TOWARDS A SKILLS DEVELOPMENT MODEL FOR A SOUTH AFRICAN MINING ORGANISATION

by

FATIMA ABOO

3672-469-6

submitted in accordance with the requirements for the degree of

MASTER OF COMMERCE

in the subject

Business Management

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: MS L. DIEDERICKS

CO-SUPERVISOR: PROF. M. BUSSIN

DECLARATION

I, Fatima Aboo, Student number 3672-4696, declare that Towards a Skills Development Model for a South African Mining Organisation, is my own work, and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

Fatima Aboo -01 February 2024

Fatima Aboo

Date: 23 September 2023

ACKNOWLEDGEMENTS

Thank you to God for giving me this opportunity and guiding me through this journey. It is by His grace and might that I have come this far in completing my studies. God has been my pillar of strength throughout my entire life.

To my parents, thank you for your guidance, support, inspiration and blessings throughout my studies. May God bless both of you, always. I love you, Mum and Dad.

It has been an honour and privilege to work with my supervisors Liezl Diedericks and Professor Mark Bussin. Your guidance and extensive insight have been instrumental in the completion of my study. Thank you for all the support.

To my language editor, Teresa Kapp, thank you for all your patience, understanding, support and assistance. I appreciate you.

ABSTRACT

Orientation: South African mining companies are facing the loss of organisational knowledge due to retiring talent, the Great Resignation, and skills attrition due to remotely located work sites and harsh and hazardous working conditions. The sector is rapidly moving towards automation, and organisations are competing for engineering, electrical, and administrative skills to manage these systems. Mining organisations thus need a skills development system to address technological advances and global industry trends in order to remain sustainable and competitive.

Motivation for the study: The company under study, a large mining house in South Africa, did not redesign its skills development system after a recent merger, causing employee dissatisfaction. The organisation remained focused on compliance with legislation regarding skills development in the mining industry.

Research purpose: The study aim was to gather insights into current shortcomings and future needs with regard to skills development, to identify the elements required — represented in a theoretical framework — towards developing a comprehensive and fit-for-purpose model of skills development for a mining organisation in South Africa.

Research design, approach, and method: This exploratory study followed a qualitative research approach. Data were gathered through semi-structured interviews with 11 purposively selected managers and two focus groups (with eight and nine participants, respectively) consisting of non-managerial staff across various departments. The data were analysed using thematic analysis.

Main findings: This research revealed that, for a skills development system to be effective, it has to be based in a culture of a learning organisation and transparency regarding opportunities, together with accessibility. Mining organisations should identify skills gaps, both current and future, and design job- and career-specific development initiatives for both ‘hard’ and ‘soft’ skills, offered through a variety of methods, such as on-the-job instruction, online learning, and mentoring and coaching, coupled with formal recognition and accreditation. The system also needs to be supported by continual feedback loops to ensure that initiatives remain relevant over time and are improved where necessary. The vital elements identified from the findings are represented in a theoretical skills development framework upon which mining organisations could draw to develop a tailor-made and context-specific model of skills development.

Practical/managerial implications: Management should ensure that skills development initiatives are informed by skills audits, and the results of these initiatives should be monitored

continuously. Management should also implement feedback loops between employees, managers, and the HR department, enabling two-way communication to ensure that the system is continuously enhanced and curricula are updated in line with technological advances and global developments. A culture of continuous learning and transparency needs to be established in the organisation, with the visible support of executive management.

Contribution/Value-add: The study's literature review and findings highlighted the critical elements of skills development, which informed in the development of the proposed Theoretical Framework of Skills Development for a Mining Company in South Africa.

KEYWORDS:

skills development; mining sector; South Africa; qualitative; soft skills; hard skills; human resource management; talent pipeline; performance; sustainability; theoretical framework

OPSOMMING

Oriëntering: Suid-Afrikaanse mynmaatskappye staar die verlies van organisatoriese kennis in die gesig as gevolg van uittredende talent, die Groot Bedanking en vaardigheidsverlies as gevolg van afgeleë werkterreine en strawwe werksomstandighede. Die sektor beweeg vinnig na outomatisering, en organisasies ding mee om ingenieurs-, elektriese en administratiewe vaardighede om hierdie stelsels te bestuur. Mynbou-organisasies benodig dus 'n vaardigheidsontwikkelingstelsel om tegnologiese vooruitgang en globale industrieneigings aan te spreek ten einde volhoubaar en mededingend te wees.

Motivering vir die studie: Die maatskappy wat bestudeer word, 'n groot mynhuis in Suid-Afrika, het nie sy vaardigheidsontwikkelingstelsel herontwerp na 'n onlangse samesmelting nie, wat werknemerontevredenheid veroorsaak het. Dir organisasie het gefokus gebly op ontwikkeling soos deur die wet vereis vir hierdie nywerheid.

Navorsingsdoel: Die studiedoel was om insigte te verkry oor huidige tekortkominge en toekomstige behoeftes met betrekking tot vaardigheidsontwikkeling, om die elemente van 'n omvattende en geskikte model van vaardigheidsontwikkeling vir die organisasie te identifiseer, saamgevat in ‘n teoretiese raamwerk.

Navorsingsontwerp, benadering en metode: Hierdie verkennende studie het 'n kwalitatiewe navorsingsbenadering gevolg. Data is ingesamel deur middel van semi-gestruktureerde onderhoude met 11 doelbewus geselekteerde bestuurders en twee fokusgroepe (met onderskeidelik agt en nege deelnemers) bestaande uit nie-bestuurspersoneel vanuit verskeie departemente. Die data is deur middel van tematiese analise ontleed.

Hoofbevindinge: Hierdie navorsing het bevind dat, vir 'n vaardigheidsontwikkelingstelsel om doeltreffend te wees, dit gebaseer moet wees in 'n kultuur van 'n lerende organisasie en deursigtigheid rakende geleenthede, tesame met toeganklikheid. Mynbou-organisasies moet vaardigheidsgapings identifiseer, beide huidige en toekomstige, en werk- en loopbaanspesifieke ontwikkelingsinisiatiewe ontwerp vir beide 'harde' en 'sagte' vaardighede, aangebied deur 'n verskeidenheid metodes, soos praktiese leiding gedurende die uitvoering van take, aanlyn leer, en mentorskap en afrigting, tesame met formele erkenning en akkreditasie. Die stelsel moet ook ondersteun word deur voortdurende terugvoerlusse om te verseker dat inisiatiewe oor tyd relevant bly en verbeter word waar nodig. Die noodsaaklike elemente wat uit die bevindinge geïdentifiseer is, word verteenwoordig in 'n teoretiese vaardigheidsontwikkelingsraamwerk waarop mynorganisasies kan steun om ‘n pasgemaakte en kontekssspesifieke model vir vaardigheidsontwikkeling te ontwikkel.

Praktiese/bestuursimplikasies: Bestuur moet verseker dat vaardigheidsontwikkelingsinisiatiewe deur vaardigheidsoudits ingelig word, en die resultate van hierdie inisiatiewe moet deurlopend gemonitor word. Bestuur moet ook terugvoerlusse tussen werknemers, bestuurders en die menslikehulpbrondepartement implementeer, wat tweerigtingkommunikasie moontlik maak om te verseker dat die stelsel voortdurend verbeter word en kurrikulums bygewerk word in ooreenstemming met tegnologiese vooruitgang en globale ontwikkelings. 'n Kultuur van deurlopende leer en deursigtigheid moet in die organisasie gevestig word, met die sigbare ondersteuning van uitvoerende bestuur.

Bydrae/Waardetoevoeging: Die studie se literatuuroorsig en bevindinge het die kritieke elemente van vaardigheidsontwikkeling uitgelig, wat toegepas is in die ontwikkeling van die voorgestelde teoretiese raamwerk vir vaardigheidsontwikkeling vir 'n mynmaatskappy in Suid-Afrika.

SLEUTELWOORDE:

vaardigheidsontwikkeling; mynbousektor; Suid-Afrika; kwalitatief; ‘sagte’ vaardighede; ‘harde’ vaardighede; menslikehulpbronbestuur; retensie van talent; prestasie; volhoubaarheid; teoretiese raamwerk

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

AET	adult education and training
AMCU	Association of Mineworkers and Construction Union
BEE	black economic empowerment
DHET	Department of Higher Education and Training
DMR(&E)	Department of Mineral Resources (and Energy)
EQ	emotional intelligence quotient
EDTP	Education, Training and Development Practices
FET	further education and training
GCIS	Government Communications and Information System
HR(M)	human resources (management)
HSRC	Human Sciences Research Council
MQA	Mining Qualifications Authority
NGO	non-governmental organisation
NQF	National Qualification Framework
NSA	National Skills Authority
NSDS	National Skills Development Strategy
NSF	National Skills Fund
NQF	National Qualifications Framework
NUM	National Union of Mineworkers
PPE	personal protective equipment
PSETA	Public Sector Education and Training Authority
RPL	recognition of prior learning
SAQA	South African Qualifications Authority
SARS	South African Revenue Service

SDLA	Skills Development Levies Act 9 of 1999
SETA	Sector Education and Training Authority
TVET	technical and vocational education and training
USA	United States of America

CHAPTER 1: ORIENTATION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

Mining organisations in South Africa are currently facing major challenges as a result of skills deficiencies in the workforce (Niselow, 2018). An article in *BusinessTech* (2022, August 7) notes that South Africa is also suffering the effects of the global 'Great Resignation' — employees resigning in greater numbers than ever before, and further states:

> *What companies need to be doing is reconsidering their value propositions and their impact on the world around them while focusing more on retention policies. This includes upskilling and retraining existing staff, in addition to offering clearer pathways for career advancement through skills development and learning opportunities* (para. 2).

Mining accounts for 40% of South African exports, which is vital in generating foreign exchange earnings (Mining Qualifications Authority, 2019). The South African mining industry's employment figures have remained relatively stable at between 450 000 and 500 000 people, and contributes around 7% of the country's GDP (Galal, 2023; Mining Qualifications Authority, 2019; Musingwini, 2017). However, mining organisations in South Africa face major challenges as a result of skills deficiencies (Farmer, 2023; Niselow, 2018). A severe shortage in frontline and professional workers such as artisans and engineers negatively affects daily operations and productivity (Xingwana et al., 2019). Platinum group metal mining companies employ the greatest share of the mining workforce, at over 170 000 in 2021 (Galal, 2023). A wide variety of professionals are employed in mining, including geologists, electrical engineers, mechanical engineers, chemical engineers, accountants, legal practitioners, environmental experts, industrial engineers, mine surveyors, and information technology specialists, to name a few (Department of Mineral Resources & Energy, 2022a).

Mining has for decades been categorised as one of the most hazardous occupations (Cho & Lee, 1978; International Labour Organization, 2015a; Meyer et al., 2019), and skills deficiencies further increase the risk of human error, causing system failures, malfunctions in production, financial losses, and injuries and fatalities in the workplace. This leads to demoralisation and the loss of valuable staff, as they seek alternative, more attractive employment opportunities (Mahmood, 2022). Coupled with economic downturns, this creates business challenges that make it imperative that mining organisations make a concerted effort to attract, retain, and develop high-performance employees (Benton, 2020). From the above,

it is clear that this imperative is also pertinent to the mining industry, which is the sector focused on in the current study.

Human capital is the sum of an individual's knowledge, abilities, competences, and characteristics that make it easier to create economic, social, and personal welfare. An organisation’s human capital has direct influence on its performance, competitiveness, and growth. An organization's human capital resides in its people — those who have the capacity to adapt, learn, innovate, and be creative in order to ensure its sustainability (Kucharcíkova et al., 2023). It is therefore imperative that businesses put in place appropriate skills development systems, along with metrics to assess the return on investment, to boost their performance (Kucharcíkova et al., 2023; Mans-kemp & Flanegan, 2022) and ensure a robust talent pipeline with which to plan succession (Karthik, 2023).

Following a recent merger, the company under study, a large mining house in South Africa, did not implement a redesigned and structured skills development system to meet the needs of the newly merged organisation. The current study uncovered the associated challenges through the views and perceptions of management and employees in various departments of the organisation, together with their opinions on what actions and remedies would improve the organisation’s skills development system. The ultimate aim of the study was to make recommendations through a theoretical framework regarding the elements of a comprehensive skills development model for a South African mining organisation.

The next section provides more details on the background against which the study was set.

1.2 BACKGROUND TO THE STUDY

The South African mining industry is rapidly moving towards automation, and mining organisations are constantly competing for engineering, electrical, and administrative skills to manage these complex systems (DMR&E, 2017, 2022b). In addition, to keep up with advances in technology, employees’ skills have to be continuously broadened, enhanced, and updated (Minerals Council South Africa, n.d.a).

Employees are considered a valuable, fundamental resource and the main asset of an organisation (Mahmood, 2022). Today’s employees enjoy high career mobility (Allais, 2022), and it is vital that organisations invest in skills development in order to build and retain their human capital. Skills development has been shown to improve not only employees' knowledge, but also their productivity, morale, and well-being (Allais, 2022).

The mining sector is no exception with regard to skills shortages, and mining companies have, for some time, often been forced to rely on outsourcing when specialised skills are required (Heather, 2020; Zhuwakinyu, 2013). There are numerous reasons for skills deficiencies in mining in South Africa, such as limited funds due to fluctuating commodity prices, poor-quality or insufficient skills development initiatives, the lure of lucrative job opportunities abroad, and an ageing workforce of which many highly skilled employees are nearing retirement (Heather, 2020). In addition, mining companies are grappling with the loss of knowledge due to staff attrition (Makhubela & Ngoepe, 2018). Specialised skills are critical in the maintenance and safe operation of complex equipment and in managing underground processes, and outsourcing these functions is notoriously costly (Makhubela & Ngoepe, 2018).

Despite the cost of outsourcing, some mining organisations are reluctant to invest in developing their employees, considering it expensive and wasteful (Benton, 2020). Nagy et al. (2023), however, argue that investment in up-skilling boosts productivity, enhances safety, stimulates work interest, and empowers employees, all of which enhance staff retention. Such investment also moderates the need to use external consulting firms, ultimately enhancing the organisation's profitability. Nagy et al. (2023) further emphasise that the workforce has to be skilled in order to adopt automation and innovation. This necessitates fostering a culture of ongoing learning and developing, with the aim of creating a competitive advantage.

Skills development in South Africa's mining sector is highly regulated. Mining organisations in South Africa are required to submit their skills development plans and annual training reports to the Mining Qualifications Authority (National Government of South Africa, n.d.a). The latest Broad-Based Socio-Economic Empowerment Charter for the Mining and Minerals Industry (Mining Charter III) (South African Government, 2018) requires that 5% of a mining organisation's payroll be invested in critical-skills development. The funds are utilised mainly to upgrade employee expertise in the areas of mathematics, engineering, and automation (Lane et al., 2019). In addition, all companies in South Africa are required to pay 1% of all salaries, including overtime, leave pay, bonusses, commission, and lump sum payments, to the government under the Skills Development Levy Act 9 of 1999 (Allais, 2022; South African Revenue Service, n.d.).

The next section elaborates on the background to the study by detailing the setting.

1.3 STUDY SETTING

South Africa is a key player in the global mining industry. It has some of the largest reserves of precious metals, with R202.61 billion value added to the country's GDP by the mining sector

in 2022 (Statista, 2023). Cassim et al. (2019), in a McKinsey & Company report, note that mining is a critical stimulus for the economic development of other sectors in any country's economy, including energy, transport, and infrastructure. Mining organisations therefore need to urgently embark on a critical-skills development course to develop their workforces, which is fundamental to enhancing profitability through performance, achieving organisational success, and contributing to the country's fiscal growth (Parker, 2023).

The current study was based in a large South African mining organisation. Founded in 2013, the company has a global footprint in mining precious metals such as gold and platinum, with operations in, amongst others, Canada and the United States of America (USA). The company recently acquired local platinum-, gold-, and minerals mines, of which the latest acquisition was a platinum mining company founded in the early 1900s, which has numerous mining shafts and production sites throughout South Africa.

The company under study faced numerous complications following the merger, including a lack of proficiency amongst members of the merged workforce. Some of the key issues that emanated from the merger include delayed operational processes, administrative problems, a misalignment between contemporary technology and employee skills, and confusion regarding reporting structures. The situation is exacerbated by a legislation-driven skills development programme that does comprehensively address these issues, which may impact the organisation's human capital. Inadequate skills development may lead to staff attrition, resulting in a leaky talent pipeline, which makes succession planning difficult, especially with regard to critical and scarce skills (Sundari & Kusmiati, 2022). This could result in a negative impact on both internal stakeholders (employees) and those external to the organisation, i.e., shareholders, affected communities, service providers, and government (Mahajan, 2023). These considerations provided the rationale for the current study, which is detailed below, followed by the statement of the research problem.

1.4 RATIONALE FOR THE STUDY

South African mining companies are facing dire shortages of critical skills (Niselow, 2018; Parker, 2023), which have dire consequences for operational safety and organisational performance. A study by the World Economic Forum found that 73% of mining companies are experiencing a lack of skills, which hampers the adoption of new technology (Parker, 2023). It is therefore clear that mining organisations need to make a concerted effort to enhance the skills of their workforce (Reddy et al., 2018). Efforts towards skills development need to address the organisation's current skills shortages while taking into account technological developments and global trends, in order to ensure that the organisation is future-fit and able

to gain a competitive advantage (PricewaterhouseCoopers, 2023). This requires informed decisions regarding current and future needs, which then need to be addressed in a strategic model of skills development (Dagnew & Elantheraiyan, 2023; Kabeyi, 2019).

The lack of such initiatives and an informed and fit-for-purpose skills development programme in the organisation under study provided the rationale for the current research. Mining is a highly regulated environment, and the generic skills development models in literature and legislation are not necessarily appropriate and sufficiently comprehensive to address the challenges that mining companies face with regard to skills development. There is a need for a current and customised skills development model for the mining company under study, which is why the present study was aimed at uncovering the elements that need to be considered, encapsulated in a theoretical framework. The framework may also prove useful to other mining companies in developing custom skills development models.

1.5 RESEARCH PROBLEM

The mining organisation in question faces operational problems in every area of its diverse operations, including in the areas of administration, safety, and production. While skills development efforts have continued following the merger, as skills development in the mining sector is highly regulated through South African legislation and regulations, increases in errors indicate that the skills development system may not yield upskilling of employees in line with new processes, procedures, technology, and systems. This is a general concern in the industry (Reddy et al., 2018). The company's skills development system was not updated after the merger, and skills development continued based on legislative requirements, as before.

The research problem is that it is unclear what skills development in the mining company under study should encompass other than that mandated by legislation. There is a paucity of research on mining, especially with regard to holistic skills development for mining companies, and there seems to be confusion in the company under study regarding which model or system to adopt. An effective model would yield the desired results in the field, which would have a direct and positive impact on the company's financial performance, justifying the required expenditure. Such a model is also imperative in ensuring that the company retains critical staff and builds human capital and a sturdy talent pipeline, thereby enhancing its sustainability and competitiveness.

The next section details the research objectives.

1.6 RESEARCH OBJECTIVES

This section addresses the primary and secondary research objectives.

1.6.1 Primary research objective

The primary research objective was:

> To explore the beliefs and lived experiences of management and employees regarding skills development, in order to make suggestions, encapsulated in a theoretical skills development framework, towards a customised skills development model for a mining organisation in South Africa.

1.6.2 Secondary research objectives

The study had two sets of secondary objectives, namely literature objectives and empirical objectives. These are detailed below, followed by the research questions.

1.6.2.1 Literature objectives (LOs)

LO1: To conceptualise skills development and related concepts;

LO2: To gain an understanding of skills development in the mining industry in South Africa;

LO3: To determine the advantages and challenges associated with formal skills development in South Africa and specifically in the South African mining industry; and

LO4: To identify elements of an effective skills development system.

1.6.2.2 Empirical objectives (EOs)

EO1: To explore and understand the perceptions of employees and management with regard to skills development in the organisation under study;

EO2: To understand the perceived adequacy of the skills development system in the organisation;

EO3: To explore and understand the perceived challenges and advantages of skills development in the organisation;

EO4: To understand the perceptions of management and employees regarding the requirements for an effective, customised skills development system for the organisation; and

EO5: To draw conclusions and make recommendations regarding a skills development model for the organisation, together with a proposed theoretical framework based on the findings and extant literature.

1.7 RESEARCH QUESTIONS

The following were the study's research questions.

RQ1: How are skills development and related concepts conceptualised?

RQ2: How is skills development conceptualised within the mining industry in South Africa?

RQ3: What are the advantages and challenges associated with formal skills development in the South African mining industry?

RQ4: What are the elements of an effective skills development model for a South African mining company?

RQ5: What are the perceptions and lived experiences of employees and management with regard to skills development in the organisation?

RQ6: How adequate is the organisation's skills development system perceived to be?

RQ7: What are the perceived challenges and advantages of skills development for the organisation?

RQ8: What are the perceptions of management and employees regarding requirements for an effective, customised skills development system for the organisation?

RQ9: What conclusions can be drawn and recommendations made regarding a customised skills development model for the organisation?

The following section provides an introduction to the disciplinary context within which the study was situated, followed by the significance of the study.

1.8 DISCIPLINARY CONTEXT OF THE STUDY

This section provides an introductory overview of the field of study and related concepts. The literature on these concepts are discussed in detail in Chapter 2.

The study is situated in the field of human resource management (HRM), with a particular focus on skills development. The following overarching constructs are germane to the study.

1.8.1 Skills

Skills are proficiencies that individuals need in order to accomplish a task (Asaram, 2022). In the context of the present study, skills included both the 'hard' skills (e.g., technical) and 'soft' skills (e.g., interpersonal) required in the South African mining industry. Organisations rely on skilled employees to remain efficient, agile, and competitive. This requires that organisations invest in developing the required skills in the workforce, i.e. its human capital, to maximise performance (Kucharcíkova et al., 2023).

1.8.2 Skills development

With the rapid advances in technology and globalisation, organisations need to continuously develop the skills of their workforce (Asaram, 2022; Benton, 2020; Farmer, 2023). Effective skills development initiatives not only strengthen the performance of employees on all levels; these initiatives make them feel valued by the organisation (Mahmood, 2022). In order to create a skills development plan, organisations need to take into consideration a number of aspects, including their employees' current skills levels and future needs (Asaram, 2022; Farmer, 2023). The Public Service Sector Education and Training Authority (PSETA) (2017) advises that effective skills development be an ongoing effort. It should be an iterative process, whereby employees' current skills and the skills needed going forward are re-examined on a continual basis, in order to determine development requirements and appropriate remedial actions, as well as the form these actions should take in order to ensure successful development of a high-performance workforce (Department of Higher Education and Training [DHET], 2019c; Walters & Rodriguez, 2017).

1.8.3 HR practitioners' role in skills development

The current study was aimed at identifying the aspects that HR practitioners need to take into account when developing a comprehensive skills development initiative, based on the perspectives of managers and employees of a mining organisation. These aspects include, amongst others: identifying current and foreseeable future gaps in knowledge, timeous and relevant skills development, available resources, talent management and succession planning, and the attraction and retention of talent (Allais, 2022; Habiyaremye et al., 2022).

