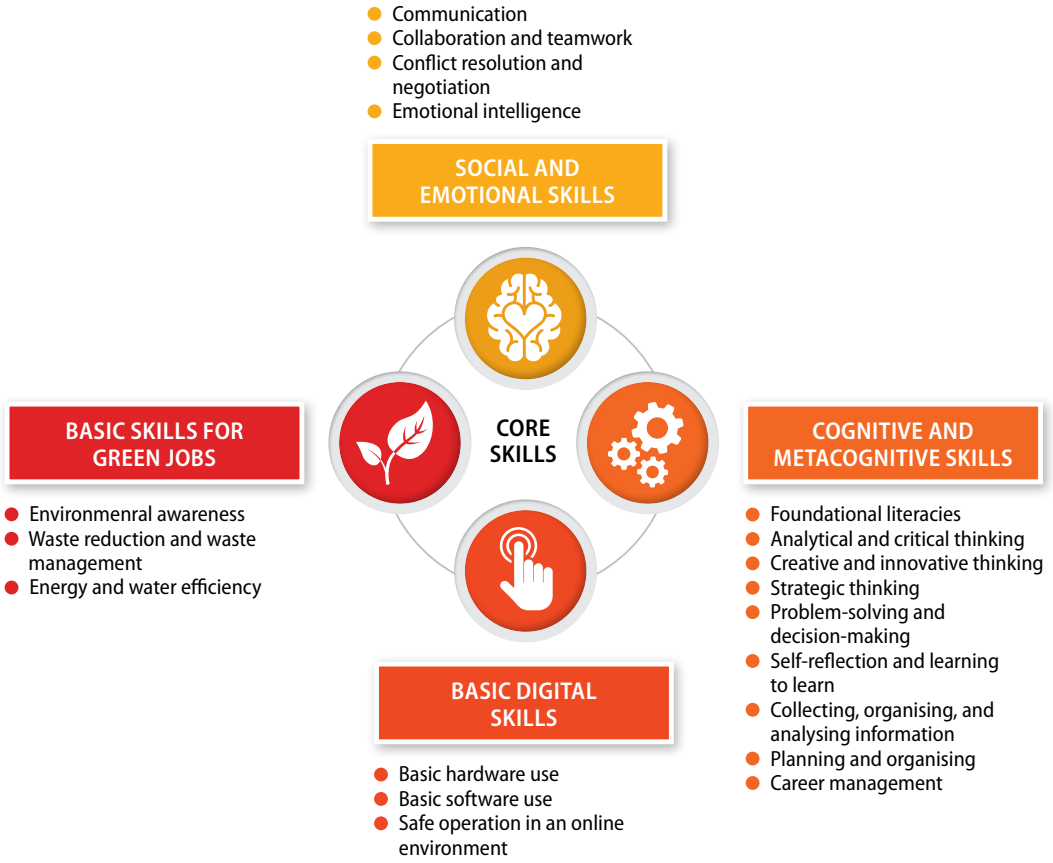
In 2021, the ILO published the 'Global framework on core skills for life and work in the 21st century' to establish coherence in the definition and categorisation of core skills. This new, global framework aims to reflect the ongoing transformations and opportunities emerging in the world of work, including 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 their 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 below.

The ILO global framework for core skills




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

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.

## 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 below). They are inclusive and can be adapted to different contexts.

The Canada 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.

## 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 of the technical report.

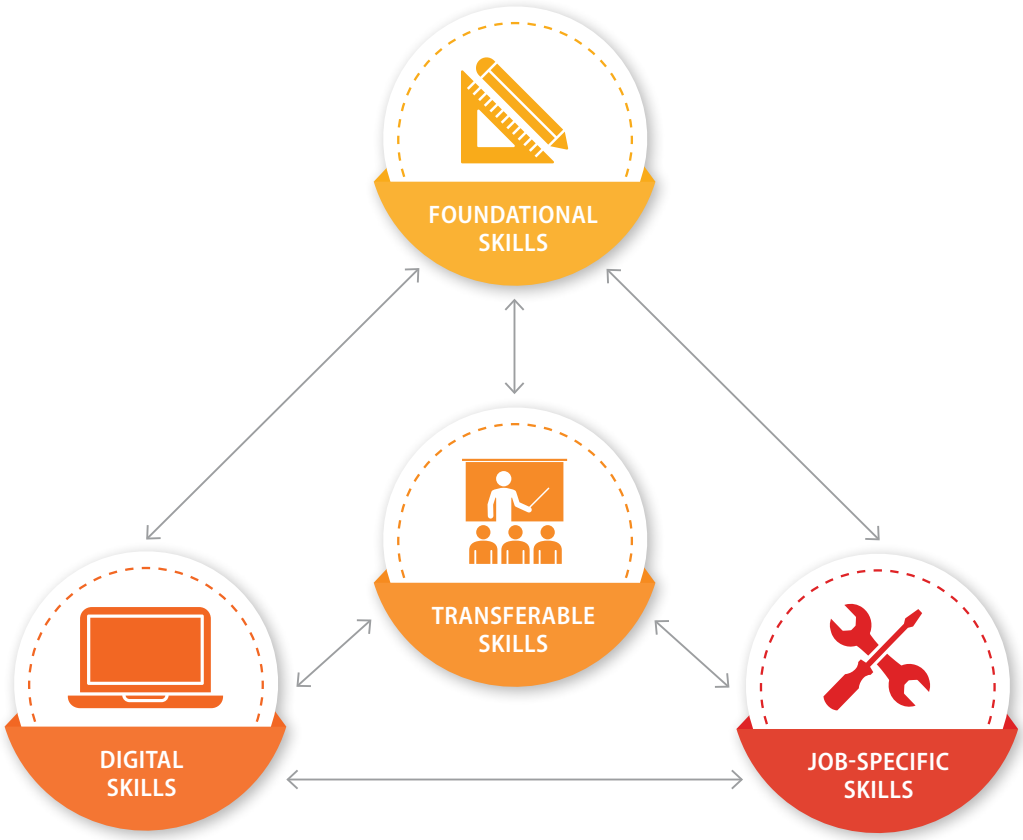
The CSfW primarily focuses on core skills relevant to the workplace. It does not cover skills associated with the changing world of work due to technological advancement. Furthermore, it lacks emphasis on soft skills, which are essential for the world of work and life.