Mahmood (2022) notes that providing employees on all organisational levels opportunities for growth is one of the core functions of the HR function. Effective development strengthens individual and management performance in attaining the organisational goals (Habiyaremye et al., 2022; Walters & Rodriguez, 2017). This ultimately enhances the organisation's

performance and share value, which indicates the importance of the role played by HR practitioners. HR practitioners therefore have to embark on impactful initiatives that are aligned to the organisation's strategies and aims, in order to enhance the organisation's sustainability (Mahmood, 2022).

1.8.4 Skills development models

The literature on skills development models is vast and diverse, and different models have different aims, or are targeted at a specific group or level of employees. Some models are applied only in the organisation, while others incorporate multiple stakeholders. In addition, some models focus on hard skills, such as technology, while others focus on soft skills, such as interpersonal skills, and many include both aspects (Engmann et al., 2017). The current study looked at key elements of skills development models proposed in literature, together with the views of the managers and employees in the mining company under study, in order to propose a comprehensive theoretical framework of skills development that could inform a model for the company.

1.9 SIGNIFICANCE OF THE STUDY

This study included an extensive review of literature in the domain of skills development (discussed in Chapter 2) and skills development specific to the mining industry (discussed in Chapter 3). This was followed by an empirical examination of lived experiences — both negative and positive — of employees and management regarding the organisation's skills development system. Based on the findings, a theoretical framework of skills development model was formulated, together with recommendations to address shortcomings in the organisation's current skills development system. As the study focused specifically on the mining sector, the findings and the framework, while not generalisable, may be useful to other South African mining organisations.

1.10 SCOPE AND DELINEATION OF THE STUDY

The study was conducted in a single, large mining organisation in South Africa. The study's population was the company's managerial and non-managerial employees (approximately 25 000), from which a sample of managerial and non-managerial staff in various departments was drawn. The participants provided a comprehensive view of current and future skills development needs and challenges, together with feedback on what development initiatives had been found to be effective and valuable.

The following sections provide an overview of the study's methodology, which is discussed in detail in Chapter 4. The next section positions the study through an overview of the research philosophy.

1.11 PHILOSOPHICAL PARADIGM

A research philosophy or paradigm is a researcher's view regarding the way in which a phenomenon should be studied, what data should be gathered, and how it should be analysed and interpreted. Researchers' chosen philosophy is determined by their worldviews, beliefs, and perceptions (Mauthner, 2020). A research paradigm is made up of ontology and epistemology (Žukauskas et al., 2018). The current study's ontology and epistemology are discussed below.

1.11.1 Ontology

Ontology is concerned with the researcher's belief regarding the nature of knowledge, i.e., what is true and real — what exists in the world, including the nature and structure of that reality (Giri et al., 2018). There are two main ontological assumptions: objectivism and constructivism (Du Plooy-Cilliers et al., 2019). Objectivism focuses on observable reality, while constructivism focuses on constructing and interpreting representations of individuals' knowledge (Du Plooy-Cilliers et al., 2019; Kivunja & Kuyini, 2017).

The current researcher followed a constructivist ontology, which holds that reality is subjective and socially constructed (Giri et al., 2018). The aim was not to objectively study the skills development system of the organisation, but to gain insight into the subjective views and lived experiences of the participants from their perspective.

1.11.2 Epistemology

Epistemology is concerned with the nature of knowledge, what is considered acceptable knowledge, and how knowledge can be gained — ways of knowing and learning about social reality. It also considers how this knowledge could be shared (Žukauskas et al., 2018). There are two main epistemologies: positivist and interpretivist (Du Plooy-Cilliers et al., 2019).

Positivist researchers distance themselves from their views and value, instead relying on empirical evidence and statistical analyses (McGinley et al., 2021). The present researcher followed an interpretivist epistemology, in which non-scientific qualitative methods are used to analyse human behaviour (Žukauskas et al., 2018), as the aim was to uncover the personal perceptions of participants with regard to the organisation's skills development system. Their

experiences and views could not have been gained and understood through objective observation (Žukauskas et al., 2018). The interpretivist epistemology focuses on symbols and social structures, as well as how individuals interpret them (Žukauskas et al., 2018).

A researcher's epistemological and ontological stance then determines the appropriate methodology to be applied in conducting the study (Du Plooy-Cilliers et al., 2019). A research methodology comprises the choice of approach and design, as well as the methods, which include instruments and actions to select, gather, classify, and analyse information (Creswell & Creswell, 2022; McCombes, 2019). The next section provides an overview of the methodology followed in the current study.

1.12 RESEARCH APPROACH AND DESIGN

The following sections provide a brief overview of the research approach and design followed in conducting the study.

1.12.1 Research approach

A study's research approach could be qualitative or quantitative, with the combination of the two approaches referred to as 'mixed-methods' research, whereby both qualitative and quantitative data are gathered and analysed in a single study (Creswell & Creswell, 2022). Quantitative research is a formal and objective process in which numerical data are gathered and statistically analysed to determine relationships between variables (Du Plooy-Cilliers et al., 2019). Quantitative research usually employs large samples, as the aim is to generalise the results (Asenahabi, 2019; Creswell & Creswell, 2022).

Qualitative research is aimed at gaining an in-depth understanding of participants' lived experiences through rich and detailed data, gathered in the form of words and/or pictures, e.g., narratives, which data are then analysed using qualitative methods, such as content- or thematic analysis (Denzin & Lincoln, 2018). Qualitative research typically uses small samples (Denzin & Lincoln, 2018), and the findings are not generalisable. However, the findings may be applicable to another, similar context.

The current study followed a qualitative research approach, which is associated with interpretivism. This is a highly suitable approach to analysing human behaviour (Creswell & Creswell, 2022), and was considered aligned to the aim of the current study: to gain detailed information on participants' opinions and judgments regarding the topic under study — the organisation's skills development system, in order to formulate a theoretical framework for skills development that could inform a custom model for the mining organisation.

1.12.2 Research design

A study's research design is the overall plan according to which the study will be conducted (Majid, 2018). There are various types of research design, the choice of which depends on the aim of the study (Asenahabi, 2019). The current study followed an exploratory design, as the aim was to gain a greater understanding of a problem and its consequences (Makri & Neely, 2021). The current study explored the organisation's skills development efforts in order to formulate a theoretical framework that could be used as a basis for designing customised skills development models for mining organisations in South Africa.

The next section provides an overview of the method followed in conducting the study, including details of the study population, sampling method, and data collection and analysis.

1.13 RESEARCH METHOD

The following subsections provide an overview of the present study's method, including the population, sampling, data collection, and data analysis.

1.13.1 Population and sampling

A study's population consists of all the people or items under study (Majid, 2018). It is generally impossible to study the entire population, which necessitates sampling (Majid, 2018). The population for the present study was all 25 000 employees (managerial and non-managerial) of the mining organisation under study.

A sample is defined as a representative subset of the population, chosen based on inclusion criteria to ensure the researcher is able to collect accurate, relevant, and high-quality data (Bryman et al., 2019; Majid, 2018; Vasileiou et al., 2018). Inclusion criteria are features and facts that participants must possess in order to qualify for participation, to enhance the trustworthiness of the study (Majid, 2018; Patino & Ferreira, 2018). The inclusion criteria were as follows. All participants (managers and non-managerial employees) had to have been employed full-time with the organisation for a minimum of two years, to ensure participants had experience of the organisation's skills development system. Therefore, all apprentices were excluded from the study. Managers' organisational level had to be at least a Paterson D grading, to ensure a high-level management perspective of the approach to skills development in the organisation.

In selecting the participants, the present researcher used purposive sampling, also known as selective or subjective sampling, which is a form of non-random sampling. This means that

not every member of the population had an equal chance of being selected for participation in the study (Bryman et al., 2019). In using purposive sampling, the researcher uses own judgement to select participants who, based on their knowledge and experience of the topic under study, are best suited to providing relevant high-quality data with which to answer the research questions (Bryman et al., 2019; Trochim, 2020).

1.13.2 Data collection

Interviews and focus-group sessions were conducted to gather the data. The interviews were conducted with managers, and non-managerial employees participated in focus-group sessions. These methods are widely used in qualitative research, and their formats range from structured to unstructured (Creswell & Creswell, 2022). In the present study, the interviews and focus-group sessions were semi-structured, conducted according to an interview guide containing open-ended questions (see Appendix 4). The present researcher continued to conduct interviews until data saturation had been achieved, i.e., no new information emerged from additional interviews (Fusch et al., 2018).

1.13.3 Data analysis

This section introduces the approach to and the method of analysis applied in the current study.

1.13.3.1 Approach to analysis

There are two approaches to analysis, namely inductive and deductive (Woiceshyn & Daellenbach, 2018). Deductive analysis moves from theory to data in explaining causal relationships (Williams & Moser, 2019). The aim is to formulate and then test hypotheses (Williams & Moser, 2019). Inductive analysis is aimed at gaining insights into the subjective meanings people attached to events (Woiceshyn & Daellenbach, 2018) by answering ‘how’ and ‘why’ questions, and is widely associated with qualitative research on organisational processes (Bryman et al., 2019; Woiceshyn & Daellenbach, 2018). Therefore, the inductive approach was considered most suitable for the present study.

1.13.3.2 Method of analysis

Thematic analysis was used to analyse the data. Thematic analysis is suitable for the analysis of complex issues in a study that is based on rich information and suggestions gathered through personal interviews (Bryman et al., 2019), which is why it was considered an

appropriate method of analysis for the present study. The following six steps (Soratto et al., 2020) were applied: immersion in the data, initial coding, categorisation of the codes into sub-themes and themes, review and refinement of themes, defining the themes through labelling, and writing up the findings. The present researcher employed Atlas.ti during the coding of the data, which is a software package that assists researchers to analyse large amounts of transcribed data (Soratto et al., 2020).

1.14 TRUSTWORTHINESS OF THE STUDY

Trustworthiness is represented by the following in qualitative research: confirmability, credibility, dependability, transferability and authenticity (Du Plooy-Cilliers et al., 2019). These criteria are defined below.

Confirmability is the extent to which the data collected matches and supports the findings of the researcher, i.e., that the findings do not reflect the perspective or biases of the researcher (Du Plooy-Cilliers et al., 2019). To ensure confirmability, the researcher has to show that the findings are based on the data gathered from the participants, and that they were not affected by researcher bias. The present researcher remained aware of personal biases in order to remain objective throughout the research. In addition, participants were asked to review the capturing of their views, a process referred to as ‘member-checking’, to confirm accuracy (see Du Plooy-Cilliers et al., 2019).

Credibility relates to confidence in the truthfulness of study findings (Du Plooy-Cilliers et al., 2019). The present researcher ensured credibility through lengthy interviews and focus-group discussions, member-checking by participants, and also took notes throughout the interactions with the participants (Denzin & Lincoln, 2018; Du Plooy-Cilliers et al., 2019). The reporting of the findings is also supported by verbatim quotes from the transcripts of the interviews and focus-group sessions.

Dependability refers to the consistency of the findings and the research methodology being reported, such that the reader is able to follow and evaluate it (Denzin & Lincoln, 2018). To ensure dependability, the researcher must provide rich detail on the methodology used to conduct the study. In the present study, the findings are supported with direct quotations from participants’ interview transcripts, and the methodology followed is explicated in detail in in Chapter 4.

Transferability is the degree to which the findings of a study are applicable in other contexts. To ensure transferability, the researcher has to provide detailed information on the context, setting, and population of the study, so that the reader is able to establish whether the findings

may be applicable to another, similar setting or context (Creswell & Creswell, 2022).

Authenticity refers to a study that reflects diverse perspectives of the participants (Denzin & Lincoln, 2018). The present researcher remained objective in analysing and reporting the themes that emerged from the data. The researcher also employed probing questions to gain insights into the organisational culture and any ulterior motives the participants may have had in answering the interview questions (see Dunbar et al., 2023).

1.15 THESIS STATEMENT

The South African mining industry is plagued by skills shortages, and a comprehensive model for skills development may be a useful tool for HR practitioners in developing effective initiatives to address needs with regard to hard and soft skills — both current and future, to ensure high-performance, future-fit, and sustainable mining organisations.

The next section provides the layout of the dissertation.

1.16 CHAPTER LAYOUT

Chapter 1: Introduction to the Study

Chapter 2: Skills Development

Chapter 3: Skills Development in Mining in South Africa

Chapter 4: Research Methodology

Chapter 5: Findings of the Study

Chapter 6: Discussion, Recommendations, and Limitations

1.17 CHAPTER SUMMARY

This chapter provided an introduction to the study, which was conducted in a South African mining organisation. Retirement, the Great Resignation, and skills attrition are causing concerning skills shortages in organisations worldwide. In the mining industry, the situation is exacerbated by employees leaving the industry due to harsh working conditions in remote locations and long working hours. In order to retain employees, mining organisations need to upskill the current workforce in alignment with technological advances and global trends, and properly manage talent. This indicates the need for an effective skills development model.

The aim of this qualitative study in a large mining organisation in South Africa was to gather insights into current shortcomings and future needs with regard to skills development, with the aim of formulating a comprehensive theoretical framework for skills development for the company, which could inform the development of customised skills development models for mining organisations in South Africa. The proposed framework may aid mining organisations in South Africa in enhancing their human capital, with a positive subsequent impact on both internal and external stakeholders. This chapter elucidated the research setting, followed by the rationale for the research, the research problem, and the research objectives. This was followed by an overview of the methodology employed to conduct the study, including sampling, data collection and analysis, as well as the strategies employed to enhance the trustworthiness of the study.

The next chapter provides an in-depth discussion of skills, skills development, South Africa's national approach to skills development, and the elements of selected models of skills development. Skills development specific to the mining industry in South Africa is discussed in the subsequent chapter (Chapter 3).

CHAPTER 2: SKILLS DEVELOPMENT

2.1 INTRODUCTION

Leaders of any business with aspirations to succeed and thrive under economic pressure have to realise the importance of investing in ongoing and relevant skills development to improve employees' proficiency and output, thereby acquiring maximum return on the investment in human capital (Kwon & Jang, 2021). Specific skills are continuously required to perform specific organisational tasks (Kwon & Jang, 2021), and excelling in a changing and competitive environment requires an organisational culture of lifelong learning (Hafit et al., 2022). As noted by Sakamoto (2019, para. 1):

> *The recent increase in attention to skills development is unprecedented … — whether it be human resource development, skilling of the workforce, or improving individual capabilities… The heightened interest in Industry 4.0 and various discussions centering on the future of work have added to this momentum.*

The 21st century has been marked by a growing gap between the skills organisations need and their employees' current abilities (Habiyaremye et al., 2022). Organisations competing in global markets must enhance their employees' skills in order to become and remain significant players and maintain a competitive edge (Mining Prospectus, 2019; Sham, 2023). It is important that these skills are relevant — organisations need to 'right-skill' their employees, as skills gaps impact not only individuals, but also communities, regions, and the country (Habiyaremye et al., 2022).

South Africa's historic apartheid regime and the COVID-19 pandemic have resulted in a large section of the population being either unskilled and/or unemployed (Maluleka, 2020). Furthermore, Afrika Tikkun Services, a skills development and placement organisation, in an article published online in *IT News Africa* on 4 January 2023 (para. 5), warned:

> [T]*he main challenges South Africa's youth face include a gap in educational quality and a failure of traditional institutions to provide the skills demanded by the economy. These challenges are a risk to the economy and should be tackled head-on. Currently, An aging workforce and a growing population of unskilled or poorly skilled youth means that even the immediate future of the economy in South Africa is uncertain.*

While it is a worldwide concern, this lack of skills was noted as particularly salient in mining organisations in South Africa by Moraka and Jansen Van Rensburg in 2015, a situation that has not improved in recent years (Farmer, 2023). The mining industry is critical to the country's economic growth, and it is vital that mining organisations focus on the development of scarce and critical skills to ensure high performance and profitability of mining organisations in order to contribute to the country's fiscal growth (Cassim et al., 2019).

The next sections discuss extant literature on the concepts of skills, training, skills development, talent management, and the role of HR practitioners in an organisational context. The chapter concludes with a review of some skills development models and frameworks, which were selected for discussion due to the fact that they provide practical steps for application. This is followed by a review of the following skills development models and frameworks: Camp, Blanchard, and Huszczo's (1986) Training Model, Graham and Mihal's (1986) Model for Determining Training Needs, Nadler's (1982) Critical Events Model for Training and Development Planning, Bird and Cassell's (2013) COMB Model, the Work Skills Development Framework of Bandaranaike and Willison (2010), and The American Society for Training and Development's (2006) Action Plan to Take Charge of the Skills Gap.

2.2 DEFINITION OF SKILLS

A skill is defined as a proficiency that an individual possesses to accomplish certain tasks efficiently (Blair et al., 2023). The Merriam-Webster dictionary (n.d., para. 1) defines a skill as:

> *1a: the ability to use one's knowledge effectively and readily in execution or performance*
>
> *b: dexterity or coordination especially in the execution of learned physical tasks*
>
> *2: a learned power of doing something competently: a developed aptitude or ability.*

The Human Sciences Research Council (HSRC) (2017, p. 4), in a diagnostic report commissioned by parliament, notes:

> *…a skill or set of skills can be what an individual holds or an attribute of a collective group of people, skills can be formally recognised in terms of formal qualifications, but there is also a high degree of informal skills (which may become formally recognised by means of the recognition of prior learning (RPL); skills are the result of formal, nonformal and informal learning; the definition of what are core or foundational skills, intermediate and high level*

> *skills, critical skills, scarce skills/skills and occupations in high demand, and so forth, is eminently contextual.*

A Green Paper by the South African Department of Labour titled *Skills Development Strategy for Economic and Employment Growth in South Africa* (1998, p. 1), states that skills include:

> *Practical competence — the ability to perform a set of tasks*
>
> *Foundational competence — the ability to understand what we or others are doing and why*
>
> *Reflexive competence — the ability to integrate and connect our performance with an understanding of the performance of others, so that we can learn from our actions and are able to adapt to changes and unforeseen circumstances.*

Skills include cognitive skills such as concentration, memory, critical thinking, creative thinking, and problem-solving (Blair et al., 2023).

In conceptualising skills, Bird and Cassell (2013) and Walters and Rodriguez (2017) explain the difference between 'training' and 'development' as 'training versus building capability'. Training focuses on content and curriculum, practice, and evaluation. It is therefore a narrow view (Giday & Perumal, 2022). Building capability takes a wider view of the organisation's business needs. In planning capability-building, other skills that may be needed to implement newly learned skills are also considered. In addition, there is a strong focus on a collective responsibility and knowledge-sharing (Bird & Cassell, 2013; Boyes, 2018). Walters and Rodriguez (2017) and Giday and Perumal (2022) define training as a function of the HR team, and includes identifying and filling the gap between current and expected performance.

In the current study, the term *skills* thus encompass both technical skills, also referred to as 'hard' skills, which are quantifiable, and 'soft' skills, which relate more to attributes and qualities, usually learned over time and through experience, that employees require to effectively fulfil their work roles (Lamri & Lubart, 2023). Sarker et al. (2021) confirm that both are needed for employees to contribute to the performance of the organisation.

The following sections discuss the two main types of skills in more detail.

2.3 TYPES OF SKILLS

Both soft and hard skills are necessary for employees to thrive in an organisation and for the organisation to be successful, innovative, and sustainable (Lamri & Lubart, 2023).

2.3.1 Hard skills

Hard skills include technical knowledge and abilities, which are gained through education and work experience (Lamri & Lubart, 2023; Binsaeed et al., 2017). Hard skills are knowledge-based and quantifiable, and are often recognised through a higher-education qualification or certification (Binsaeed et al., 2017; Lamri & Lubart, 2023). Hard skills are thus specific (usually technical) skills in which an individual has undergone intensive development to gain competence and knowledge, complemented by experience, to be able to perform a particular task using specific equipment and/or software (Binsaeed et al., 2017; Lamri & Lubart, 2023). Due to the pace of innovation and ongoing changes in technology, certain skills may need to be redefined or may become obsolete, indicating the need for ongoing learning (Mining Prospectus, 2019; Oviawe, 2018). Such ongoing learning needs to be informed by evaluation and review against industry standards and global developments (Binsaeed et al., 2017).

Historically, hard skills were regarded as the only skills necessary to secure employment (Bholane, 2022; Blair et al., 2023; Lamri & Lubart, 2023). However, employers have started emphasising the development of soft skills such as communication, emotional skills, critical thinking, interpersonal skills, teamwork, problem-solving, self-motivation, responsibility, flexibility, and time management as crucial to improving productivity and performance (Farrugia & Wingard, 2021).

2.3.2 Soft skills

Soft skills are not related to specific technical skills, but nevertheless have a significant influence on individuals' behaviour and performance, as well as the performance of their colleagues (Lamri & Lubart, 2023). There is no internationally accepted definition of soft skills, with researchers proposing that these skills encompass interpersonal skills, employability skills, non-cognitive skills, non-technical skills, people skills, and transferable skills (Hirudayaraj et al., 2021). Williams (2022) includes emotional skills such as a growth mindset, grit, likeability, and civility in soft skills. Soft skills are social and personal skills that guide employees in displaying their hard skills and technical knowledge effectively in the workplace (Farrugia & Wingard, 2021), and are often personality-related (Sarker et al., 2021). Other examples of soft skills are: communication, concentration, memory, critical thinking, persistence, communication, conflict resolution, creativity, collaboration, and civility, some of which are particularly vital to individual learning (Williams, 2022). Leadership skills, time management, and stress management are also vital soft skills in dealing with the realities of the world of work (Hirudayaraj et al., 2021).

Hirudayaraj et al. (2021) reported that studies have found that modern-day technical jobs increasingly require greater interpersonal and social skills, and that employees with soft skills are harder to find that employees with hard skills. While it is unlikely that individuals' personality will change, it is possible to mould and develop the behaviours they display towards others (Mining.com, 2018).

In organisations, skills development is mostly focused on a particular practical subject. However, in today's world of work, employees and organisations can no longer rely solely on specialised knowledge to achieve career- and organisational success (Sarker et al., 2021). In this regard, Hirudayaraj et al. (2021, para. 3) note:

> *Recognizing the needs of the rapidly evolving and globally dispersed work contexts, IBM (International Business Machines Corporation) recommended that technical education in the 21st century should focus on preparing 'T' shaped individuals who are not only steeped in field specific technical knowledge but also are able to demonstrate knowledge across disciplines and the ability to work with others.*

Employment markets worldwide are volatile. While education can improve the immediate employment prospects of individuals, soft skills, which are normally acquired through experience and by emulating role models, are gaining increasing importance (Sarker et al., 2021). Somfula and Zhanda (2023) emphasise that most employees are hired for their technical skills, but that many leave their jobs due to a lack of soft skills. Author and executive coach Ray Williams (2022, paras 2–3) notes:

> *For many business leaders, it is not so much about what we can achieve, but rather how we want to act in the world. These shifts in perspective elevate the importance of what used to be considered soft skills, such as kindness, empathy, resilience, ethical behavior, and other positive character traits. In fact, as we move forward, these skills should no longer be viewed as 'soft'; increasingly, they will be determinants of success.*

Soft skills enable employees to connect emotionally and mentally with others, thereby promoting open communication and enhancing networking and teamwork, which ultimately enhance productivity (Farrugia & Wingard, 2021). As with hard skills, developing soft skills also requires a commitment to lifelong learning (Farmer, 2023). The support of the organisation is vital in this regard, as the organisation needs to ensure that the appropriate skills are acquired, that is, in alignment with the objectives of the organisation (Kwon & Jang, 2021; Sarker et al., 2021). Therefore, in selecting high performers, both their hard and soft

skills should be considered, as both are essential to achieving organisational effectiveness and, ultimately, success and sustainability (Sarker et al., 2021).

The following sections provide a brief overview of some of the soft skills that have received research attention in the organisational context.

2.3.2.1 Communication skills

Being able to communicate effectively is considered one of the most important skills in the global market, and is required at all levels in any organisation (Al-Alawneh et al., 2019). Effective communication is a skill that can be learned (Al-Alawneh et al., 2019). It involves exchanging information verbally, non-verbally (through body language), and in writing (Sarker et al., 2021). Skilled verbal and written communication is the ability to construct a clear message for the intended audience and ensuring that the message is received and understood (Al-Alawneh et al., 2019).

Gaps in communication negatively influence goal achievement, evident in, for example, poor customer service (Campbell et al., 2020; Habiyaremye et al., 2022), while effective communication enhances knowledge transfer and teamwork (Sarker et al., 2021). Communications skills also enhance work relationships (Sarker et al., 2021). Various studies over an extended period have found a direct correlation and between employee relations and organisational revenue (Habiyaremye et al., 2022)

Communication skills include the ability to listen, which is crucial in enhancing morale, promoting efficiency, and mitigating stress (Campbell et al., 2020). Effective communicators are also able to convey empathy, which enhances trust and respect in work relationships (Al-Alawneh et al., 2019). Effective communication also enhances perceived transparency. It is critical in ensuring clarity regarding work roles and long-term organisational goals (Campbell et al., 2020). In addition, clear communication, particularly with regard to processes, reduces employee error rates, thereby preventing damage and harm. Consistent communication also enhances organisational knowledge-sharing, and various studies over time have found that it mitigates employee attrition by fostering loyalty to the organisation (e.g., Al-Alawneh et al., 2019).

2.3.2.2 Emotional intelligence

Emotional intelligence, also known as ‘emotional quotient’ (EQ), is the ability to manage one’s own emotions and deal with those of others in overcoming obstacles and managing stress and anger (Torres & Viejo, 2023). This requires a high level of self-awareness (Amrutha &

Myneni, 2023; Mining.com, 2018). Torres and Viejo (2023) posit that EQ is a pre-requisite for effective leadership, as it helps the leader to influence employees, and promotes healthy relationships with colleagues and managers. Al-Alawneh et al. (2019) point out that empathy is a form of emotional intelligence, and that it aids understanding of employees' frame of mind and emotions. It also instils self-control over reactions, impressions, and the signals individuals send to those in their immediate environment (Al-Alawneh et al., 2019).

2.3.2.3 Critical thinking

Critical thinking is the ability to conceptualise, analyse, and evaluate information with the aim of solving complex problems and producing fact-based decisions, and is considered a rare skill (Li, 2022). Critical thinking entails observation, analysis, interpretation, evaluation, explanation, and drawing inferences regarding a particular subject (Prat-Sala & Van Duuren, 2022). Barriers to critical thinking include confirmation bias, self-bias, lack of product- and subject knowledge, and unfounded generalisations (Li, 2022). Critical thinking should be purposeful and underpinned by restraint, sound reasoning, humbleness, and persistence in seeking answers that are supported by verified facts (Li, 2022).

Prat-Sala and Van Duuren (2022) confirm that critical thinking skills contribute to daily performance and effectiveness, thereby facilitating growth and high performance in all areas of an organisation. A lack of critical thinking can prove detrimental to employees' productivity and, ultimately, the success of the organisation (Hirudayaraj et al., 2021). Prat-Sala and Van Duuren (2022) point out that 'uncritical thinkers' neither contemplate the basis of their notions or beliefs, nor do they consider the consequences of their decisions. Critical thinking is an employability skill that allows employees to focus on reviewing problems from several perspectives and sources, with the objective of making an informed, well-reasoned, and logical decision (Prat-Sala & Van Duuren, 2022).

2.3.2.4 Reflection

Reflective thinking, theorised by American philosopher John Dewey, is a process of creating connections between experiences, creating meaning, and learning. It is closely tied to critical thinking, and is a disciplined and rigorous form of thinking that requires the ability to self-assess and the desire to achieve increased personal and moral growth (Sahoo et al., 2020). Sahoo et al. (2020) posit that reflective thinkers constantly evaluate the following factors: the intentions of their thinking; the problem they are trying to solve; their perspective on their thinking; the validity of the notions or theories that drive their thinking; whether the information is factual and evidence-based; the manner in which the information is construed; and the

implications of actions. Sahoo et al. (2020) note that reflective thinking is also amongst rare skills.

2.3.2.5 Conflict management

Conflict within an organisation occurs when the goals of various individuals are not sufficiently aligned in order to achieve a particular result (Durai & Thomas, 2022). Caputo et al. (2018) opine that conflict is a common issue in the workplace, as people compete for job security and promotion. Constructive conflict can result in positive changes, while negative or destructive conflict causes division amongst employees, leading to lowered morale and decreased productivity (Caputo et al., 2018; Durai & Thomas, 2022). Conflict management is a method of solving a dispute by focusing on areas that will benefit both parties concerned (Caputo et al., 2018).) Durai and Thomas (2022) assert that conflict-management skills also assist individuals to remain calm in conflict situations.

2.3.2.6 Teamwork

Teamwork is a combined effort by a group of diverse people with specialised skills to complete a task efficiently (Khwam et al., 2017; Sanyal & Hisam, 2018). This skill is two-fold, as it includes managing teams effectively (Mining.com, 2018). Teamwork enhances performance through co-operation, and can aid in developing human capital through knowledge-sharing. Both have a positive effect on organisational performance and growth (Khwam et al., 2017; Sanyal & Hisam, 2018). Sanyal and Hisam (2018) suggest that management and employees who make a concerted effort to work in teams will improve their ability to generate creative ideas and show greater accountability.

2.3.2.7 Problem-solving

Problem-solving is the process of finding a solution to a complex issue (Sahoo et al., 2020). Problem-solving skills involve the ability to identify and define the problem, gather all the necessary information, considering alternative solutions, evaluate and select the best option, and implement the selected solution (Sahoo et al., 2020). Problem-solving is deemed a vital activity in organisations, as it teaches employees to focus, actively learn, make decisions, and better manage fast-paced tasks (Rahman, 2019). This cognitive process is closely related to contemplation and reflective thinking, as well as critical thinking (Rahman, 2019).

The next section reviews the concepts of organisational skills development and training, as well as what they entail.

2.4 SKILLS DEVELOPMENT VS TRAINING

Bird and Cassell (2013) define training as the procurement of specialised capabilities. The HSRC (2017), and Achanya and Dickson (2022) state that effective training increases the probability of the organisation achieving its overall business objectives. Training focuses on expertise required to perform a specific job task, whereas skills development is focused on improving knowledge and aiding career growth (Achanya & Dickson, 2022).

The terms *training* and *skills development* are sometimes used interchangeably, but they are distinct (Ryklief & Tengeh, 2022). Examples of ambiguity in the use of the terms are the HSRC (2017), in its parliamentary report, defining skills development as "all forms of post-school education and training and which recognises a range of dimensions of a skill, its use and purpose" (para. 1). Habiyaremye et al. (2022) define skills development as a process that focuses on identifying gaps in knowledge and taking measures to close these gaps through, amongst others, occupation-based learning. Hafit et al. (2022) state that the aim of honing skills is to achieve increased output at lower costs. The latter two definitions seem to imply training in hard skills.

Literature does, however, provide a distinction between the terms *training* and *skills development*. Training on a specific task is an aspect of skills development, while skills development, overall, supports the greater organisational strategy, including career development and creating a talent pipeline to enable succession planning (Blair et al., 2023). Thus, a skills development system is the overall curriculum aimed at increasing the capabilities of the workforce (PSETA, 2017).

These curricula in the mining environment typically focus on the mitigation of employment-related risks by ensuring that the desired modus operandi are followed, and upholding procedures, legal compliance, and workplace health and safety measures, with scant attention to the development of soft skills (Meyer et al., 2019).

PSETA (2017) asserts that skills development systems and individual plans need to be tailored to employees' current competencies, to ensure that the development is not haphazard, thereby creating new gaps in knowledge. Skills development should also enable individuals to further their knowledge in order to climb the corporate ladder (International Labour Organization, 2022) by improving their output, career mobility, and social mobility, as well as improve the quality of their work life (Kwon & Jang, 2021; Patacsil et al., 2017).

The HRSC (2017) and Oswald et al. (2023) note that skills development methods could include formal activities such as formal practical training (with certification) and various

informal activities, such as coaching, leadership, mentoring, and on-the-job instruction. Skills-building should also incorporate the development of soft skills, such as meta-cognition, management skills, cognitive thinking, and problem-solving, in an iterative process (Ruder et al., 2018). Lamri and Lubart (2023) state that skills development should include developing employees in specific disciplines — hard skills, as well as soft skills, such as teamwork, creativity, time management, and problem-solving. Bholane (2022) notes that soft skills include interpersonal and intrapersonal skills within a specific work context. Skills development should also be focused on preparing individuals for potential future tasks (Asaram, 2022; Farmer, 2023). Skills development thus also enables employees to be more confident in keeping pace with evolving technology (Blair et al., 2023; Walters & Rodriguez, 2017).

In the present study, skills development includes identifying skills gaps in employees' soft and hard skills and then taking appropriate actions to equip employees with both.

The next section reviews national legislation pertaining to skills development, with some details on the mining industry, to provide context to the situation of the sector in national legislation. The legislation and bodies applicable specifically to the mining industry are discussed in detail in Chapter 3.

2.5 NATIONAL SKILLS DEVELOPMENT LEGISLATION AND BODIES

The following sub-sections discuss national legislation and the various national bodies and strategies in South Africa's national skills development system.

2.5.1 National Skills Development Act 97 of 1998

South Africa's Skills Development Act (RSA, 1998, para. 2) has as overall aim:

- *to provide an institutional framework to devise and implement national, sector and workplace strategies to develop and improve the skills of the South African work force;*
- *to integrate those strategies within the National Qualifications Framework contemplated in the South African Qualifications Authority Act, 1995;*
- *to provide for learnerships that lead to recognised occupational qualifications;*
- *to provide for the financing of skills development by means of a levy-grant scheme and a National Skills Fund;*
- *to provide for and regulate employment services; and*

- *to provide for matters connected therewith.*

The Act (RSA, 1998) is aimed at enhancing the knowledge of employees, with the ultimate aim of enhancing productivity, employment, and service delivery, in order to contribute to the country's economic growth and transformation. The Skills Development Act (RSA, 1998) was amended through, amongst others, the Amended Skills Development Acts 31 of 2003, 37 of 2008, and 26 of 2011, as well as the Skills Development Levies Act 9 of 1999.

2.5.2 Skills Development Levies Act 9 of 1999

Under the Skills Development Levies Act (RSA, 1999), with a few exceptions, organisations that pay total salaries in excess of R500 000 over 12 months are required to pay 1% of their total payroll to the South African Revenue Service (SARS). The funds are then paid to Sector Education and Training Authorities (SETAs), who manage and disburse the funds to develop employees' skills (SARS, n.d.; National Government of South Africa, n.d.b). The allocation of funds has to conform to legislation; for example, the Mine Health and Safety Act 29 of 1996 and the Mineral and Petroleum Resources Development Act 28 of 2002 are pertinent to the mining and minerals sector. The Mining Qualifications Authority is the mining industry's SETA (Mining Qualifications Authority, n.d.b). SETAs are responsible for identifying skills needs, formulating skills development plans, and supporting research in the sector (Mining Qualifications Authority, n.d.b; National Government of South Africa, n.d.c; Services Seta, n.d.).

The Department of Labour states that the aim of these levies is to fund development initiatives such as facilitated skills development courses and workshops; employee grants and learnerships for those who have gained knowledge and skills through experience; and course accreditation via assessments and moderation (Rajaram, 2017).

Organisations can claim up to 20% of their levy back by submitting an Annual Training Report and Workplace Skills Plan to the relevant SETA (DHET, 2020; National Government of South Africa, n.d.b; Services Seta, n.d.). However, in order to do this, the relevant SETA must, per Chapter 3, Section 10(1) of the Skills Development Act (RSA, 1998), approve the organisation's skills development plan, which has to be aligned to the National Skills Development Plan 2030 and SETAs' sector skills plans, as noted in the Mining Qualifications Authority's Funding Policy, effective 1 April 2022 to 31 March 2023 (Mining Qualifications Authority, 2021a, 2021b). The overall aim of the levy is thus to develop critical and scarce skills in South Africa (Allais, 2022).

2.5.3 The National Skills Authority

The National Skills Authority (NSA) is a legislative body that was established in 1999 per the Skills Development Act 27 of 1998 (DHET, n.d.a). Its function is to advise the Minister on the National Skills Development policy, strategy, and process of implementation (DHET, n.d.a). The NSA further advises on the allocation of sponsorships from the National Skills Fund, and also advises the Minister on any guidelines that need to be implemented (DHET, n.d.a). The NSA also co-ordinates with the SETA on the National Skills Development policy and strategy, including on progress made (DHET, n.d.a). One of the main objectives of the NSA is to support tertiary education and skills development in order to improve economic growth, in line with national priorities. Per its website (DHET, n.d.a), other objectives include:

- Supporting the functioning of the NSA through the SDA and the White Paper for Post School Education and Training mandate;
- Assisting the Department of Higher Education and Training (DHET) in the development of policies for the National Skills Development Plan;
- Incorporating education and skills development on a national level by reviewing the policies of skills development and National Skills Fund frameworks;
- Expanding the knowledge of relevant stakeholders;
- Improving business enterprise development and beneficiation through innovative research and development opportunities; and
- Promoting skills development and acknowledgement of the NSA through various communication and marketing strategies (DHET, n.d.a).

Of the most important objectives of the NSA are monitoring and evaluating the work of the SETAs and the implementation of the National Skills Development Strategy III (DHET, n.d.b) and the National Skills Development Plan 2030 — MerSETA (DHET, 2019a), to ensure efficiency in skills development in South Africa.

2.5.4 The National Skills Fund

The National Skills Fund (NSF) is a public entity, established by the South African government in 1999, and reports to the Minister of Higher Education, Science and Innovation (DHET, 2019a). The NSF funds development initiatives in alignment with the National Skills Development Plan 2030 (DHET, 2019a; DHET, 2019d; National Government of South Africa, n.d.a).

The NSF follows a two-pronged approach, whereby funds are allocated for (1) bursaries, scholarships, and work-based learnerships, and (2) post-school education and skills development, focused on capacity-building, investment in skills infrastructure, research, and innovation (DHET, 2019d). The NSF supports various universities, technical and vocational training and education (TVET) colleges, and community colleges by investing in their skills infrastructure and research (DHET, 2019a). Non-governmental organisations and community-based education programmes are also considered vital areas of skills development (Nandan & Kushwaha, 2017), particularly in sub-Saharan Africa (Adu-Baffoe & Bonney, 2021).

The DHET (2019a) explains that the NSF receives 20% of its funds based on the provisions of the Skills Development Levies Act (RSA, 1999). Other sources of income include interest earned on investments with the Public Investment Corporation, donations, and funding allocated by the South African parliament (DHET, 2019d). These funds are distributed by the NSA, whose key function is to enhance the availability of skills development to both employed and unemployed individuals, with the aim of improving employment opportunities and facilitating economic growth (DHET, n.d.a).

2.5.5 The National Skills Development Strategy III

The Minister of Higher Education and Training announced the National Skills Development Strategy III (NSDS III) in 2011 (DHET, n.d.b), with the aim to improve the national skills development system, to support economic growth by focusing on creating more employment opportunities and social development (DHET, n.d.b). The following are some of the NSDS III goals set to be achieved by 2030 (DHET, 2019a):

- To Improve the quality of TVET colleges with the aim of attracting approximately a 1.25 million enrolments;
- Local communities and training colleges to participate in providing learning opportunities to 1 million students;
- To develop 30 000 artisans per year by 2030;
- PhD qualifications to be increased from 34% to 70%, with the aim of producing 1 million doctorates per year;
- University enrolments to be increased from 950 000 in 2010 to approximately 1.62 million by 2030;
- Students to be encouraged to study maths and science with the aim of qualifying for related degrees; the aim is to reach 450 000; and

- To encourage research in science, technology, and innovation through government investments.

2.5.6 SETAs

SETAs are vocational skills development organisations in South Africa that facilitate development of skills with the aim of expanding employment and economic growth (National Government of South Africa, n.d.b; Services Seta, n.d.). Their aim is to improve skills and on-the-job experience to address challenges related to discrimination, gender inequality, unemployment, and poverty (Education, Training and Development Practices [ETDP] SETA, 2021). SETAs aim to motivate learners, employees, and employers to participate in skills development and use their workplace environments as areas to facilitate learning and real workplace experience, in order to enhance learners' and employees' career opportunities. SETAs also provide information on institutions that are approved and certified educational entities (National Government of South Africa, n.d.b).

South Africa has multiple SETAs that focus on various industries (Rosenburg & Ward, 2020). Each SETA is concerned with creating sector-specific skills development programmes, learnerships, internships, and apprenticeships to facilitate knowledge expansion. These efforts are funded through grants to employers and training institutions (ETDP SETA, 2021). SETAs also monitor the quality of occupation-based skills development in various work environments, with the aim of researching workplace skills and building specific work-related skills through a variety of courses (ETDP SETA, 2021).

The functions of SETAs further include reporting on the Strategic Plans and Annual Performance Plans to the DHET (ETDP SETA, 2021). These reports include information on finances, and are signed off on a quarterly basis by the accounting authorities (ETDP SETA, 2021). The reports are also submitted to the National Treasury and various members of Parliament (ETDP SETA, 2021).

2.5.7 The South African Qualifications Authority

The South African Qualifications Authority (SAQA), a statutory body regulated by the National Qualifications Framework Act 67 of 2008, was established on 4 October 1995. It is a statutory body that consists of 29 members appointed by the Minister of Education, in consultation with the Minister of Labour, and oversees the development and implementation of SAQA's National Qualifications Framework (NQF) (SAQA, n.d.).

The key objective of SAQA is to facilitate South African citizens' admission to and advancement in education and professional career development (SAQA, n.d.). SAQA also determines accreditation of qualifications, including qualifications attained abroad (SAQA, n.d.).

The NQF is a strategy to instil lifelong learning through integrated education and skills development (SAQA, n.d.). It is a framework of policies and regulations that provides recognition for skills development and educational achievements.

The NQF lists 10 levels of education, as shown in Table 2.1.

Table 2.1

Description of Qualifications per NQF Level

Level number	**Description of qualification**
NQF 1	Grade 9 Level 2
NQF 2	Grade 10 and National (Vocational) Certificate Level 2
NQF 3	Grade 11 and National (Vocational) Certificate Level 3
NQF 4	Grade 12 (National Senior Certificate and National Vocational Certificate)
NQF 5	Higher certificates and advanced national (vocational) certificates
NQF 6	National diplomas and advanced certificates
NQF 7	Bachelor's degrees, advanced diplomas, postgraduate certificates, and B-Tech degrees
NQF 8	Honours degrees, postgraduate diplomas, and professional qualifications
NQF 9	Master's degrees
NQF 10	Doctoral degrees

Source: SAQA (n.d.)

The NQF is aimed at facilitating career growth through recognition of prior learning. According to SAQA (n.d.), learning is not restricted to a particular subject or course; the NQF allows for multiple pathways to be explored in achieving a particular level of competence (SAQA, n.d.).

SAQA (n.d.), in the NQF, notes that educational institutions must commit to the concept of lifelong learning, regardless of the subject or content of learning. They should also provide educational benefits to various communities, societies, and the country as a whole. Policies and rules that will result in the award of a qualification should be clearly stated. To provide learners with accreditation and competence for future learning, the purpose and learning outcomes of a specific course should be indicated using valid criteria and assessment

methods. It is also important for the NQF to recognise qualified and competent learners that they may become eligible for employment (SAQA, n.d.).

This concludes the discussion on national legislation and skills development authorities in South Africa. The next section discusses extant literature on the importance of skills development in organisations.

2.6 IMPORTANCE OF SKILLS DEVELOPMENT IN ORGANISATIONS

Skills development not only facilitates personal and career growth (Kwon & Jang, 2021), but organisations reap the benefits of employees who are highly skilled and up to date on technology and innovations in their field (Hirudayaraj et al., 2021). A skills development system is a task-related curriculum aimed increasing the capabilities of employees, to enhance their performance and ensure that they thrive in their areas of work (Mahmood, 2022). Deficiencies in skills can result in fatalities, system failures, malfunctions in production, bankruptcy, and the loss of valuable staff (Meyer et al., 2019). Skills development is crucial because innovation and technology are constantly improving and changing the world of work, and employees require constant upskilling to remain competent (Hirudayaraj et al., 2021).

Continual employee development is also crucial to organisational growth and employee retention (Mahmood, 2022). Development enables employees to take on more challenging roles and responsibilities and progress in their careers in the organisation, thereby lowering the risk of their leaving the organisation in search of better opportunities (Hirudayaraj et al., 2021).

Comprehensive skills development includes identifying gaps in knowledge that have a negative effect on the organisation's performance and taking appropriate measures to close these gaps (Habiyaremye et al., 2022). Research has consistently shown that this process ultimately results in enhanced performance at lower cost (Asaram, 2022). Skills development enhances productivity in existing tasks, and is also an investment in productivity in potential future tasks (Asaram, 2022; Farmer, 2023). Skills development in an organisation facilitates the learning of specific skills and then practising such skills under supervision, in the relevant environment (Ahuja, 2020; Blair et al., 2023). Research over decades has consistently shown that organisations that invest in creating a high-quality workforce create a virtuous cycle: skills enhance job satisfaction, thereby enhancing productivity, ultimately improving organisational performance (see, e.g., Sanyal & Hisam, 2018; Walters & Rodriguez, 2017).

Kwon and Jang (2021) posit that a need for development is indicated by six situations: (1) a deficiency in a business outcome; (2) sub-standard employee performance; (3) new

knowledge is required to complete a task; (4) an operational change in the business; (5) an opportunity to enhance the organisation's performance and sustainability; and (6) compliance with new legislation or regulations.

Skills development systems need to be fashioned according to employees' level of competence (Asaram, 2022; Farmer, 2023). This is consistent with the view of Palladan and Adamu (2018), who note that accurately determining employees' skills requirements enables alignment with an appropriate curriculum. For example, in South Africa, learnerships are curricula implemented by organisations to provide employees with relevant NQF qualifications (MQA, 2019). Prioritising skills development also aids the attraction and retention of talented employees who, in turn, enhance the organisations performance, competitiveness, and sustainability (Palladan & Adamu, 2018; Walters & Rodriguez, 2017).