## 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

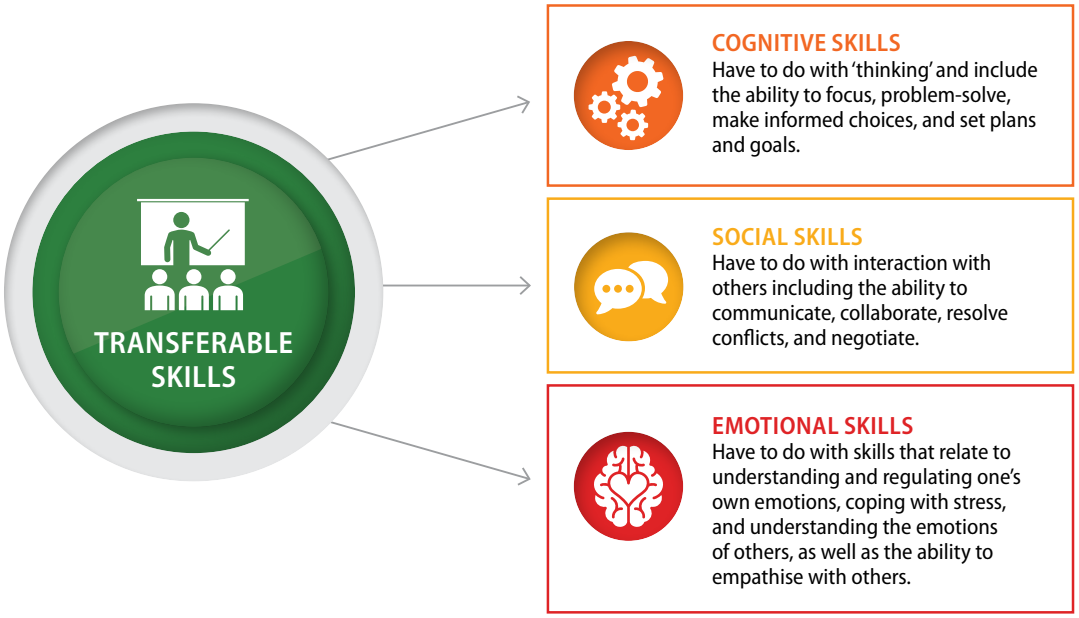
learning pathways—formal, non-formal, and community based. The UNICEF Global Framework on Transferable Skills model is depicted below.

The 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 framework proposes a working definition of transferable skills composed of three main interrelated categories of skills (UNICEF, 2019) (see below).

The 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.

## 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 needed 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 wellbeing.

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

## 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.

# Annexure B: Why skills gaps exist or arise

## 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's 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 (2023), "More Engineering and Science majors are needed". The National Centre for Science and Engineering Statistics reported that only 33% of US college 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 labour industry. One of the areas that the LMI programme is focused on is to better understand what employers want (DHET, 2019). However, the career choices of individuals are 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) discuss 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 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.

# Annexure C: The impact of skills gaps

## 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). McKinsey Global Institute (2019) reported on the impact of skills gaps on wage stagnation, hindering the economic mobility of workers in the US. The European Centre for the Development of Vocational Training (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).


**DPRU CONTACTS**

**Programme Leader:** Professor Haroon Bhorat – haroon.bhorat@uct.ac.za
**Programme Manager:** Ms Janine Jantjies – janine.jantjies@uct.ac.za

**DHET CONTACTS**

**Programme Leader:** Ms M. khuluvhe – khuluvhe.m@dhet.gov.za
**Project Secretariat:** Ms M. ramasodi – ramasodi.m@dhet.gov.za