Bird and Cassell (2013) and Somfula and Zhanda (2023) note that skills development initiatives fail when they are: not linked to organisational operations and goals; generic and lacking in content; not engaging, with little focus on participants; and the results are not monitored. Meyer et al. (2019) note that, in order for skills development to be successful, the trainees have to have trust in the following: the accuracy with which their strengths and weaknesses are assessed, that they are able to successfully complete the skills development course, that their skills development is relevant, and that they have the necessary job resources to perform the required tasks effectively.

Continuous development should complement individuals' academic qualifications and experience, and should assist the organisations in staying abreast of industry developments and advancements (Asaram, 2022; Farmer, 2023). Furthermore, skills development initiatives provide organisations an opportunity to align employees' abilities and behaviours with the organisation's strategies, culture, and values. Feedback from such development also helps the organisation identify high-performers and talent, who may then be targeted for further development to meet the organisation's future needs (Ahuja, 2020; Somfula & Zhanda, 2023). Development has also been found to motivate employees and aid retention of talent, which both have a direct impact on organisational performance (Ahuja, 2020; Somfula & Zhanda, 2023).

Despite far-reaching legislation and powerful industry bodies, skills development in South Africa is sorely inadequate. In furthering the argument of the importance of skills development, the next section discusses South Africa's skills shortage.

2.7 SOUTH AFRICA'S SKILLS SHORTAGE

South Africa's DHET (2019c) describes a skills shortage as a situation where there are insufficient appropriately qualified workers to fill vacant positions; these positions are referred to as 'shortage occupations'. The DHET (2019c) further notes that the intensity of shortages differs vastly across sectors. Of great concern is that the average intensity of shortages in the mining sector is more than three times that of the agriculture sector, and more than twice that of safety and security.

In 2018, the South African economy was globally ranked as 'efficiency-driven', which indicates that the economy's production processes rely heavily on skilled labour (DHET, 2019c). South Africa's DHET (2014) defines two types of skills scarcity: absolute and relative. *Absolute scarcity* refers to insufficient numbers of skilled people, whereas *relative scarcity* refers to a situation where there are suitably skilled people, but they do not meet other employment criteria, such as geographic location and equity considerations.

The DHET (2019c) notes that the skills profile of employment in shortage occupations has shown that the skills in greatest shortage are soft skills, specifically complex-problem-solving and social skills. Other pressing skills deficiencies lie in learning strategies, reading comprehension, active learning, and writing. Knowledge shortages were found to be the greatest in the fields of computers and electronics, administration and management, and clerical work. At the other end of the spectrum, shortages are smallest with regard to more technical and manual skills such as installation, operation and control, quality control analysis, and technology design. The DHET (2019c) report titled *Skills supply and demand in South Africa* also states that there are more under-qualified than over-qualified people in South Africa. The DHET (2019c, pp. xvii-xviii) report further states:

> *Although education has a strong influence on the chance of labour market participation, skilled labour can be difficult to find in most skilled and professional segments largely due to the poor state of the public education system …*

The DHET, in its 2022 report of skills supply and demand in South Africa, reported that 35% of South Africa's employed population has completed only a secondary education, while a staggering 41% of the workforce does not hold Grade 12. This holds dire consequences for organisations' human capital, as it manifests in a meagre talent pipeline and hampers succession planning (Sundari & Kusmiati, 2022), and may also have a negative impact on the engagement of both internal and external

stakeholders due to, for example, the company's performance being negatively affected (Mahajan, 2023).

Bird and Cassell (2013) note that skills development initiatives often fail because they are applied in a vacuum while there are larger implications to consider. The next section therefore examines aspects of skills development that support the achievement of the organisational strategy and goals.

2.8 SKILLS DEVELOPMENT AND THE ORGANISATIONAL STRATEGY

An organisation's strategy has as aim to ensure the success and competitive advantage of an organisation (Palladan & Adamu, 2018). Kabeyi (2019) posits that a business strategy has five main elements: strategic analysis, environmental analysis, strategic choice, strategy implementation, and strategy evaluation and control.

Strategic analysis is the domain of senior management and executives, and entails setting the organisational vision by determining the strategies that are aligned with the organisational goals (Sundari & Kusmiati, 2022).

Environmental analysis involves gathering, analysing, and interpreting data to inform strategies (Tolici, 2021). This analysis involves assessing the external and internal environments (Tolici, 2021), in order to identify opportunities and threats in the external environment (e.g., the skills of competitors, the market, and consumer trends), and relating these to the organisation's strengths and weaknesses (e.g., current employee skills and performance) (Kabeyi, 2019). This analysis facilitates setting goals and objectives and determining the required foci to achieve the desired outcomes (Kabeyi, 2019).

Strategic choice relates to decisions regarding the overall direction of the business (Tolici, 2021). These decisions include allocating new resources and restructuring existing resources (Phiri et al., 2019). Strategic implementation involves translating the chosen strategies into action plans and activities, with the assistance of the HR function, management, and employees (Palladan & Adamu, 2018).

Strategic evaluation and control are an ongoing process of determining if the chosen strategy is effective in achieving the organisational goals and objectives (Phiri et al., 2019), that is, scrutinising current performance against the required performance (Phiri et al., 2019). From the above, it is clear that having the required skills is an integral part of successful strategy implementation, and that skills have to be considered from the very start of strategic planning. The above considerations are detailed in the following sub-sections.

2.8.1 Facilitating a culture of skills development

Research has shown that a challenging and stimulating work environment in which employees are able to develop their skills on a continuous basis is an important part of attracting, cultivating, and retaining employees (Farid & Taher, 2021). Methods such as job rotation and on-the-job instruction provide invaluable everyday experience and offer employees opportunities to share information (Sarker et al., 2021). Skills acquired through formal or informal programmes can also be supported and developed further through in-house or external coaching and mentoring, whereby employees on all levels, managerial and non-managerial, are paired with more experienced and expert colleagues, supervisors, or external consultants to gain hands-on experience (Sarker et al., 2021).

It is imperative for the cohesiveness of the implementation of skills development strategies that managers consistently and visibly support skills development initiatives. This requires that they are informed about the overall skills development strategy and are committed to facilitating its implementation (Suknunan & Bhana, 2022).

2.8.2 Performing skills audits in support of the organisational strategy

Prior to attempting to develop the skills of its workforce, the organisation needs to embark on a skills audit, which can be accomplished through a number of methods (Van Der Waldt, 2020). The aim of such an audit is to assess current employee skills versus the skills the organisation requires in order to function optimally (Besic et al., 2018). A mismatch indicates a skills gap (Allais, 2022; Van Der Waldt, 2020). A skills audit is also used to determine current skills of employees and compare these with the skills that will be required in future, in order to address gaps timeously and prevent future deficits (Meyer et al., 2019). Performance gaps include variance in the way individuals perform their tasks, different procedures followed by management to measure and rate employees, and gaps in organisational structures (Meyer et al., 2019).

Individual needs analysis is the practice of identifying performance gaps by means of gathering, investigating, and interpreting information on an individual's background, personality, experience, knowledge, and skills, with the aim of resolving gaps in the person's performance (Meyer et al., 2019). Sundari and Kusmiati (2022) assert that factors that contribute to gaps in knowledge include a lack of confidence and commitment, low levels of understanding, fear of failure, and a lack of interest in developing skills.

Conducting individual needs analyses assists the organisation in designing a curriculum that is relevant to the learning needs of employees while concurrently helping employees to

achieve growth and development in their respective careers (Meyer et al., 2019). Erasmus and Loedolff (2015), in their seminal analysis of training models, updated in 2015 by Erasmus et al., assert that the analysis should include the ongoing collecting of information on individual and organisational obstacles to learning, to ensure the success of learning interventions as part of the skills development programme, a view that is supported by Meyer et al. (2019).

A job need assessment or task analysis involves the investigation and study of specific jobs and their requirements in the form of skills and behaviours, so that relevant skills development programmes can be conceptualised and put into place to update employee capacity (Erasmus & Loedolff, 2015; Sundari & Kusmiati, 2022). The job–duty–task method is one appropriate method to research the scope of the job in question (Meyer et al., 2019). This process involves compiling and then analysing the job title, duties, related tasks, and knowledge (Meyer et al., 2019).

Organisational needs assessment focuses on the organisation as a whole, and includes analysing policies, injuries, accidents, work quality, staff attitude, turnover, absenteeism, and employment equity (Erasmus & Loedolff, 2015). The goal of an organisational needs analysis is thus to identify fundamental issues that may indicate a need for skills development (Bird & Cassell, 2013; Somfula & Zhanda, 2023; Sundari & Kusmiati, 2022). Skills development must be aligned to the goals, values, and strategies of the organisation and its employees to achieve the desired objectives (Bird & Cassell, 2013; Somfula & Zhanda, 2023).

2.8.3 Talent management

A talent is a natural ability that an individual possesses, which in an organisational context, is relevant to the performance of tasks (Erasmus & Loedolff, 2015; Schreuder & Noorman, 2019). Talent management is the process of aligning employee behaviour with the organisation's strategies, culture, and values; identifying employees' current skills; and preparing and executing developmental strategies to further expand their knowledge, in order to accomplish high levels of organisational productivity (Theus, 2019). Talent management is aimed at ensuring a state of equilibrium in the distribution of talent in the organisation and securing the availability of indispensable skills, currently and for the future, in line with the organisation's business strategy (Schreuder & Noorman, 2019).

Comprehensive talent management entails employing a number of strategies, including identifying, tracking, recruiting, developing, and advancing talented employees, with the dual aim of increasing their value to the organisation and retaining them (Erasmus & Loedolff, 2015; Schreuder & Noorman, 2019). From the above, it is clear that an organisation's skills

development programme has to take into consideration the organisation's current talent, the identification of promising individuals for further development, and measures to retain such talent.

2.8.4 Succession planning

Succession planning is an important facet of skills development, as it is closely related to talent management. It entails identifying promising individuals who can be accelerated to critical positions when the current incumbent is promoted or leaves the organisation (Meyer et al., 2019). Succession planning therefore informs skills development by ensuring that there is no gap in the talent pipeline when a particular individual retires or otherwise exits the organisation (McGuire et al., 2022).

Theus (2019) notes that succession planning assists organisations in surviving unforeseen events, such as the loss of an employee for whatever reason, by ensuring that the smooth running of the business is not interrupted. This requires that the company take a long-term view of talent management and ensure knowledge-sharing (Ahuja, 2020). In addition, replacing a key individual may be a costly exercise if an outsider has to be bought in.

Thus, talent management and succession planning both enhance retention, and retention aids the management of talent and succession planning (Theus, 2019). McGuire et al. (2022) assert that there is a direct relationship between employee development and employee performance. When employees are developed, it results in greater commitment to the organisation and improved performance, which ultimately contribute to organisational effectiveness (Hafit et al., 2022). If an organisation is transparent about skills development and careers possibilities within the organisation, employees are less likely to seek a career elsewhere.

The next section looks at skills development as part of the organisational strategy, followed by a discussion of the role players in skills development.

2.9 ROLE PLAYERS IN SKILLS DEVELOPMENT

Skills development is a key function of HR management. However, HR management cannot operate in isolation in ensuring effective skills development. A concerted, co-ordinated, and comprehensive approach to skills development requires the input and co-operation of HR practitioners, management, and employees.

As the custodians of skills development in organisations, HR practitioners are responsible for designing the appropriate skills development strategy, based on the organisation's operational strategies (Mahmood, 2022). The HR function thus needs to be informed of both current and future needs, and be able to identify appropriate actions. Feedback as a source of information plays an important role in this process (Akbar et al., 2017). Feedback can take the form of single loops to address short-term issues, while double feedback loops and continuous feedback loops that yield constant improvement, also referred to as 'feedback spirals', serve longer-term purposes (Carless, 2018). Communication between managers, employees, and the HR function should take the form of a continuous, long-term feedback loops. Feedback loops/spirals are an iterative process of revisiting the solutions to problems and assessing their efficacy, with the conclusions informing future actions, which process, over time, strengthens the overall skills development strategy (Carless, 2018).

Feedback is more effective if it is gained from a variety of sources, as the information can be compared and triangulated (Schreuder & Noorman, 2019). It is thus important that HR practitioners gain accurate information from both managers and employees (Akbar et al., 2017; Mahmood, 2022). Managers play in important role in monitoring and feedback to the HR function. Managers are also in an ideal position to communicate the company's positive stance on skills development, which contributes to a positive perception amongst employees of such initiatives (Akbar et al., 2017). Employees must feel free to communicate problem areas to management, who then have to liaise with the HR function in addressing these shortcomings. This process thus requires more than ad hoc communication (Mahmood, 2022).

The above sections addressed important constructs and elements in the domain of skills development. The next sections review widely recognised models and frameworks of skills development in literature, which were chosen for review in the current study because they contain practical applications.

2.10 SKILLS DEVELOPMENT MODELS AND FRAMEWORKS

The literature on skills development covers a myriad methods and techniques, which are included in various forms and permutations in models that organisations can use to enhance the skills of their workforce. However, as every organisation is different and operating environments vary widely, these should only be used as guidelines and adapted according to the organisation's unique needs and context (Sundari & Kusmiati, 2022). As noted earlier, for the purpose of the current study, the models below were reviewed to identify elements of successful skills development with the aim of developing a comprehensive theoretical

framework that will provide guidance to the mining organisation in developing a model to address the organisation's skill development needs.

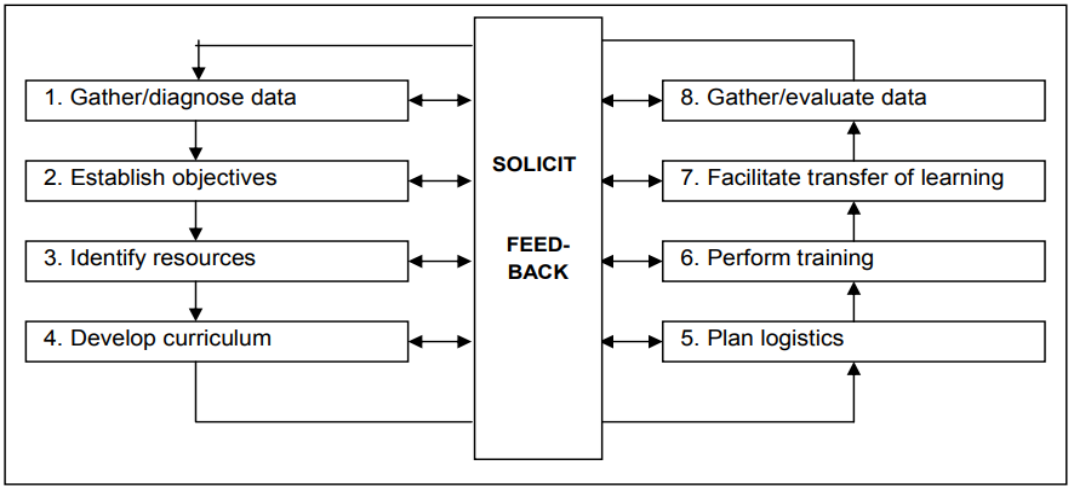
This section reviews the following models and frameworks: Camp Blanchard, and Huszczo, (1986) Training Model, Graham and Mihal's (1986) Model for Determining Training Needs, Nadler's (1982) Critical Events Model for Training and Development Planning, Bird and Cassell's (2013) COMB Model, the Work Skill Development Framework of Bandaranaike and Willison (2010), and The American Society for Training and Development's Action Plan to Take Charge of the Skills Gap (2006).

2.10.1 Training Model of Camp Blanchard, and Huszczo

Camp et al.'s (1986) Training Model contains eight steps (Erasmus & Loedolff, 2015). The first step is a needs analysis to pinpoint skills gaps. Step 2 is the setting of quantifiable goals and objectives, followed by Step 3, determining cost-effective development initiatives to ensure maximum return on investment and making the necessary financial resources available. Step 4 is ensuring that the required tutoring aids, such as computers, diagrams, and books, are available, which is followed by Step 5, the training carried out by a facilitator who understands the contents. In Step 6, the data from the training outcomes are evaluated to determine if the desired learning targets have been attained. In Step 7, the data are used to determine if any employees require further development. Step 8 is management, which entails using the final results to establish if learning has taken place and if there was a satisfactory return on the investment. This model emphasises feedback at every step (Erasmus & Loedolff, 2015). The model is shown in Figure 2.1.

Figure 2.1

Training Model of Camp et al.



Source: Camp et al. (1986), as illustrated in Erasmus et al. (2007, p. 17)

Camp et al.'s Training Model (1986) seems to focus only on task-specific, technical skills (hard skills). There is no mention of the development of soft skills. Furthermore, top management does not seem to be involved in the process of employees' development. In this regard, Kwon and Jang (2021) posit that a successful work culture is facilitated when management and employees work together as a unit in thinking, planning, reviewing, analysing, deciding, and taking action.

2.10.2 Graham and Mihal's Model for Determining Training Needs

Graham and Mihal's (1986) model is used to determine the skills required specifically by managers, and contains four steps. Step 1 entails compiling a comprehensive list of the knowledge and competencies required in the role. During this job analysis, the managers continue to perform their tasks, so that sufficient information can be gathered. In Step 2, managers are required to point out those skills they feel they need to improve to facilitate their specialisation and efficiency in their areas of work. In Step 3, the managers rank their development needs in order of importance according to the organisation's strategic objectives. Step 4 entails the managers' direct superiors evaluating the identified needs.

According to Graham and Mihal's (1986) model, managers have to be involved in evaluating their own work, as they can make a valuable contribution in determining what their development needs are. The model also emphasises the involvement of senior management in order to prevent bias.

Graham and Mihal's (1986) Model for Determining Training Needs excludes non-managerial employees. In addition, the model is applied through self-assessment, without the involvement of an HR practitioner. No formal skills analysis is mentioned, which may cause the risk of bias in determining development needs. The model also does not address the actual skills development process, and considerations such as goals, long-term objectives, and curricula are not given much attention. The model is also focused on task-related knowledge, i.e., hard skills.

2.10.3 Nadler's Critical Events Model for Training and Development Planning

Nadler's (1982) model can be used for all levels of employees, both managerial and non-managerial (Erasmus & Loedolff, 2015). Erasmus and Loedolff (2015) describe this model as a holistic approach to skills development, which is executed in nine interrelated steps. The steps are as follows (Erasmus & Loedolff, 2015):

Step 1: Determine development needs by considering the internal and external environments and obtaining feedback from employees;

Step 2: Evaluate performance;

Step 3: Determine the specific skills required by individuals in order to determine gaps in knowledge;

Step 4: Develop specific and general skills development objectives;

Step 5: Compile a curriculum of mandatory skills, in alignment with the organisational objectives and the specific tasks of employees;

Step 6: Select the appropriate development methods with consideration of time- and financial constraints;

Step 7: Provide the necessary resources to implement the development initiative; and

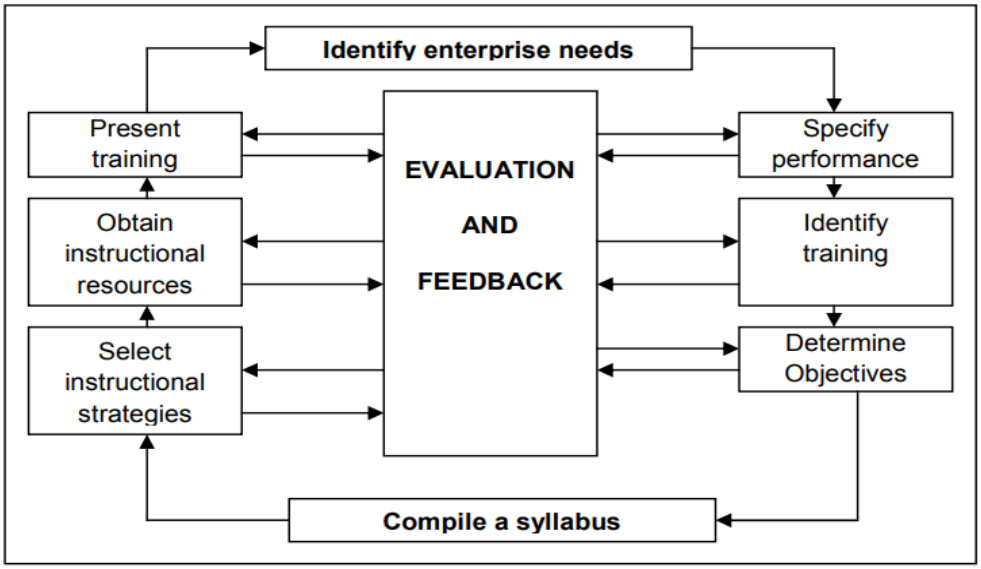
Step 8: Conduct the skills development initiative and gather data for assessment.

Step 9: Conduct and evaluation and provide feedback.

According to Nadler (1982), the model is a holistic approach to both training and development. The model is shown in Figure 2.2.

Figure 2.2

Nadler's Critical Events Model for Training and Development Planning



Source: Nadler (1982, p. 12), as illustrated in Erasmus et al. (2007, p. 15).

Nadler's (1982) Critical Events Model for Training and Development Planning provides a rather comprehensive view of skills development in an organisation, but does not address the development of soft skills. The model consists of various steps, with the first being identifying the organisation's skills needs. There is also an emphasis on evaluation and feedback in each step, with the exception of the first two steps, which are identifying skills requirements and compiling the syllabus (Erasmus & Loedolff, 2015). The feedback and evaluation steps are also aimed at ensuring that organisational requirements are met (Erasmus & Loedolff, 2015). However, the model does not seem to specifically address the role of top management.

2.10.4 Bird and Cassel's COMB Model

Bird and Cassel's (2013) COMB Model offers guidelines for providing fast and simple skills development sessions. The COMB Model is used to identify modifications required to capability, opportunity, and motivation in order to facilitate behavioural change (Bird & Cassell, 2013). The four constructs of the model are:

Context: Determine the context and topic of the course;

Objective: Determine the aspects that will be covered in the course;

Map: Set the agenda and determine the method of delivery; and

Benefit: Explain why employees need to successfully complete the course by highlighting both benefits of completion and consequences of non-completion or failure.

Bird and Cassell's COMB Model (2013) has behaviour as the main focus. The model does not focus on hard skills, and does not provide a skills development process. This model is aimed at helping employees learn specific behaviours that may assist them to perform tasks. The model also does not address the role of top management (Bird & Cassell, 2013).

2.10.5 Bandaranaike and Willison's Work Skill Development Framework

Employers often find that there is a mismatch between employees' tertiary education and applying what they have learned in the work environment. The Work Skill Development Framework of Bandaranaike and Willison (2010) is a learning and teaching model that is applied in the context of work-integrated learning (Torres et al., 2022), i.e., to assess the integration of course theory into the physical work environment. Using this model, employees are taught work skills through reflective practices that facilitate understanding of particular tasks, enhance problem-solving and cognitive thinking, and encourage lifelong learning (Bandaranaike, 2018). Work-integrated learning involves a series of assessment practices, such as internships, workplace experience, and blended learning (Bandaranaike, 2018). This framework combines qualitative assessments with the more traditional quantitative assessments, and is therefore a more inclusive performance measure that can be applied in a variety of jobs (Bandaranaike & Willison, 2010).

The Work Skill Development Framework has six facets (Bandaranaike & Willison, 2010, p. 4), shown in Figure 2.3.

Figure 2.3

Bandaranaike and Willison's Work Skill Development Framework

Facet of Work	WSD Cell Description	Action Verb	Example of Work Skill
Initiative	Student establishes role and adapts	Inquire Focus Locate	Enthusiastic Querying
Technology	Student applies technology to find and generate information/data	Select Manage Innovate	Identifying Translating
Learning	Student critically evaluates their role and objectives to establish lifelong learning skills	Interpret Aspire Change	Projecting Understanding
Self Management	Student reflects and self manages time and information	Plan Choose Judge	Organising Evaluating
Problem Solving	Student synthesises and analyses to create solutions	Define Test Reason	Distinguishing Investigating
Communication	Student understands self and others through interpersonal communication and teamwork	Listen Network Negotiate	Interpreting Consulting

Source: Bandaranaike, S. & Willison, J. (2010, p. 4)

In this framework, reflection and application are introduced in three stages: pre-placement, in-placement, and post-placement. In Stage 1 (pre-placement), employees prepare themselves for work-integrated learning using a tool of the Work Skill Development Framework. Relevant questioning methods and skill statements derived from the Work Skill Development Framework's six facets of work aid in guiding employees through the process of self-identifying their current employability skill sets. Employees then self-rate across a number of workplace skills identified by the model.

In Stage 2 (in-placement), the employee has to collect evidence of practical application of a learned skill. As the employees progress in honing their skills and gaining new skills, these are recorded or mapped on an online template.

In Stage 3 (post-placement), the employees re-evaluate their competencies by reflecting on the Work Skill Development Framework's degrees of autonomy. These reflections aid in compiling a personalised skills profile that indicates how employable the individual is. The results are analysed, and the employees are provided with feedback. The results also inform discussions on work-integrated learning with various stakeholders (Torres et al., 2022).

Bandaranaike and Willison (2010) note that the model instils the importance of lifelong learning, and note the importance of assessing outcomes to determine gaps and inform changes required to the curriculum. The framework helps intern employees participate in an actual work environment. Particular tasks and reflective practices teach these learners to solve problems, make decisions, and become more creative. Learning outcomes include self-assessment of work skills as well as self-evaluation of strengths and weaknesses. Further outcomes achieved include the assessment of work skills by the educator, employees' perceptions of the learners' abilities, and building soft skills such as motivation and confidence to facilitate development (Bandranaike & Willison, 2010).

Bandaranaike and Willison's (2010) framework is applied through an online portal where assessments and achievements are reported and updated. The model is specifically designed for newly qualified learners entering the world of work. Employees in mining environments consist of a mix of new and long-term employees. New employees require extensive development in their specific areas of work. Considering the size and nature of mining operations, development of apprentices has to be in alignment with an array of organisational strategies and goals and comply with various legal requirements and regulations (Chirgwin, 2021). This requires the involvement of top management. In addition, it is vital that HR practitioners are involved in evaluation and review, to continually update and improve the skills development system. Neither of these considerations is addressed in the model. The model also does not differentiate between hard and soft skills, and does not address a skills analysis or provide a detailed development processes (Bandaranaike & Willison, 2010).

2.10.6 The American Society for Training and Development's Action Plan to Take Charge of the Skills Gap

The American Society for Training and Development (ASTD), now the Association for Talent Development, asserts that the following steps should be taken by organisations in identifying and addressing skills gaps: a focus on the organisation's strategy in determining current performance levels; identifying required employee capabilities and proficiencies; evaluating employee skills to determine the gap between what employees know and what they need to know; setting achievable goals to reduce the identified skills gaps; implementing relevant skills development courses; and, once learning is complete, analysing and reporting the outcome (ASTD, 2006, 2012; Salleh & Sulaiman, 2013). The ASTD (2006) explains the various steps required to determine a current skills gap within an organisation in the diagram presented in Figure 2.4.

Figure 2.4

ASTD Action Plan to Take Charge of the Skills Gap

Step 1	Step 2	Step 3
Understand the organisation's key strategies and performance metrics	Identify competencies that map out these strategies and performance metrics	Assess the skills gap
Key questions: □ What are your organisation's key strategies, goals and objectives? □ Who are your customers? □ What is your position in the industry or market? □ What is business recent SWOT analysis? □ How is organisation's performance and success measured? □ Where is organisation and industry headed in the immediate, short and long term?	Key questions: □ What skills and competencies are needed in the organisation? □ What is organisation's future state to meet business goals? □ What is the skills and competency mapping of the organisation? □ What are the priority skills and competencies to grow the business? □ What is the reflection on skills and competency mapping in terms of job function, specialisation area, departmentally & geography etc.?	Key questions: □ What are the demographics of the organisation's workforce? □ What are the results of the workforce review? □ What are the results of skills audit? □ What are the results of skills forecast? □ Are the gaps in specific lines of business? □ Are the gaps more pronounced in specific employee groups? □ Are the gaps geographically based?
Step 4	**Step 5**	**Step 6**
Set goals and prioritize the path to filling the gap	Implement learning solutions	Measure results and communicate impact
Key questions: □ What are the set targets between current skill sets and those needed to support the future goals of the organisation? □ What are the baseline measures? □ What are the change management plans? □ What is the communication strategy of the organisation with regard to an comprehensive action plan to address the organisation's skills gap? □ What processes & methods exist for identifying internal talent, recruiting new talent, retaining employees with key skill sets that organisation needs?	Key questions: □ What are the created learning plans and learning paths for employees? □ What are the best delivery modes? □ What systems exist to measure employee competencies and skills before, during and after learning takes place? □ Who are the role models in business and industry? □ What improvements can be done to improve the situation? □ What are the results from international bench marks?	Key questions: □ What are the results of employee measurement re: progress on the learning plans against individual and organisational goals? □ What is progress comparing before and after learning takes place? □ What is the progress in building needed skills? □ What is the return on investment? □ What is the impact of learning interventions to the employee, organisation, industry and the economy?

Source: ASTD (2006, pp. 14-15)

As can be seen in Figure 2.4, the ASTD (2006) framework provides detailed practical advice for addressing skills shortages and skills surpluses in different locations; determining the costs and benefits of skills development; addressing skills gaps, skills flow, migration, and skills destinations; addressing extinct skills; increasing employees' knowledge of their progression; and enhancing decision-making capabilities (ASTD, 2006). Based on the above discussions of the models, a more comprehensive model would contain the elements of, especially, the ASTD's Action Plan (2006) and Nadler's Critical Events Model (1982). Table 2.2 provides a synthesis of the elements contained in the models discussed above.

Table 2.2

Elements of the Various Skills Development Models

Main factors to be considered for skills development	**Camp Blanchard and Huszczo**	**Graham and Mihal (managers only)**	**Nadler**	**Bird and Cassel**	**ASTD**	**Bandaranaike and Willison**
Top management involvement					x	
Stated objectives and goals on skills development	x		x		x	
Organisational, individual and job analysis	x	Self-rating	x		x	x
Skills audit (current versus expected)	x		x		x	
Required resources	x		x		x	
Qualified course trainers	x		x			
Curriculum: Hard skills (technical)	x		x	x	x	x
Curriculum: Soft skills						x
Analysis of results	x	x	x	x	x	x
Feedback and desired action	x				x	

Note. Researcher's own compilation

2.11 CHAPTER SUMMARY

This chapter provided an in-depth discussion of the conceptualisation of skills and skills development, followed by a discussion of hard and soft skills, South Africa's national approach to and legislation regarding skills development, the role players in skills development, and the elements of select models of skills development as proposed in Camp et al.'s (1986) Training Model, Graham and Mihal's (1986) Model for Determining Training Needs, Nadler's (1982) Critical Events Model for Training and Development Planning, Bird and Cassell's (2013) COMB Model, the Work Skill Development Framework of Bandaranaike and Willison (2010), and The American Society for Training and Development's (2006) Action Plan to Take Charge of the Skills Gap (2006).

From the literature review, it is clear that building organisational knowledge could yield a more efficient workplace, ultimately positively impacting individual and organisational performance and productivity and the organisation's sustainability. Modern organisations need technically skilled employees who are also capable of informed decision-making, innovative and critical thinking, and creative problem-solving. This requires resilient and collaborative teams who work in harmony. Regular revision and feedback help to ensure that current skills are not lost, and provides opportunities to hone new skills in keeping up to date with cutting-edge technology that will heighten employee capabilities and give the organisation a competitive advantage. Organisations need both hard and soft skills, and there is an increasing need for innovation, creativity, compromise, teamwork, and social skills (Lamri & Lubart, 2023). In this regard, the Organisation for Economic Co-operation and Development (OECD) (2019) notes that creativity is the skill second-most in demand, after cloud computing. As Amrutha and Myneni (2023, pp. 23-24) note:

> *For a very long time, social skills were undervalued in favour of technical abilities as the most crucial qualities… A key factor in determining a project's success is the emotional intelligence of the project managers and other members of the team.*

Comprehensive skills development also enhances job satisfaction and retention. Allowing high achievers to take on different roles and responsibilities and play a more active role in the organisation can revive their enthusiasm, fuel company growth, and enhance retention. Leaders who inspire and mobilise the vision and imagination of people are more impactful than those who focus only on profit, and it is crucial that organisations encourage and enable continuous learning.

Finally, this chapter highlights the need for the development of a customised skills development model for organisations in South Africa's mining sector. The next chapter focuses on skills development specifically in the mining industry in South Africa, including relevant legislation.

CHAPTER 3: SKILLS DEVELOPMENT IN MINING IN SOUTH AFRICA

3.1 INTRODUCTION

Chapter 2 provided an overview of skills development in South Africa, specifically national legislation and bodies that play a role in national skills development and models proposed in literature. This chapter focuses on these aspects of skills development specific to the mining industry.

The South African government is placing mining organisations under immense pressure to invest in corporate social responsibility by providing skills development and job opportunities to local communities (Asaram, 2022; Dube & Maroun, 2017). Mining houses are also required to comply with government regulations regarding the transformation objectives of black economic empowerment (BEE) (Department of Mineral Resources & Energy, 2018). Empowering and developing local BEE companies, including those owned by black women and youths, have become mandatory in achieving the government's objectives of redressing historic and socio-economic inequalities (Mining Qualifications Authority, 2019). Apart from challenges such as electricity blackouts (load shedding), and an economic recession, mining companies have also had to deal with an unskilled workforce, a factor that has negatively impacted production (Asaram, 2022). This indicates the importance of the mining sector to employment and economic growth in South Africa (Dube & Maroun, 2017; Mining Qualifications Authority, 2019).

Mining in South Africa is highly legislated and regulated, and much of the skills development in this environment has to adhere to strict prescriptions (HSRC, 2017). Therefore, any skills development programme for the mining industry has to take cognisance of mandatory skills development. The next section discusses legislation and regulatory bodies related to the mining industry.

3.2 SKILLS DEVELOPMENT IN MINING: LEGISLATION AND REGULATORY BODIES

National skills development is governed by the amended Skills Development Act (RSA, 1998) and the Skills Development Levies Act (RSA, 1999). The Skills Development Levies Act (RSA, 1999) is an amendment to the Skills Development Act (RSA, 1998), whereby a tax (1% of staff payroll) paid by organisations registered with SETAs via SARS (SARS, n.d.). SARS pays these levies to the NSF, which then distributes the funds to SETAs (SARS, n.d.).

The organisations and legislation that play a role in skills development in the mining sector include: the Department of Mineral Resources and Energy, the Mining Qualifications Authority, and the Mining Charter III (HSRC, 2017). These are discussed below.

3.2.1 Department of Mineral Resources and Energy

The Department of Mineral Resources and Energy (DMR&E) is one of the oldest departments in South Africa, and has as aim to develop, standardise, and uphold the energy and mineral sectors, with the aim of ensuring that South Africans benefit from both these resources by making them affordable and sustainable (Government Communication and Information System, in *South Africa Yearbook 2021/22*). The DMR&E also aims to promote social equality, job creation, sustainable development, and environmental sustainability through various local programmes (DMR&E, 2017, 2022b). The DMR&E has three directorates, each with an area of responsibility:

- The Directorate of Empowerment Transactions aims to transform and promote black empowerment in mines and mineral industries;
- The Registration Office of the Directorate of Mineral and Petroleum Titles administers all transactions related to minerals and petroleum; and
- The Directorate of Administrative and Information Systems provides support to the mineral regulation branch (DMR&E, 2017).

The DMR&E, through the Mine Health and Safety Inspectorate, aims to protect the health and safety of employees and local communities who are affected by mining operations (DMR&E, 2022a). The Mineral Regulation branch is also responsible for the administration of mining rights and permits, as well as managing the Environment Mineral Policy and Promotion branch, which was established in 2005. Its functions include mineral economics, mining on a small scale, beneficiation economics, and the development of mineral policies and strategies for the development of and research on the mining environment (DMR&E, 2022a).

Bursaries, internships, and learnerships are provided for historically disadvantaged groups (DMR&E, 2022b). Bursaries are provided for the following fields of study: chemical engineering (mineral processing), electrical engineering (heavy current), electro-mechanical engineering, environmental health and management, industrial engineering, metallurgical engineering (extractive), mining engineering, and mining survey. Learnerships are sponsored in the following fields: electrical engineering (heavy current); mechanical engineering; mining engineering; mine surveying, and occupational hygiene.

To further assist in its mission of transformation, the aim of the Mining Charter, of which the latest version is the Mining Charter III, is to expand on its empowerment strategies and transformation objectives (Mining Qualifications Authority, 2019).

3.2.2 The Mining Charter III

The South African Government (2018) developed the Mining Charter, and the DMR&E (2018) specified implementation guidelines, to ensure transformation of the mining sector. The aim of the Charter is to assess growth and accomplishments of mining companies against a defined set of targets. According to Lane et al. (2019), noted in a report for Deloitte, the objectives of the latest Charter, the Mining Charter III (DMR&E, 2018; Government of SA, 2018) are: to enhance opportunities for previously disadvantaged individuals to enter the mining and minerals industry and benefit from the exploitation of such resources; to refine the skills and advance the employment of historically disadvantaged individuals, to achieve greater industry productivity; to encourage social cohesion by enhancing the social and economic welfare of South Africans; to enhance the growth and effectiveness of the mining industry; to ensure that local mining input sectors expand and progress by assisting these entities financially; and to support mineral extraction (beneficiation) of South Africa's various mineral commodities.

The Mining Charter III (DMR&E, 2018; Government of SA, 2018) ensures that mining organisations invest 5% of a leviable amount on critical skills development and research initiatives. The Charter also encourages support of and investments in various academic institutions (Lane et al., 2019).

3.2.3 The Mining Qualifications Authority

The Mining Qualifications Authority (MQA) is the Mining and Minerals SETA. SETAs are tasked with monitoring the quality of education and skills development, in alignment with the Sector Skills Plan and the NSDS III. SETAs have to perform these duties in co-operation with Employment Services, the NSA, and the provinces' leaders (Parliamentary Monitoring Group, 2000).

The mission of the MQA is to ensure skills sufficiency in South Africa's mining sector in order to improve health and safety, employment equity, and productivity (National Government of South Africa, in *MQA*, n.d.a). The South African Government (in *MQA*, n.d.a, para. 2) further notes the following regarding the MQA:

> *The Authority's strategic objectives are to: promote efficient and effective governance and administration; improve skills development planning and decision-making through research; promote work-based skills development to support transformation in the mining and minerals sector; facilitate access to occupationally-directed learning programmes for the unemployed; support community training initiatives to access economic opportunities; and ensure the delivery of quality learning programmes in the mining and minerals sector.*

The MQA facilitates and administers skill development programmes for South Africa's entire mining and minerals sector, and creates specific unit standards and qualifications for the mining sector (Minerals Council South Africa, n.d.b; MQA, 2019). The MQA is tasked with ensuring that skills development in the mining and minerals sector remains at the cutting edge of industry developments (MQA, n.d.b). The MQA (n.d.b, 2021b) also supports the aims and objectives of the Mining Charter III (South African Government, 2018), and is responsible for driving transformation in this sector.

In 2018, the South African economy underwent a technical recession, which led to the development of the Mining Charter III and amendment to the Mineral and Petroleum Resource Development Bill. This yielded R45 billion in investments and the creation of 4 000 jobs in 2019 (MQA, 2019). In addition, President Ramaphosa pledged R800 million towards skills development in the form of bursaries, internships, and apprenticeships in various areas, including electrical, mechanical, engineering, and artisanal training. These skills development programmes are facilitated by the MQA (MQA, 2019).

The MQA assists in addressing the supply of skills in mining. Employees who have an education between Grade 4 and Grade 9 represent 14% of the sector, which is why one such initiative is adult education and training (AET) centres, which offer outcomes-based programmes providing adults with basic learning tools, knowledge, and skills, in preparation for obtaining qualifications (MQA in *Annual Report 2021–2022*; South African Government, n.d.). The MQA (2023a) prioritises funding to AETs to upskill these employees in the areas of automation, technology, literacy, and numeracy. The MQA also provides career guidance to aid learners in identifying their strengths and aligning these with a career in mining (MQA, 2019).

The MQA (2019), through career development workshops, further aims to create awareness of career opportunities in the mining sector. The MQA (2023a) also ensures that learnerships and bursaries are awarded to employees and unemployed individuals, with a focus on local communities of mining operations. These learnerships play an important role in developing

the careers of employees, and assist unemployed individuals to develop the necessary skills for employment in the mining sector. The MQA (2023a, 2023b) focuses on skills development programmes in the following areas: electrical, fittings and machinery, artisans, and diesel mechanics. Various universities and colleges have strategically collaborated with the MQA to place recent graduates into a work placement programme with host employers. This alliance aims to accomplish education of a high level to support BEE, create a skills bank, and raise interest in a career in mining amongst previously disadvantaged groups (MQA, 2019; MQA in *Annual Report 2021–2022*).

In a report by the MQA (2021b) to the Department of Higher Education and Training, titled *Mining Qualifications Authority Sector Skills Plan Update 2022–2023*, a sector skills plan was developed to determine skill priorities through an analysis of the supply and demand of specific occupations in mining. The report noted a lack of specialised technology skills and insufficient practical experience of TVET college graduates. The report also indicated a poor representation of women in the industry. The report further indicated a lack of mine managers, production- and engineering managers, mechanical engineers, diesel mechanics, and auto electricians. The gold mining sector suffers a lack of foreign investments due to South African mines lacking expertise in innovation and technology such as rock drilling (MQA, 2021a, 2021b). The diamond mining industry is plagued by safety- and environmental concerns, while the platinum sector has to contend with frequent strikes and a lack of adequately skilled employees (MQA, 2021a, 2021b).

The skills priority actions to address some of these challenges noted in the report are as follows (MQA, 2021a, 2021b):

- to ensure skills development for sustainability of the environment;
- to support the economic development of small local business while simultaneously facilitating transformation, which includes BEE, women in mining, and gender equality;
- to improve health and safety in mining through various skills development interventions;
- to address workforce imbalances through more women in management and core occupations;
- to ensure that employees are kept abreast of the latest technological changes and software systems by committing to constant learning;
- to improve skills related to mineral beneficiation, core mineral skills, and vacancies that are difficult to fill; and
- to ensure equal employment and skills development opportunities for individuals with disabilities.

The next section discusses skills development in mining.

3.3 SCARCE SKILLS IN MINING IN SOUTH AFRICA

The Minerals Council South Africa (n.d.b) defines skills development as a continuous and co-ordinated process to equip all employees with the skills, attitudes, and perceptions required for personal development and workplace transformation, and includes offering employees opportunities to practise these skills.

Advances in technology continuously disrupt the field of mining, and the need for innovation in South Africa is evident, as old methods of production are no longer feasible or economical, and do not support the growth of mining organisations (Asaram, 2022; Habiyaremye et al., 2022). Unfortunately, the South African mining industry is currently experiencing critical skills shortages in occupation categories such as mechanical and electrical engineers, artisans, and boiler makers, and construction specialists (Asaram, 2022), a situation that has persisted for some time (see Van der Walt et al., 2016). Employees working in positions that are affected by skills shortages are often burdened with added duties and responsibilities, which can negatively impact their stress levels and mental health (Asaram, 2022).

The MQA (2019) notes that there are many occupations in the South African mining environment with skill gaps that need to be urgently addressed. Skills gaps are skills deficiencies that hinder employees from performing their daily tasks optimally and successfully (Habiyaremye et al., 2022). These skills gaps are the result of, amongst others, a lack of skills development, new job tasks, and changes in innovation and automation (Blair et al., 2023). According to the MQA (2023b), some vacancies are difficult to fill, due to a lack of qualifications and/or experience. Some of the most pressing shortages are listed in Table 3.3.

Table 3.3

Scarce Skills in Mining in South Africa

Occupation code	**Occupation**
112101	Executive director
121101	Finance manager
121201	Employee relations, personnel/human resources manager
121202	Business training manager; Human resources development manager; Technical training manager
121203	Compensation and benefits manager; Remuneration and benefits manager
121206	Safety, health, and environmental (SHE) manager
121908	Quality manager; Quality systems manager
132104	Engineering manager
132203	Rock engineering manager
134201	Medical manager
134901	Environmental manager
211401	Engineering geologist; Exploration geologist; Geologist
212103	Geostatistician; Statistician
214101	Industrial engineer; Plant engineer; Process engineer; Production engineer
214102	Process design technologist
214605	Metallurgist
215201	Instrumentation engineer
242302	Skills development facilitator; Skills practitioner; Skills development strategist
311501	Mechanical engineering technician; Mechanical instrument technician
341201	Community development officer; Community worker
651401	Metal fabricator
653101	Auto engineer; Mechanic

Source: MQA (2023a, 2023b)

Hermanus (2017) cites a report published by Deloitte (2015) that points out the various technologies that mining organisations can use to enhance productivity. Mines could create networks to share statistics on electrical equipment to reduce the risk of unplanned maintenance. They should moving towards innovation and automation to increase performance, productivity, and reduce risk. Three-dimensional (3D) printing could be employed in important areas on the various mine sites, and integrated equipment could be built in areas adjacent to mining sites. Mines should also invest in upgrading personal

protective equipment (PPE) with sensors to track danger and fatigue. They could also use hybrid airships to transport mining equipment to remote areas (Hermanus, 2017).

However, the above can only come into effect if employees are trained to use these systems and equipment (Habiyaremye et al., 2022). According to the MQA (2019), mining organisations should make concerted and ongoing efforts to provide bursaries to employees and people from the local communities. This will, at the same time, empower these communities and alleviate labour shortages. Per data obtained from the MQA (2019), shown in Table 3.4, mining employers offer bursaries for specific occupational development.

Table 3.4

Mining Bursaries

Bursary Type	**No. of Bursaries**	**% Contribution**
Other (non-mining related)	1 310	93.3%
Mining engineering	32	2.3%
Analytical chemistry	16	1.1%
Electrical engineering (heavy current only)	10	0.7%
Chemical engineering (mineral processing)	9	0.6%
Metallurgy	7	0.5%
Environmental health and management	6	0.4%
Electro-mechanical engineering	4	0.3%
Geology	4	0.3%
Extraction metallurgy	2	0.1%
Mine survey	2	0.1%
Industrial engineering	1	0.1%
Jewellery design	1	0.1%
Total	**1 404**	**100%**

Source: MQA (2019, p. 54)

The 2023 MQA bursaries are available to unemployed historically disadvantaged groups and individuals who are already employed in the mining sector and would like to further their education (MQA, 2023a). The bursaries are limited to the following disciplines: metallurgical engineering, analytical chemistry, jewellery design manufacturing, electro mechanical engineering, geology, industrial engineering, mining engineering, occupational health and

safety, mechanical engineering, occupational hygiene, mine surveying, occupational medicine, electrical engineering, operations management, chemical engineering, quality management, and environmental health and management (MQA, 2023a). There have, thus, been some changes, such as the removal of the “Other (non-mining-related)” category, and no numbers are specified (MQA, 2023a). The MQA also offers bursaries for studies at TVET colleges, specifically in the fields of boilermaker, fitting (including machinery), motor mechanic (diesel), instrumentation mechanic, electrician, millwright, fitter and turner, and rigger ropesman, and specifies a 20% bursary allocation for deserving employed and unemployed individuals (MQA, 2023a).

3.4 CAUSES AND DYNAMICS OF SKILLS SHORTAGES IN MINING IN SOUTH AFRICA

Skills shortages in the mining sector have, for some time, hampered South Africa’s ability to compete internationally (Ediriweera & Wiewiora, 2021; Gaskel, 2012). Production decline is attributed to outmoded mining technology that prevents the mining industry from attaining the required levels of output to match contenders in the market, which, according to literature has remained a persistent concern (Ediriweera & Wiewiora, 2021). Another persistent problem, evident from research spanning a significant period, is that the mining industry has a higher level of unskilled than skilled workers, which poses operational dangers, especially with regard to the use of machinery (Ediriweera & Wiewiora, 2021; Zhuwakinyu, 2013). The South African Chamber of Mines has noted that the skills shortage is one of the main causes of reduced productivity and dangerous work environments (Parker, 2023; PricewaterhouseCoopers, 2023). There are numerous reasons for the skills shortages in South Africa’s mining sector. The next sections look at some of the main considerations.

3.4.1 Inadequate schooling

South Africa’s primary, secondary, and tertiary education play a role in the availability of skills in the mining sector (Sham, 2023). Moodley (n.d.) asserts that, to remain viable in the global mining industry, South African mines need to focus on education in technology and promote such education at primary school level, in order to properly educate and prepare sufficient suitable candidates for future operations. Mechanisation and automation should be the primary focus, as these functions require specialised skills (DMR&E, 2017, 2022b). Neingo and Tholana, in 2016, warned that educational institutions were not meet the mining sector’s needs, a situation that has persisted (James, 2023). In addition, many South Africans are unable to afford an education (International Labour Organization, 2015b). A study by the University of Pretoria (n.d.) points out the following concerns: 15.4% of all mineworkers never

attended school at all; 37% did not complete their primary schooling; 48.9% of mineworker left school before achieving a qualification equivalent to an NQF 1, which limits their access to formal qualifications and mining programmes; and 71% of all employees did not complete Grade 12.

Institutions of higher education ought to play a more pro-active role in promoting skills development to support South Africa's mining industry (Moodley, n.d.). While various legislative bodies and organisations are attempting to upskill mining employees and promote their career progression, their efforts are hampered by a lack of suitable school leavers (Moodley, n.d.). It is thus critical that investments are made in scholars to lay the foundations to support these efforts (Moodley, n.d.).

The subjects of Science, Technology, Engineering and Mathematics (STEM) are vital in pursuing most critical-skills careers in mining, and not enough is done to promote these subjects at school level (James, 2023). It is also vital that institutions of higher learning promote these subjects and provide high-quality education to address the shortage of these critical skills (Moodley, n.d.). Data from the Sector Skills Plan of the MQA (2021a, 2021b) indicate a decrease in the number of students qualifying in these areas of expertise (Moodley, n.d.), making it difficult for mines to source sufficient electricians and engineers (James, 2023).

3.4.2 Lack of support for and investment in skills development

Employers are vital decision makers, and are constantly faced with the predicament of upskilling their own employees or outsourcing the required labour (Consolidated Employers Association, 2020). Employees, however, feel that managers do not enable and support their career development (Rosenburg & Ward, 2020). To ensure maximum output, employers need to invest in nurturing the skills of their workforce (Allais, 2022). Aside from enabling the skills development of their subordinates, it is also important that line managers' skills are kept up to date, as they are responsible for overseeing the work of their subordinates (Bird & Cassell, 2013; Rosenburg & Ward, 2020).

Bird and Cassell (2013) and Rosenburg and Ward (2020) note that top management needs to be supportive of the development of employees' skills and provide the necessary assistance. Managers should devote time to ensuring that mandatory proficiencies are acquired and transferred by actively participating in the learning sessions (Bird &Cassell, 2013; Kwon & Jang, 2021). Rosenburg and Ward (2020) support this view, noting that managers should be educated in identifying and developing talent and engage in discussions on career progression and succession planning. This will ensure that high-performing individuals acquire the

necessary skills to support the organisation in meeting its objectives and enhance their retention (Kwon & Jang, 2021; Moodley, n.d.).

Organisational support also entails the organisation providing the financial resources to fund upskilling (Lane et al., 2019). Management also needs to engage in ongoing performance management by facilitating skills development and setting high standards of competence (Rosenburg & Ward, 2020).

3.4.3 Inadequate skills development programmes

In order to develop a successful workforce, an effective skills development system must be implemented, one that ensures that employees receive the right education from the right institution at the right time (MQA, 2019). Lack of initiative from management to upskill employees has also contributed to the workforce not having the required skills (Consolidated Employers Organisation, 2020; Moodley, n.d.). Limited opportunities for skills development are preventing existing mining employees from closing the gaps in their technological and science-based skills (Ramdoo, 2020). In addition, mining organisations and their executive teams are often reluctant to invest in skills development, citing a lack of financial resources due to the economic recession and financial constraints related to declining commodity prices and foreign investment (Venter et al., 2022).

Soundering (2017) and Venter et al. (2022) note that the lack of skills development facing this industry is due to management's inability to recognise the significance of skills development and the positive impact it has on the sector and employees. Some employers also perceive new hires as more cost-effective than upskilling current employees. However, Ghebrihiwet (2019) posits that, if one takes into consideration the cost of recruitment and time lost, it may cost the organisation up to twice as much to employ new staff.

3.4.4 Experience versus qualification

South African mines require a combination of academic education and practical understanding, and new graduates have insufficient experience to handle complicated tasks (Asaram, 2022; Farmer, 2023). However, the MQA (2021a, 2021b) notes that education should never stop at graduation from an institution of higher learning, and that a continuous learning culture should be fostered to ensure that employees keep up with the latest development in technology and the industry.

Many employees in mining organisations believe that management focuses more on qualifications than on experience (Majid et al., 2019). Raturi (2019) notes that graduates

entering the workplace are demanding far higher salaries, while they lack existing employees' experience and practical knowledge. While qualifications from recognised institutions are essential, the value and significance of experience cannot be denied if organisations are to achieve the desired targets (Achanya & Dickson, 2022). Organisations do not sufficiently value the experience of unqualified employees, and they rather appoint newly qualified individuals (Asaram, 2022; Farmer, 2023). This causes friction between existing and new employees and demotivation and turnover of existing employees. Furthermore, new employees' inexperience in mining may be a significant contributing factor to human error, leading to accidents, injuries, and fatalities (Farmer, 2023).

3.4.5 Remote sites

Mining operations situated in remote and isolated regions find it difficult to attract and retain competent employees, and therefore have to offer high salaries to lure talent to these locations and retain their services (Benton, 2020). Mining organisations are faced with the further complication of development of the skills and specialised knowledge of employees operating on remote sites (Benton, 2020).

3.4.6 An ageing workforce

The retirement of employees with critical skills and experience is a major contributing factor to skill shortages in South African mines (Makhubela & Ngoepe, 2018), as finding a suitable replacement is difficult, leading to a loss of organisational knowledge (Makhubela & Ngoepe, 2018). Canada's Mining Industries HR Council already warned in 2017 that 49 000 skilled individuals will be required within the next 10 years to replace the ageing workforce (Benton, 2020). The situation is exacerbated by ageing individuals refusing to share their knowledge with co-workers (Boyes, 2018; Labafi, 2017), a phenomenon known as 'knowledge hoarding' (Boyes, 2018). Knowledge hoarding may also be an attempt to enhance job security and authority (Boyes, 2018). This causes younger employees not having access to the information required to improve their performance (Boyes, 2018).

It is imperative to multi-skill and cross-skill employees in order to close the knowledge gaps between the younger and older, more experienced employees (Habiyaremye et al., 2022). This should be done by providing guidance and on-the-job instruction, especially in critical skills (Ahuja, 2020). Young, inexperienced employees also need to have a sense of accountability instilled in them (Ahuja, 2020). Mandatory retirement ages and an ageing workforce are also hampering the transfer of skills, a work ethic, and business relationships to the younger generation of employees (Mining.com, 2023).

3.4.7 Global opportunities and economic recession

The MQA, in its *Annual Report 2021*–2022, notes South Africa is also facing challenges in replacing qualified workers who left the country to pursue a career abroad. The international prospects in diverse mining industries have attracted many South African employees, resulting in a declining skilled workforce and a limited supply of skills (Parker, 2023). The MQA considers upskilling new graduates the only way to replace lost skills (MQA, in *Annual Report 2021–2022*). Organisations do not realise the potential of their current employees, which would require investment in developing their skills (Asaram, 2022; Dagnew & Elantheraiyan, 2023; Farmer, 2023).

In addition, occupations in the field of engineering and administration in mining are challenging to fill in times of economic downturns (Asaram, 2022; Farmer, 2023). Fraser (2023) reported that, in 2023, a total of 40 000 locally skilled people were migrating to countries like Canada and Australia in pursuit of better working conditions, career opportunities, and salaries, a concern that has persisted for a number of years (see Benton, 2020; Parker, 2023; PricewaterhouseCoopers, 2023). Mining organisations lose their competitive edge as a result of these departing employees, who take with them their expertise and knowledge (Asaram, 2022; Farmer, 2023). Approximately 25 000 skilled employees leave South Africa per year in search of better job opportunities, leading to clamouring for high-calibre employees with unique skills and abilities (Brothwell, 2020; Writer, 2019).

3.4.8 Policy uncertainty

Mining companies in South Africa have been contending with declining commodity prices and a lack of foreign investment in the country (Venter et al., 2022). The DMR&E (2022b), in its Exploration Strategy for the Mining Industry of South Africa, notes that political issues surrounding trade unions and employees, unemployment, increasing fuel prices, outdated technology, and economic recessions have caused massive uncertainty in the country. There is an urgent need for better leadership and policies to address the country's economic challenges (Venter et al., 2022).

There are a number of challenges that mining houses are facing from legislative authorities such as the DMR&E and The Mining Charter III (South African Government, 2018). The Mining Charter III specifies that 70% of goods and 80% of services have to be procured from local organisations (DMR&E, 2018; South African Government, 2018). While transformation is supported by mining organisations, this approach is not always possible, due to the speciality

of some of these goods and services. Yet, failure to adhere to these policies results in penalties (South African Government, 2018).

It is evident that policymakers need to consider reviewing and reformulating skills development policies (Venter et al., 2022). These policies need to address and clearly define economic requirements for mining houses (DMR&E, 2017). Policy uncertainties are causing mining organisations to be hesitant to develop their employees. On the one hand, employment is not guaranteed, due to political unrest, while, on the other, targets set by the DMR&E to address skill shortages and employment are unrealistic (Venter et al., 2022).

3.4.9 Disruptive innovations

Assimilating new technology is vital in keeping organisations viable and competitive, especially in global markets such as mining (Asaram, 2022; Farmer, 2023). While adopting technology may reduce costs and facilitate better production in the longer term, adapting operations to use such technology is challenging in the short term, and may lead to costly administrative and technical errors (Asaram, 2022; Benton, 2020). Successfully and smoothly adopting technological advances requires uniform and formal skills development (Asaram, 2022; Benton, 2020).

The South African mining industry is rapidly moving towards greater automation, which requires highly developed engineering, electrical, and administrative skills to manage these complex systems. In keeping up with these disruptive changes, employees' skills have to be continuously updated and redeployed (Allais, 2022).

3.4.10 A hazardous work environment

Mining has for long been recognised as one of the most dangerous occupations in the world, and it is crucial that mines optimise safety, as illnesses, accidents, and fatalities have direct and indirect negative impacts on mining organisations, the economy, society, and especially the affected families (see, e.g., Liedtke, 2019; Preis & Webber-Youngman, 2021). Direct costs related to illness, accidents, and fatalities include payment of restitution, repairs to equipment and infrastructure, and the loss of production (Preis & Webber-Youngman, 2021). Indirect costs are the loss of a loved one and the impact thereof on the person's community (Preis & Webber-Youngman, 2021).

Due to the dangerous nature of mining, health and safety have to remain a priority, and the field is legislated in most countries. However, according to Tsichla and Adam (2022), mining employees do not receive sufficient instruction on health and safety to prevent ill health due

to, e.g., lung diseases and to ensure the safe operation of machinery. Accidents involving underground machinery are common in the South African mining sector (Kotze, 2019). In 2018, 2 447 South African miners suffered occupational injuries, with a similar figure, 2 406, reported for 2019 (Moodley, 2020; South African Government, 2020). For 2022, the DMR&E reported 2 056 occupational injuries and 49 fatalities. Health concerns in South African mines include silicosis, tuberculosis, and noise-induced hearing loss (Kotze, 2019). The DMR&E (2022a) reported a 5.5% increase in cases of hearing loss, from 738 in 2020 to 776 in 2021. Occupational diseases that led to death increased from 975 in 2017 to 999 in 2018 (Moodley, 2020).

The Mining Health and Safety Act 29 of 1996 requires that all mines use the services of skilled and experienced medical surveillance teams to detect and monitor infirmity (DMR&E, 2022a). It is imperative that these experienced medical practitioners perform constant testing and screening for diverse diseases and provide management, coupled with periodic reports (DMR&E, 2022a). Furthermore, mines need to offer frequent courses on health and the proper use of PPE such as hard hats, earplugs, gloves, facemasks, boots, protective clothing, and safety glasses (DMR&E, 2022a).

Mining hazards include, but are not limited to, rock bursts, rock falls, excessive underground heat, lack of oxygen, and gas explosions (Niselow, 2018). Prior to 1994, South Africa witnessed hundreds of mineworker deaths per year (Mathews, 2019). Galal (2023) reported that mining industries recruit 1% of the global labour force and account for 7% of South Africa's GDP, and that mining is accountable for 8% of deaths worldwide. According to a report by the Minerals Council South Africa (n.d.b), 72 mine employees died in the year 2021, compared to 60 the previous year. Following these fatalities, employees experience heightened stress, hostility, rage, and resentment, and many employers faced litigation and the involvement of unions such as the Association of Mineworkers and Construction Union (AMCU) and the National Union of Mineworkers (NUM) (Niselow, 2018).

Mining employees lose their lives as a result of their own or others' negligence, including the negligence of managers and organisations, and a lack of skills and neglecting to follow safety measures are considered major contributing factors, a situation that has persisted for some time (see, e.g., Lang, 2010; Macnamara, 2022). Mine Health and Safety Statistics (2020) emphasises that safety- and modern technology skills are essential to protect underground mine workers and maintain competitiveness.

3.5 THE ADVANTAGES OF SKILLS DEVELOPMENT IN SOUTH AFRICAN MINING

In addition to mitigating the issues discussed in the previous sections, skills development in the mining industry offers the following advantages.

3.5.1 In-house expertise

Benton (2020) highlights that China's expansion in mining operations has depleted the availability of skills worldwide. Skills shortages have forced the mining sector to rely heavily on outsourcing specialised skills, which is costly . Despite this high cost, some mining operations are reluctant to invest in developing employees, considering it a waste of time and money, as highly skilled employees may depart for greener pastures (Asaram, 2022; Farmer, 2023). Nagy et al. (2023) posit that upskilling boosts productivity, enhances safety, stimulates work interest, and promotes empowerment, which then facilitate employee retention, which will lower the need for external consulting firms.

3.5.2 Improved productivity

Macnamara (2022) emphasises that the workforce has to be skilled in order to adopt a culture of automation and innovation, both of which have a considerable impact on productivity in mining. A culture that continuously focuses on learning and developing fosters a multi-skilled workforce that provides the company with a competitive edge (Hafit et al., 2022).

3.5.3 Talent attraction and retention

Competent employees are considered a fundamental resource and asset in any organisation (Farid & Taher, 2021). South African mining organisations find it challenging to attract and retain skilled individuals (Asaram, 2022; Farmer, 2023; SA Mining, n.d.). To attract and retain these resources and assets, mining organisations need to invest in skills development programmes to improve employees' knowledge, productivity, morale, and well-being, as well as offer attractive careers in mining (Farid & Taher, 2021). In addition, in order to attract and retain technologically skilled employees, mining organisations must market themselves as being proactive in adopting technology and skilling their employees in its use (DMR&E, 2017, 2022b). This will enable mining organisations to find, or have available, the right person, with the right skills, at the right time (DMR&E, 2017, 2022b).

Mining organisations could also strategically source skilled and talented individuals by collaborating with educational institutions in providing bursaries and career guidance and offer development opportunities aligned with the organisational strategy (Benton, 2020; Bird &

Cassell, 2013). Proficiencies acquired through skills development hold benefits for both employees and employers in terms of monetary value, human welfare, productivity, career opportunities and succession planning (Nagy et al., 2023).

3.5.4 Succession planning

Succession planning is the process of identifying talented individuals and developing their skills to be able to seamlessly replace employees who leave the organisation or retire (Nagy et al., 2023). Succession planning therefore requires upskilling current employees and broadening their experience in line with the medium- and long-term organisational strategy (Nagy et al., 2023). According to the International Labour Organization (2022), skills development also aids the promotion of equal job opportunities with better income options for both men and women, thereby promoting gender equality.

3.6 CHAPTER SUMMARY

This chapter discussed the legislation and governing bodies in mining in South Africa, including the DMR&E, MQA, and the Mining Charter III, followed by the complex dynamics of the industry, such as inadequate schooling, lack of support of and investment in holistic skills development, the ageing workforce, remote and dangerous mining sites, policy uncertainty, and disruptive innovations, all of which play a role in skills development. The chapter also highlighted scare skills in mining and the advantages of skills development, including in-house expertise, improved productivity, talent attraction and retention, and a talent pipeline for succession planning. It is clear from these discussion that the current emphasis in skills development in the mining industry is on technical skills — mainly due to the industry being highly regulated — with little or no consideration of soft skills. While technical (hard) skills are rightfully the primary consideration in the dangerous and highly technical mining environment, soft skills play a crucial role, and should not be neglected in skills development initiatives. These two development streams should, furthermore, be combined in a culture of continuous learning, due to the rapid pace of technology developments in the global mining industry. The discussions therefore underscore the need for a customised skills development in the mining industry.

The next chapter discusses the methodology applied in conducting the current study.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 INTRODUCTION

A study's methodology is anchored in the researcher's research philosophy or paradigm (ontology and epistemology), which informs the research approach and actions taken to select, gather, classify, analyse, and interpret the gathered information (McCombes, 2019). The methodology includes the research approach and design, and the methods employed to select a sample from the population, data collection, and the method of data analysis (Creswell & Creswell, 2022), which are discussed in the subsequent sections.

4.2 RESEARCH PHILOSOPHY

A research philosophy is a researcher's view regarding the way in which a phenomenon should be studied, what data should be gathered, and how the data should be analysed and interpreted (Creswell & Creswell, 2022). Creswell and Creswell (2022) refer to it as the researcher's 'worldview'. Researchers' philosophy is determined by their worldview, beliefs, and perceptions (Mauthner, 2020). This system of thought and assumptions has a significant impact on the way in which a study is conducted (Žukauskas et al., 2018).

Mauthner (2020) explains that a research philosophy or paradigm consists of an ontology and an epistemology, which are discussed below, together with the ontology and epistemology followed in the current study.

Ontology is concerned with the nature of knowledge, i.e., what is true and real, and what exists in the world, including the nature and structure of that reality. It is thus the researcher's stance regarding what can be known (Giri et al., 2018). There are two main types of ontology, namely objectivism and constructivism (Denzin & Lincoln, 2018). Objectivism holds that there is an objective, 'hard' reality, independent of people's views, whereas constructivism holds that reality is subjective and socially constructed, and that it can only be understood through others' views and perspectives (Creswell & Creswell, 2022).

The present study followed the constructivist ontology, which holds that people try to learn about and understand the world in which they live (Creswell & Creswell, 2022; Denzin & Lincoln, 2018). Individuals develop multiple and varied subjective meanings based on their daily experiences and interactions with objects and people (Creswell & Creswell, 2022). Thus, reality is subjective and socially constructed, and can be gained through perceptions and interpretations (Denzin & Lincoln, 2018). This ontology was appropriate, as the aim of the

current study was to discover the subjective views of participants, the study followed a constructivist ontology.

Epistemology relates to the researcher's view on how knowledge can be gathered and disseminated (Denzin & Lincoln, 2018). The interpretivist researcher employs non-scientific, qualitative methods to analyse human behaviour. This approach focuses on symbols and social structures, and how individuals interpret these (Denzin & Lincoln, 2018). The constructivist ontology is closely associated with the interpretivist epistemology, based on:

> *the assumption that reality and the human behavior therein is characterized by continuous fluctuations, and adjustments, and transformations operating simultaneously at multiple sites and that they offer a subtle depiction of how facts emerge and 'truths' are shaped* (Van der Walt, 2020, p. 61).

The interpretivist–constructivist paradigm holds that there is more to the truth than what can be observed, and that truth is subjective, and that there is knowledge to be gained from perceptions and interpretations (Du Plooy-Cilliers et al., 2019). As social phenomena are the result of social interaction, their meaning is in constant flux (Du Plooy-Cilliers et al., 2019). The constructivist–interpretivist researcher's aim is to learn about and understand the world in which participants live, and the researcher is part of the research (Park et al., 2020). Such researchers seek to understand participants' daily life and/or work experiences, as people develop multiple and varied subjective meanings based on their experiences and interactions in their daily lives with objects and people. Interpretivist constructivism is often used in qualitative sociological research to study beliefs, norms, and values (Burns et al., 2022).

The present researcher followed a constructivist ontology and interpretivist epistemology because the aim of the study was to gain insight into the personal perceptions of employees with regard to skills development in their organisation, in order to formulate a theoretical framework for skills development for the organisation. The present researcher was of the view that participants' experiences and views could not have been gained and understood through objective observation.

A researcher's paradigm then determines the appropriate research approach and methods to be applied in conducting the study (Du Plooy-Cilliers et al., 2019). This is discussed in the next section.

4.3 RESEARCH APPROACH

Literature distinguishes between quantitative and qualitative research, with a mixed-methods research approach being the combination of the two approaches in a single study (Creswell & Creswell, 2022). Which one is applicable depends on the nature of the phenomenon under study and whether the researcher wants to be objective or more emersed in the study.

McCombe (2019) explains quantitative research being 'from the outside', while qualitative research is 'from the inside'. Quantitative research is a formal and objective process in which information is gathered in the form of numerical data in order to examine relationships between variables (Du Plooy-Cilliers et al., 2019) The data are typically gathered from a large sample and subjected to statistical analyses (Creswell & Creswell, 2022). However, social reality is difficult to capture and present accurately using numbers, due to participants' perceptions and understanding varying widely (Bryman et al., 2019).

Qualitative research is aimed at gaining an understanding of participants' lived experiences, and rich and detailed data are gathered in the form of words and/or pictures, e.g., narratives, which data are then analysed using qualitative methods such as content- or thematic analysis (Denzin & Lincoln, 2018). Qualitative research involves collecting and analysing non-numerical data to gain an understanding of various concepts, opinions, and experiences of the subjects being studied (Creswell & Creswell, 2022). Qualitative research focuses on gaining in-depth knowledge of an organisation, phenomenon, event, or groups (Du Plooy-Cilliers et al., 2019). In using this approach, the aim is to determine how participants derive meaning from their surroundings and how such meaning influences their behaviour (Denzin & Lincoln, 2018). Such research typically uses small samples of participants who are able to contribute valuable information on the topic under study (Denzin & Lincoln, 2018). According to McGinley et al. (2021), qualitative research provides a holistic understanding of the view of the world in which the participants live and work, which is why this research approach was considered appropriate for the current study.

In using a mixed-methods approach, the researcher gathers qualitative data to augment the gathered quantitative data, to gain in-depth insights into the reasons for participants' responses (Denzin & Lincoln, 2018).

The current study followed a qualitative research approach, whereby participants' experiences and perceptions were collected directly from them and on the site where they were experiencing the phenomenon (see Du Plooy-Cilliers et al., 2019). In describing qualitative research, Johnson et al. (2020) quote the widely used description of qualitative research proffered by Denzin and Lincoln (2005, p. 2):

> *Qualitative research involves the studied use and collection of a variety of empirical materials — case study; personal experience; introspection; life story; interview; artifacts; cultural texts and productions; observational, historical, interactional, and visual texts — that describe the routine and problematic moments and meanings in individual lives. Accordingly, qualitative researchers deploy a wide range of interconnected interpretative practices, hoping always to get a better understanding of the subject matter at hand. It is understood, however, that each practice makes the world visible in a different way. Hence there is frequently a commitment to using more than one interpretative practice in any study.*

The aim of qualitative research is to expand understanding of the experiences of individuals or groups in a specific context in order to contribute to new theory and/or develop a framework or model (Johnson et al., 2020). Qualitative researchers attempt to explore and describe a phenomenon exactly as it occurs in a real-life environment by examining multiple perspectives (Denzin & Lincoln, 2018; Du Plooy-Cilliers et al., 2019). Such researchers personally interact with study participants, and actively work to minimise the distance between them and the individuals with whom they are interacting in the study (Bryman et al., 2019).

The qualitative approach is more flexible than quantitative research, and aids in discovering new knowledge while gaining insight into how people construct meanings related to their experiences (McGinley et al., 2021). Qualitative researchers also tend to use multiple resources of information, such as interviews, observations, and documents, rather than relying on a single data source (Abdalla et al., 2018). However, qualitative research also has limitations. It is a time-consuming process, as rigour in this approach requires extended periods of interaction with participants and meticulous cleaning, categorising, and analysis of the textual data (Du Plooy-Cilliers et al., 2019). Furthermore, the small sample sizes employed in qualitative research mean the findings are not generalisable (Bryman et al., 2019), and the researcher has to continuously guard against bias throughout the study, from selecting participants to interpreting the findings (Bryman et al., 2019).

This approach was considered suitable in achieving the aim of the present study, which was to gain in-depth knowledge of the organisation and events surrounding skills development from the perspective of employees, specifically the subjective views of employees and managers of the skills development system of the organisation under study. Gaining in-depth insights and opinions, together with the underlying reasons and motivations would not have been possible in a quantitative approach using a questionnaire with closed-ended questions. The researcher was thus involved in the research, and personally collected the data through

extensive in-person interviews.

The next section discusses the study's research design.

4.4 RESEARCH DESIGN

The choice of research design is informed by the chosen paradigm and research questions (Creswell & Creswell, 2022). The research design is a plan for the research that details the methods and various steps the researcher will follow in conducting the study (Du Plooy-Cilliers et al., 2019; Tomaszewski et al., 2021).

Related to the philosophy underpinning the current research are the explanatory, descriptive and exploratory design. Explanatory research is aimed at clarifying why an event occurs when there is limited information available on the topic, while descriptive research is aimed at describing a population of phenomenon without considering the reasons or causes (Asenahabi, 2019; Creswell & Creswell, 2022). The present study followed an exploratory design. An exploratory design is suitable for research on a problem on which few prior studies have been conducted, and is useful in gaining background information on the study topic and an understanding of the problem, as well as in generating new ideas (Asenahabi, 2019). The aim of exploratory research is to gain a better understanding of the problem under study and its consequences, and to clarify conjecture (Makri & Neely, 2021). It is also flexible in answering different types of research questions (Sacred Heart University, n.d.). This design can determine a range of causes of the problem and indicate various solutions (Makri & Neely, 2021).

The exploratory design was considered appropriate for the current study because few studies have been conducted on skills development in mining as experienced by employees on various levels in order to arrive at a comprehensive theoretical framework for skills development for a mining organisation in South Africa.

4.5 RESEARCH METHOD

The research method comprises the actions taken to classify, select, and evaluate information on a particular topic (McCombes, 2019) including defining the population, the method of sampling, data collection, and analysis and interpretation of the findings (Creswell & Creswell, 2022). The following sub-sections discuss the method followed in conducting the study, including defining the population, the sampling method and the realised sample, the method of data collection, and the data analysis.

4.5.1 Population and sampling

A study population is all the people or items under study (Du Plooy-Cilliers et al., 2019; Majid, 2018). The population of the present study was all 25 000 employees of the mining organisation under study, and included both managerial and non-managerial staff in all departments.

It is generally impossible to study the entire population, which necessitates sampling (Majid, 2018). A sample is defined as a subset of the population, chosen based on inclusion criteria (Denzin & Lincoln, 2018). Inclusion criteria are features and characteristics that participants must possess in order to qualify for participation, to enhance the trustworthiness of the study (Patino & Ferreira, 2018). Therefore, inclusion criteria are the features or characteristics of individuals that make them appropriate for inclusion in the sample (Patino & Ferreira, 2018). While inclusion criteria ensure that representative and appropriate participants are chosen, exclusion criteria prevent the inclusion of individuals whose contribution may have a detrimental outcome on the trustworthiness of the study (Patino & Ferreira, 2018). To qualify for participation in the present study, all participants had to meet the criterion of having been in the full-time employment of the organisation for at least two years, to ensure they had sufficient experience of working for the organisation and participating in the skills development system to make a meaningful contribution to the study. Apprentices and students on learnerships were, therefore, excluded. Employees were sampled from various organisational levels, but managers had to hold a job grading of at least a Paterson D level. The researcher ensured that all participants had experience of the company's skills development system and had a good command of English.

Sampling can take the form of either probability or non-probability sampling. In probability sampling, every unit of the population has an equal chance of being selected for participation in the study, which is not the case in non-probability sampling (Trochim, 2020). In the present study, purposive sampling, a form of non-probability sampling, was used to select participants.

Purposive sampling, also known as judgement, selective, or subjective sampling, is the selecting of individuals who have the required knowledge and experience to add value to the research by contributing high-quality data (Johnson et al., 2020).

In determining an adequate sample size for qualitative interviews, literature recommends anything from five to 50 participants; however, it is common for the samples of qualitative research to be smaller than those in quantitative research (Marjan, 2017).

Vasileiou et al. (2018) note that, in determining an appropriate sample size, researchers need to consider the delineation of the study, the topic, and the quality of the data gathered thus far. Vasileiou et al. (2018) also argue that the number of participants is less important than the development of a comprehensive set of categories from the data and providing sufficient evidence from the data for these categories. A major consideration is data saturation — the point at which additional interviews yield no now knowledge or information, and the information gathered thus far is sufficiently supported (Denzin & Lincoln, 2018; Faulkner & Trotter, 2017).

The present researcher continued to conduct interviews until data saturation had clearly been achieved. Data saturation was achieved after nine interviews, and the researcher conducted another two interviews to confirm data saturation. Thus, a total of 11 managerial employees were interviewed. The researcher also conducted two focus-group sessions with eight and nine non-managerial employees, respectively.

4.5.2 Participant profile

The managers and employees represented a variety of levels and positions in the organisation, as recommended by Bryman et al. (2019). As shown in Table 4.5, the final sample consisted of a total of 28 participants: 11 managers and 17 non-managerial employees, with an overall gender distribution of nine men and 19 women. While there were more women than men in the total sample, the distribution was more equal amongst the managers, i.e., five men and six women. Their ages ranged from 26 to 65, and they represented the following divisions in the organisation: Engineering, Finance, and Human Resources. The participants represented various race groups, all had a good command of the English language. Tables 4.5 and 4.6 provide more detailed participant information.

Table 4.5

Invitations and Realised Sample

Focus group/Interviews	**Number of invites**	**Number participants**	**Number of women**	**Number of men**
Focus Group 1 (non-managerial employees)	50	8	4	4
Focus Group 2 (non-managerial employees)	50	9	9	0
Individual interviews (managers)	30	11	6	5

Table 4.6

Participant Profile

Interview/Focus group participant number	**Self-identified gender**	**Organisational level (managerial/ non-managerial)**	**Age group**	**Self-identified race**
II1	Male	Managerial	56–65	White
II2	Male	Managerial	56–65	White
II3	Female	Managerial	36–45	Black African
II4	Male	Managerial	56–65	White
II5	Female	Managerial	46–55	Black African
II6	Male	Managerial	46–55	White
II7	Male	Managerial	36–45	Black African
II8	Female	Managerial	26–35	Black African
II9	Female	Managerial	56–65	White
II10	Female	Managerial	56–65	White
II11	Female	Managerial	36–45	Indian
FG1P1	Male	Non-managerial	36–45	White
FG1P2	Female	Non-managerial	26–35	Black African
FG1P3	Male	Non-managerial	36–45	Black African
FG1P4	Male	Non-managerial	46–55	Indian
FG1P5	Female	Non-managerial	36–45	Black African
FG1P6	Female	Non-managerial	36–45	White
FG1P7	Female	Non-managerial	26–35	Black African
FG1P8	Male	Non-managerial	36–45	Black African
FG2P1	Female	Non-managerial	26–35	White
FG2P2	Female	Non-managerial	36–45	White
FG2P3	Female	Non-managerial	56–65	White
FG2P4	Female	Non-managerial	46–55	White
FG2P5	Female	Non-managerial	46–55	White

Interview/Focus group participant number	Self-identified gender	Organisational level (managerial/ non-managerial)	Age group	Self-identified race
FG2P6	Female	Non-managerial	36–45	Black African
FG2P7	Female	Non-managerial	46–55	White
FG2P8	Female	Non-managerial	36–45	Black African
FG2P9	Female	Non-managerial	36–45	White

4.5.3 Data collection

Data collected in qualitative research may take the form of words (text), visuals, images, and observations. In collecting data from participants, the researcher aims to gather information, perspectives, and opinions through interviews, focus-group discussions, and/or observations (Du Plooy-Cilliers et al., 2019). In the present study, individual interviews and focus-group discussions were conducted, which methods are widely recognised and employed in qualitative research (Du Plooy-Cilliers et al., 2019), and often used in the same study to gather additional data (Denzin & Lincoln, 2018). Participants in focus-group sessions interact with each other in answering the questions, which may shed additional light on the topic under study (Du Plooy-Cilliers et al., 2019). Focus-groups sessions are less formal and intimidating than individual interviews, and participants may raise issues to which other participants add additional insights, and debates amongst participants could further enrich the data (Bryman et al., 2019). Another advantage of focus groups is that such sessions enable a researcher to generate large amounts of data in a short period (Bryman et al., 2019).

In the present study, both the interviews and focus-group discussions were semi-structured, which provides the interviewer the freedom to change the order of the interview questions in order to facilitate a free-flowing discussion (Du Plooy-Cilliers et al., 2019), and to ask probing questions to delve deeper into the reasons behind participants' responses (Creswell & Creswell, 2022; Denzin & Lincoln, 2018). This allows the researcher to uncover deeper meanings and obtain more clarity while allowing participants to freely air issues they deem relevant to the topic under discussion (Bryman et al., 2019).

The interviews and focus-group discussions were conducted according to an interview guide containing open-ended questions (see Appendix 4). Interview guides maintain a certain order and consistency in interactions with participants by ensuring that the same questions are posed to all participants and that the discussions remain relevant to the aim of the study, as

well as ensuring that all questions are posed to all participants (Creswell & Creswell, 2022). The table below indicates the interview questions pertaining to the study's empirical objectives.

Table 4.7

Interview Questions Linked to Empirical Objectives

Empirical objective	**Interview question**
EO1: To explore and understand the perceptions of employees and management with regard to skills development in the organisation under study;	What are the perceptions and lived experiences of employees and management with regard to skills development in the organisation?
EO2: To understand the perceived adequacy of the skills development system in the organisation;	How adequate is the organisation's skills development system perceived to be?
EO3: To explore and understand the perceived challenges and advantages of skills development in the organisation	What are the perceived challenges and advantages of skills development for the organisation?
OE4: To understand the perceptions of management and employees regarding the requirements for an effective, customised skills development system for the organisation; and	What are the perceptions of management and employees regarding requirements for an effective, customised skills development system for the organisation?
EO5: To draw conclusions and make recommendations regarding a skills development model for the organisation, together with a proposed theoretical framework based on the findings and extant literature.	What conclusions can be drawn and recommendations made regarding a customised skills development model for the organisation?

The limitations of interviews (including those with focus groups) are that they are time-consuming and labour-intensive, and there is a risk of the loss of data if the interviews are conducted online (Kakilla, 2021). Language barriers may also result in incorrect meaning being perceived or communicated (Kakilla, 2021). In addition, there is the risk of participants providing socially desirable answers — what they think the researcher wants to hear, and a fear of raising contentious issues, particularly in a group setting (Kakilla, 2021).

The risks noted by Kakilla (2021) were addressed as follows in the current study. To mitigate the risk of loss of the data, the researcher electronically recorded and made back-ups of the

interviews and focus-group sessions. The researcher encouraged the participants to share the views openly and honestly, an effort that was supported by the participants being assured of anonymity. The researcher established rapport with the interviewees before commencing with the interviews and focus-group sessions, and again provided information on the study.

All participants were selected using the same sampling method (purposive) and inclusion criteria, and were asked the same interview questions (see Du Plooy-Cilliers et al., 2019). Individual interviews took place from 25 August 2022 to 12 December 2022, with 11 managers in total. The first focus-group session took place on 23 August 2022, with a total of eight participants. The second focus-group session took place on 30 August 2022, with a total of eight participants. The data were collected and analysed concurrently, and the present researcher continued to conduct interviews with additional participants until the point of data saturation was reached, i.e., when additional interviews yielded no new information (Creswell & Creswell, 2022; Fusch et al., 2018). The recoded data were transcribed using Microsoft Teams. The researcher then cleaned the data, in preparation for analysis.

4.5.4 Data analysis

The next sub-section explains the approach to the data analysis and the method employed.

4.5.4.1 Approach to analysis

The approach to reasoning in the analysis can be either inductive or deductive. In the deductive approach, the reasoning is based on scientific principles, and the reasoning moves from theory to the data, i.e., from larger concepts to details in the data. This type of analysis requires a highly structured approach, and the researcher remains independent of the study (Williams & Moser, 2019).

In inductive reasoning, which is aligned with qualitative research, the researcher aims to gain in-depth insights into the meanings people attach to events, thus moving from detailed data to larger concepts (Woiceshyn & Daellenbach, 2018). Morse and Mitcham (2023) note that qualitative research is based in inductive reasoning, which is the process of deriving general principles from data in a bottom-up process, while deductive reasoning is top-down, moving from general ideas to specific findings.

The inductive approach was followed in the current study, with the constructs under study explored from the viewpoint of participants to gather detailed information (see Woiceshyn & Daellenbach, 2018). In following the inductive approach, the researcher attempts to understand the meanings participants attach to issues through qualitative data, and the study

places great emphasis on the context of events (Woiceshyn & Daellenbach, 2018).

4.5.4.2 Method of analysis

The method applied to analyse the collected data was thematic analysis. Thematic analysis is a process of identifying themes from non-numeric data, i.e., data in the form of descriptions, narratives, or pictures, rather than statistically analysing numbers. It entails scrutinising and categorising the data, and identifying patterns or themes within the data (Du Plooy-Cilliers et al., 2019). The following six steps (Soratto et al., 2020) were applied: 1. immersion in the data, 2. initial coding, 3. categorisation of the codes into sub-themes and themes, 4. review and refinement of themes, 5. defining the themes through labelling, and 6. writing up the findings. The way in which the steps were applied in the current study is discussed below.

In Step 1, immersion in the data, the researcher read and re-read the transcribed data in order to become familiar with the contents (see Soratto et al., 2020). In Step 2, initial coding, the researcher highlighted important concepts in the data transcripts and made preliminary notes (see Bryman et al., 2019). In Step 3, categorising the codes into emergent sub-themes and, thereafter, themes, the researcher collated excerpts from the data that covered similar concepts and conveyed similar meanings into sub-themes, from which the researcher developed themes (Williams & Moser, 2022). In Step 4, the researcher further aligned and refined the themes and their sub-themes (see Williams & Moser, 2019). The aim was to scrutinise the themes for overlaps and connections between the various sub-themes and themes (see Castleberry & Nolen, 2018; Williams & Moser, 2022).

Thematic analysis is suitable for the analysis of complex issues in a study that is based on rich information and suggestions gathered through personal interviews (Du Plooy-Cilliers et al., 2019), which is why it was considered an appropriate method of analysis for the present study. The coding of the data was aided by Atlas.ti software, which is a tool that helps researchers to group large amounts of textual data into ciphers and themes (Soratto et al., 2020). Comments and texts can be added using Atlas.ti to classify the subject matter into a sequence that promotes understanding (Williams & Moser, 2022).

The next section discusses the strategies employed in the current study to ensure quality research.

4.6 STRATEGIES TO ENSURE TRUSTWORTHINESS

Ensuring trustworthiness, i.e., rigour, in qualitative research requires that the entire research process be based on best practices, and that the method followed is explained in detail —

providing an ‘audit trail’, and that the findings are reported in a transparent manner (Johnson et al., 2020; Maher et al., 2018). In qualitative research, the researcher serves as the ‘research instrument’ collecting the data, and, therefore, has to guard against personal views and biases influencing the research process and outcomes (Johnson et al., 2020). Trustworthiness is achieved by satisfying the following criteria: confirmability, credibility, dependability, transferability and authenticity (Du Plooy-Cilliers et al., 2019). The criteria and how they were met in the current study are discussed below.

Confirmability is the extent to which the data collected match and support the findings of the researcher (Du Plooy-Cilliers et al., 2019), i.e., that the findings do not reflect the perspective or biases of the researcher (Denzin & Lincoln, 2018). To ensure confirmability, the researcher has to provide evidence that the findings are based on the data gathered from the participants and were not affected by researcher bias. The present researcher remained aware of personal biases in order to remain objective throughout the research. In addition, participants were asked to review the capturing of their views, a process referred to as ‘member-checking’, to confirm accuracy, as recommended by Denzin and Lincoln (2018).

Credibility relates to confidence in the truthfulness of the study findings (Du Plooy-Cilliers et al., 2019). To ensure credibility, the researcher has to provide sufficient supporting evidence that the findings relate to the phenomenon under study and the aim of the study, in order to create confidence in the truthfulness of study’s findings (Du Plooy-Cilliers et al., 2019). The present researcher ensured credibility through lengthy interviews and focus-group discussions, constant observation, member-checking by participants, and also took notes throughout the interactions with the participants (see Du Plooy-Cilliers et al., 2019). The reporting of the findings is also supported by verbatim quotes from the transcripts of the interviews and focus-group sessions.

Dependability refers to the consistency of the findings and the research methodology being reported, such that the readers are able to follow and evaluate the process (Denzin & Lincoln, 2018). To ensure dependability, the researcher must provide rich detail on the methodology used to conduct the study. In the present study, the findings are supported by direct quotations from participants’ interview transcripts, and the method followed is explicated in detail in this chapter.

Transferability is the degree to which the findings of a study are applicable in other contexts. This requires detailed descriptions of the research setting and how the study was conducted (Creswell & Creswell, 2022). To ensure transferability, the researcher has to provide detailed information on the context of the study, so that the reader is able to establish whether the

findings may be applicable in another setting or context. This requires detailed descriptions of the research setting and the population under study (Creswell & Creswell, 2022).

Authenticity refers to a study that reflects diverse perspectives of the participants (Du Plooy-Cilliers et al., 2019). The present researcher remained objective in analysing and reporting the themes that emerged from the data. The researcher also employed probing questions to gain insights into the organisational culture and any ulterior motives the participants may have had in answering the interview questions (see Dunbar et al., 2023).

Trustworthiness is further enhanced by appropriate sampling, data saturation, prolonged engagement with and observation of participants, and data triangulation (Creswell & Creswell, 2022; Denzin & Lincoln, 2018). Triangulation is the use of multiple techniques, sources of data, and theories to confirm the findings of a study, as it allows the researcher to view the data from diverse angles (Creswell & Creswell, 2022). In the current study, the researcher triangulated the findings from the data of the individual interviews and the focus groups, and triangulated both with the literature discussed in Chapters 2 and 3, in discussing the findings (reported in Chapter 6). As recommended by Gray et al. (2020), the current researcher engaged in extended interactions with the participants — 30 to 60 minutes with managers and 60 to 120 minutes with each of the focus groups.

Johnson et al. (2020) recommend that qualitative researchers practise reflexivity in order to remain aware of possible personal biases and preconceived notions that may affect the manner in which a study is conducting and how the data are analysed, interpreted, and reported. The researcher has to remain aware of this risk throughout the study (Johnson et al., 2020). This was pertinent to the present study, as the researcher was an employee of the company under study at the time the study was conducted. However, the researcher did not select participants from her immediate organisational environment. The present researcher acknowledged her role as researcher in the qualitative approach, continuously checked for bias, and strove to remain objective in conducting the study, particularly in analysing and reporting the findings.

The next section discusses the ethical considerations pertinent to the current study.

4.7 ETHICAL CONSIDERATIONS

Upholding ethics is critical in research, especially in studies that involve humans (McGinley et al., 2021). Ethical considerations in research focus on the researcher protecting the participants from physical and emotional harm (Bryman et al., 2019).

Ethical clearance to conduct the present study was obtained from the Ethics Committee of the University of South Africa (see Appendix 1). Permission to conduct the study in the organisation was obtained from the organisation's manager of technical training (see Appendix 2). The organisation was fully informed about the aim and method of the study, and the name of the organisation is not used in the reporting. Should more information on the study be required by external individuals, written permission would have to be obtained from the mining organisation under study.

The researcher adhered to the Protection of Personal Information (POPI) Act 4 of 2013 throughout the study. Participants' electronic mail addresses were known to researcher prior to commencing the study; therefore, inviting them to participate in this manner did not constitute a breach of the Act.

As recommended by Du Plooy-Cilliers et al. (2019), potential participants were truthfully informed about the aim of the study and what their participation would entail. They were assured of anonymity in the reporting, including that no personal identifiers would be used, including specifics regarding the department in which an individual was employed. The researcher assigned codes to participants in reporting and quoting their views.

Aligned to the recommendations of Taquette and Borges da Matta Souza (2022), participation was voluntary, and participants were assured that they could withdraw from the study at any point, without any negative consequences. Participants had to sign an informed consent form (see Appendix 3) prior to commencement of the interviews and focus-group sessions. This form also contained details of the study and the ethics that would be upheld. Participants and the organisation were assured that the data would be used for academic purposes only. The audio-recording of the interviews and focus-group sessions was done with the participants' written consent. Furthermore, there was no remuneration for participation.

The data were stored in a password-protected file, while hard copies were stored in a locked cupboard inside a locked office, to which only the researcher and study supervisors had access. The data will be destroyed five years after completion of the study. The researcher upheld these ethical values throughout, and made every effort to ensure that the findings were not biased through alteration or distortion.

4.8 CHAPTER SUMMARY

This chapter discussed the methodology employed in conducting the study. The study followed interpretivist–constructivist philosophy, a qualitative research approach, and an exploratory research design. The population consisted of all the organisation's employees on

all levels. This chapter also detailed the sampling method (purposive sampling) and the realised sample, which consisted of 11 managers, who were interviewed individually, and non-managerial employees, who participated in two focus groups (eight and nine participants, respectively), followed by the method of data collection. The analysis was conducted using thematic analysis following an inductive approach. The chapter also detailed the strategies to ensure trustworthiness of the study and the ethics upheld throughout. This concludes the discussion of the methodology followed in conducting the study. The next chapter reports the findings of the study.

CHAPTER 5: FINDINGS OF THE STUDY

5.1 INTRODUCTION

The study's realised sample consisted of 11 managerial employees, who were interviewed individually, and two focus groups, with eight and nine participants, respectively (see Appendix 4 for the interview guide). There were more women (19) than men (nine) in the total sample; however, the distribution was more equal amongst the managers, namely five men and six women. The managers and employees represented a variety of organisational levels, roles, and departments in the organisation.

The findings are presented according to the empirical objectives (EOs). All participants, both in the individual interviews and the focus groups, were asked the following interview questions (IQs):

IQ1: Explain your personal experience of skills development within the organisation.

IQ2: In your opinion, did the merger have an impact on skills development?

IQ3: What are the perceived advantages and challenges of skills development for the organisation?

IQ4: What is working for you within our current skills development system, and what do you think we should change to make it more effective?

IO5: In your opinion, what factors are important for skills development system to be successful?

These questions supported the achievement of the following EOs of the study:

EO1: To explore and understand the perceptions of employees and management with regard to skills development within the organisation;

EO2: To understand the perceived adequacy of the skills development system in the organisation;

EO3: To explore and understand the perceived challenges and advantages of skills development for the organisation; and

EO4: To understand the perceptions of management and employees regarding the requirements for an effective, customised skills development system for the organisation.

To avoid duplication in the reporting, and to maintain the focus on the overall aim of the study, namely to propose a theoretical framework to inform a model for effective skills development for a mining organisation in South Africa, the discussion of the themes that emerged from the data starts with the overall perceptions of the participants regarding: the current skills development system (Section 5.2, addressing EO1); the perceived adequacy of the system (Section 5.3, addressing EO2); and the challenges and advantages of the system (Section 5.4, addressing EO3). This is followed by a detailed discussion of the themes that emerged from the discussions regarding employees' and manager's perspectives of the elements of an effective, customised skills development system for the organisation (addressing EO4), in Section 5.5.

EO5 (*To draw conclusions and make recommendations regarding a skills development model for the organisation*) is addressed in Chapter 6 (Sections 6.2 to 6.8), providing an in-depth discussion of the findings, together with a proposed theoretical framework for skills development, based on the findings and extant literature.

The findings are supported with verbatim quotations from the interview transcripts. To ensure anonymity, individual interviews (conducted with managers) are indicated as "II", together with a number for the participant, e.g., "P1". Quotations from the transcripts of the focus-group discussions are indicated as "FG", followed by the number of the focus group, e.g., "1" or "2", and the number of the participant in the focus group, e.g., "P1".

5.2 PERCEPTIONS OF EMPLOYEES AND MANAGERS WITH REGARD TO SKILLS DEVELOPMENT IN THE ORGANISATION

While there were some positive comments, overall, participants' perceptions of the skills development system of the organisation were negative.

> IIP2: *"It is working, but, like I said previously, the first question they must involve more technology in it, and make it more advanced."*
>
> IIP6: *"Terrible, I have not done any course yet through them. However, there is a development plan for each of my team members. I have not done it for myself as yet. There is no feedback or information from the training departments, especially for development that we need in the projects and engineering teams."*
>
> IIP7: *"They need to stop the paperwork and start running with what it takes to build a successful organisation. Currently, it's more about statistics. They focus more on the figures of who needs to be trained, and don't care if the training really took place. They must understand what the strategic direction is, the strategic alignment of the business concerned. And, at the same time, I think we need to be flexible in how we read performance. Currently the performance is based on statistics more than the deliverables."*

IIP8: *"There's a lot that's going on all at once, you know, so I am of the view that not enough attention has been paid towards skill development, and it's primarily because everyone is just focused on getting things going. You know, just getting the day-to-day work done. There is not enough time allocated to actual skills development programmes."*

IIP1: *"It's not really aligned to our current set of tasks. You're learning new skills, and you'd like more development on those new skills, right?"*

A number of participants noted a lack of skills development, while others noted that skills development was not aligned to their career development, with the organisation focusing on compliance. Participants also indicated that skills development initiatives need to include advancements in technology.

5.3 PERCEIVED ADEQUACY OF THE ORGANISATION'S SKILLS DEVELOPMENT SYSTEM

Most participants indicated that the skills development system is inadequate, slow, and somewhat uncoordinated. Managers noted that they are the sole drivers of their employees' skills development. Some participants noted that they are limited to skills development pertinent to their field, which limits their development in areas of interest to them and that would enhance their career development. They also noted a lack of psychometric testing to determine their strengths, which could inform suitable skills development and career progression.

IIP8: *"…there's a lot of policies and procedures that get circulated through the organisation's official communication. However, there isn't a specific programme that is followed, or rather that I'm involved in, for skills development."*

IIP7: *"Yeah, I think, as far as skills are developed, this concept, I personally have not had any experience or any development or training. Maybe it's because what I do is, it's more maintenance work or maintenance-related activities. As far as that is concerned, no development at all. For these guys that report to me, I update their IDPs* [Individual Development Plans] *and contact HR myself, as nothing is done from anyone's side if I don't take the initiative."*

IIP4: *"We engineers went through a four-year study programme at the university. Theoretically, there's not much that you can teach an engineer when he's coming from university. The practical side of it you will have to learn on the job. This is what we have done for years. Teach us other skills."*

FG1P3: *"I think, personally, for me, it has been very slow. I think it is, to some extent, a paper exercise. That is the reality. And when I say that, I mean we do a lot of career paths and career development things, but that never really materialised."*

FG2P2: *"I have not had much skills development training over the years. I've been with the mine for ten years and had no formal training. It was mostly on-the-job training, and it would be nice if training was more frequently in the future."*

FG2P3: *"All right, this is a concern for me. Ever since I've been in this organisation, there have been no courses that have been offered. Personality tests, assessments — never done. Talent management — never. I've never seen it. Capabilities testing — I have never seen that, which I have seen in other organisations. In some cases, courses were offered and nothing transpired. So that's my one-cent opinion."*

The above excerpts illustrate general discontent with the organisation's skills development system. Participants were then asked to provide more information on the challenges, together with their perceptions of advantages a skills development system could hold.

5.4 PERCEIVED CHALLENGES AND ADVANTAGES OF SKILLS DEVELOPMENT IN THE ORGANISATION

Participants noted that the advantages are: enhanced morale, increased expertise, enhanced self-confidence, career advancement, improved productivity, improved communication, and team-building.

The challenges the participants noted are: a lack of skills audits to determine problem areas, particularly with regard to the new administrative system, a lack of alignment of skills development with operational needs and organisational strategy, lack of communication skills and channels in certain areas, and the absence of succession planning and a talent pipeline.

IIP3: *"Definitely, it boosts a person's morale in terms of being knowledgeable. You become an expert or super-user in your area of work. When they know more, you can also see that there's positivity in how they do their work with confidence. It also creates opportunities for people to be promoted to next levels in their area of employment or any other area within the organisation."*

IIP5: *"Most of the other team members are really reluctant. Maybe the system is a bit difficult for them, or what? That's why I mentioned that, maybe, we first need to identify the 'why'. What are the challenges that people see with our systems?"*

IIP5: *"The advantages include growing within a company, in other words, career growth. Also, when I'm not there, then someone else can take over quickly or stand in for me."*

IIP7: *"Somebody would basically install a pump incorrectly. Now, tomorrow, the same pump is there again. He has to go back and rework on the same pump. A lot of production time gets wasted. We need to focus and spend more time and energy on developing our people to make sure that we eventually achieve our strategy codes and direction. If you can train our guys, I think our involvement will then be to enhance them."*

FG2P2: *"I would say there's both positive and negative. Positive, obviously, because I've learned the new system, which is good. The negative is that I feel somehow that the previous systems had more and better functionalities than this new system."*

FG2P2: *"I think, for me, the benefits is that, we all can do our jobs better and, obviously, faster. Maybe we will be able to communicate better with each other. People don't update and communicate! They leave things to be, and then comes a massive problem,*

and now they're in trouble because they did not communicate. Also, better opportunities may arise, and so people moved to other departments or get better jobs because of that. We lose good people."

FG2P7: *"Advantages, definitely becoming a better, stronger team that can conquer anything. The advantage, like the other participants said, is people will do good at their work, but then they go to the next job or higher post, and then you need to start training all over again. It does not end."*

FG2P9: *"I think everything has been said already in terms of productivity being improved as an advantage. I agree with most of the participants that time is a challenge."*

Participants thus noted a number of specific issues that require addressing, and stressed that skills development should be aligned to creating a robust talent pipeline.

5.5 PERCEPTIONS OF MANAGEMENT AND EMPLOYEES REGARDING THE REQUIREMENTS FOR AN EFFECTIVE, CUSTOMISED SKILLS DEVELOPMENT MODEL

The following themes and code groups emerged from the data.

Table 5.8

Summary of Emergent Themes and Sub-themes, Together with Examples of Codes

Theme	Sub-theme	Examples of Codes
Theme 1: Orientation and mindset	**Ownership of and commitment to continuous learning** Both managers and employees must commit to continuous learning in order to create a learning organisation, which will aid in the achievements of organisational goals. Managers and employees both have to take ownership of their own and their subordinates' leaning in their area.	commitment; HR; management; ownership
	Communication Mangers, the HR function, and employees should effectively communicate with each other regarding the types of skill development opportunities required and those that are made available. More visibility is required in terms of who to contact and the process to follow to secure an opportunity for development.	openness; transparency; clarity; slow responses; who to contact

Theme	Sub-theme	Examples of Codes
Theme 2: Skills audits	**Company-specific** The organisation should undertake a skills audit to determine the specific skills required for a particular job, currently and going forward, and then ensure timely and appropriate development.	skills assessment; identify gaps; task-specific
	Industry-wide (national and global) In order to compete on a national and international level, the organisation has to ensure that it keeps abreast of developments in the field and measures current skills levels against these trends and developments.	global competitiveness; international; developments in mining; specialist knowledge
Theme 3: Funding	Limited funding for development presents a major challenge to skills development.	sufficient funds; financial resources; money
Theme 4: Time	**Allocate time for skills development during working hours** Time should be allocated for courses during work time and in such a way that employees do not experience conflict between leaning and performing their job tasks. **Class capacity** Due to the merger, classes are overcrowded, and trainers are unable to give participants individual attention.	No time; too much work; no substitute; relief staff; classes slow; overcrowding
Theme 5: Types of skills	**Soft skills** Employees desire the development of their soft skills, e.g., emotional intelligence, mental health, and problem-solving.	soft skills; communication; conflict management; team-building
	Hard skills Besides task-related skills, participants suggested that employees' skills in Microsoft Word and Excel be developed. Courses should be job-specific, to increase productivity.	task-specific; relevant; practical

Theme	Sub-theme	Examples of Codes
Theme 6: Development method	**Online** Online programmes that employees can access remotely should be adopted for both surface- and underground employees, to save time and enhance flexibility.	hard to attend training at venues; distance to venues; travel time
	Mentoring/Job-shadowing/Coaching These methods facilitate career growth and development of specialised skills, including management skills.	learning from others; learning from managers; job rotation; job shadowing
	Refresher courses Refresher courses will ensure that employees perform optimally and stay abreast the latest system functionalities.	could not attend course; forgot what was learned
	On-the-job/In-house skills development One-on-one practical skills development is particularly effective in learning specialised skills, especially with regard to manual and technical skills.	teach others; show how it is done
	Knowledge-sharing Sharing knowledge should be encouraged and facilitated to optimise work processes and allow employees to tap into the knowledge and experience of others, as well as to get assistance when problems arise.	knowledge hoarding; sharing knowledge; learning organisation
	Short courses Short courses are less time-consuming, and therefore less intrusive on work time.	courses too long; more regular attendance possible
	Self-learning Self-development videos and manuals (i.e., remote learning) are valuable when working under time constraints. Individuals are then able to invest in their development in their own time and at their preferred pace.	desire for self-development; learning in own time; convenience

Theme	Sub-theme	Examples of Codes
Theme 7: Talent pipeline	**Recognition and certification** Formal recognition and certification are deemed career-enhancing, and therefore enhance motivation and organisational loyalty.	career development; promotion; reward; career progress
	Transparency Participants indicated that the development agenda and opportunities need to be more transparent, and that these should be tied to career development within the organisation.	favouritism; lack of information; confusion regarding offerings
	Accessibility Employees who want to study a Master's degree only qualify to apply once they reach a Paterson D level. Participants view this as an unnecessary limitation. Linked to transparency, they also indicated nepotism and lack of co-operation as hampering their access these courses.	No promotion without degree and no degree without promotion; Catch 22; hampers progress
	Talent pipeline Participants indicated the importance of building a robust talent pipeline, which requires developing and retaining talent.	attrition; better offers; losing talent;
	Monitoring and feedback Participants indicated the need for more feedback, both top-down and bottom-up. Managers need to be more involved in monitoring development, and identify and communicate potential gaps. Employees require avenues to provide feedback on their needs and the quality and relevance of development initiatives.	no way to communicate issues; lack of monitoring; poor presentation; courses not completed

Note. Researcher's own compilation

5.5.1 Theme 1: Orientation and mindset

This theme covers the fundamental attitudes and beliefs of employees and managers at all levels as the philosophy underpinning skills development. This theme has two code groups.

5.5.1.1 Sub-theme 1.1: Ownership and commitment

All participants (employees and managers) believed that all individuals the organisation should take ownership of and commit to their own development and that of their subordinates. Participants noted that, currently, there is a lack of visibility and initiative from all stakeholders regarding skills development. Some participants revealed that a number of employees are also not willing to participate in skills development; they are seemingly in a comfort zone. A few participants held a negative perception of the HR team, noting that there is a lack of engagement and assistance in the area of skills development.

> IIP9: *"The mine is already doing a lot. We need to give the best from our side. However, they can focus on constant and continuous learning."*
>
> IIP1: *"Yeah, sure. I will definitely say, as human beings, we're responsible for our own learning, because the company is not going to call you and ask you if we can send you for this. No, no, no, no. It doesn't work like that. If you want to gain a better future for you and your family, you need to make sure that you are in line with your own skill development process, not the company. The company is only there to assist you."*
>
> IIP5: *"We need to talk more about it, even maybe in our meetings, and communicate the advantages of upskilling your career and whatever skills that you have. Because, yeah, at times, we will speak about it just once, the development plans. We need to make sure that that is taken very seriously, and that we monitor to see if people are really serious about upskilling their careers."*
>
> IIP6: *"Make it more available, and also promote it, because it doesn't seem to me that they really would like to develop your skills."*
>
> IIP9: *"So, I personally experience the challenge of employees that do not want to develop. They don't want formal training. If the organisation is giving you training, take the opportunity!"*
>
> FG2P9: *"Something that I've picked up when I was still working on the shaft was, a lot of the times, the guys who was sitting on the shelf in the HR position doesn't really want to help because they're scared that it's going to add on to their workload. So, they prefer just to send you to the next guy. So, you get a runaround without ever getting a proper indication of what you can do, where you need to go. And I also think I agree with management being prepared. To allow you time off to develop and open communication with transparency on the available opportunities, not only items like, for instance, the women in mining Master's degrees that they had recently, but on all development opportunities that is available."*
>
> FG1P6: *"…willingness and learnability, your attitude, and effective communication."*
>
> IIP8: *"Participants must be disciplined enough to finish the programme."*

From the above, it is clear that there is a clear link between ownership and commitment and the next code group, *Communication*.

5.5.1.2 Sub-theme 1.2: Communication

Employee participants and managers noted that they have limited information on courses that are made available, and that they require more communication in this regard from the HR function. Employees revealed that they need to take the initiative and ask around to get more details on courses or programmes being offered. Participants also indicated that the HR function should seek advice from people in specialised positions in the organisation on skills and related courses that are task-specific. Participants also felt that courses should not be too general. It is clear that there is a lack of communication between the various stakeholders. Some participants also noted that there is a lack of communication regarding the skills matrix and its requirements in order for them grow into higher positions. The recent merger led to the implementation of a new work system, which has demotivated them. The upskilling and communication regarding this new system seems to have been lacking. Concerns regarding lack of support and communication from the team that implemented this system was also expressed. Participants noted that this is causing delays in work, which have a negative effect on their productivity.

> IIP3: *"If I can just say it as it is, the information from my end is not readily available for people to be aware of the kind of skills there are for the people to participate or to take on."*
>
> IIP3: *"I'm not aware until I ask. Then I'm told what is available for either myself or for my team members or for my subordinates to register. So it's not visible to everyone what is done and whom to also contact for whatever skills there are."*
>
> FG2P5: *"There must be more visibility to everyone to know that these courses or this training is available for you, and that you can apply for it or go on it. A big problem is that most people do not know about these training sessions or courses."*
>
> IIP4: *"Yeah, I think, for us as managers, to obviously improve on these programmes, I think, if an employee is hungry to learn and if he's engaging with his manager … then management needs to ensure that person's skills development. But if we can have the employees to push slightly more on that manager's button: 'But is there opportunities?', and then be open about it. I think that's the most important thing. The communication around the skills development, what we as management should really pre-empt and promote for employees, that's the one thing. But the other thing is from the employee's side, he should also address it in a way that is easy for management to be able to spot that the need is still there. The employee can then indicate: 'But the need is, so please develop me in this or this direction.' So, really, I think the one thing that's standing out is the communication. So, not one-way communication, maybe from the employer to the employee, but also from the employee to the employer."*
>
> IIP5:*"I think the best thing would be to conduct a survey of employees to identify their skills, to determine: 'What do they know? What is it that you, that they, do not know?' … Also, we need to identify the challenges that employees come across, especially those challenges that cause demotivation in upskilling them."*

IIP5: *"That's why I mentioned that, maybe, we first need to identify the 'why'. What are the challenges that people see with our systems?"*

IIP6: *"However, there is a development plan for each of my team members. I have not done it for myself as yet. There is no feedback or information from the training departments, especially for development that we need in the projects- and engineering teams."*

IIP7: *"I think, when you review our structure, your development matrix, you need to have discipline specialists sitting in the very same team that reviews these things. For instance, you cannot have HR personnel compiling engineering development interventions, because the HR person has no idea what he is doing or what they have to do."*

IIP10: *"Nothing is working. To make it effective, ask the super-users to help solve the problems, and be patient. Sometimes, when you have got a problem, you cannot reach anybody, and no one else knows how to assist you or guide you."*

IIP11: "[With regard to communication being lacking] *Yes and no, because it's out there, the communication is there. And if you know what to look for, then yes, it's working. But, like I mentioned earlier on, I think that the onus is on the individual, their manager specifically. I've had a few people who have asked me, 'What do you do?' I contact HR and say, 'OK, this is the process you have to follow.' So, again, communication, for me, is very key. Yes, they don't know where to go, but when you come aboard, it is for your manager to assist you with those sorts of things. It's in that area. I do believe that there should be some sort of an induction package. Also, when you come aboard with the mergers and acquisition, I think there should be something in your contract that you are made aware of what's available to you. Communication is key."*

FG1P4: *"…what I do find is that some training needs to be better communicated. There are training sessions, but, you know, if you don't speak to your peers, you're not aware of such training, so maybe the training needs to be better communicated."*

FG2P5: *"A big problem is that most people do not know about these training sessions or courses."*

FG1P7: *"Let's say, for example, you are in a department as a lower-level administrator and you need to understand what the matrix of skills is to end up being the unit manager, and then, from that matrix, understand what opportunities there are. Do they offer to pay for any of the fees to be trained or to be developed, if it's internally or externally? I think that process in terms of what's available, what are the skills matrix, what is the process, is very little from HR. There isn't somebody that we know for this type of skills development."*

FG2P9: *"Skills development is currently only based on the skills that you require on systems that you're required to work on. However, it's very limited. For instance, personal experience, I wasn't included in any of the original new systems training, and it took me between four and six months to get someone to show me how to work on it. It still wasn't a formal training session. I phoned this person and they told me to go there, then there, and 'This is what you do', and I had to phone another person and ask them. There's not a follow-up for people that missed the original training, or, if there is, nobody can tell me where it is. I phoned people in different sections to show me how to do a certain task."*

FG1P7: *"It's just that such opportunities is either not communicated to us or there needs to be more global or better communication regarding it. So that's one of the challenges that we basically facing..."*

According to participants, following the merger, there is a lack of clarity regarding the new company structure, processes, and areas of responsibility. Participants indicated that a clear organisational structure and clarity regarding the flow of internal processes will aid productivity through effective channelling of queries.

FG1P5: *"When someone from outside calls you, then you wouldn't have to put them through six people to get to know exactly what's going on."*

FG1P7: *"…not having knowledge of each other's processes and having to refer people through six different emails because they're not aware of what's going on is a challenge. I think that's just something internally as an organisation that we can do to get more training. If somebody is asking for assistance and you need to refer them somewhere, you don't have to ask five other people down the line before we get to the right person."*

From the above, it is clear that there is a concerning lack of communication on a number of issues and on various levels. Communication also appears to be slow, which has a dire impact on personal and, ultimately, organisational performance, as issues are left unaddressed for extended periods.

5.5.2 Theme 2: Skills audits

Participants indicated the need for skills audits. This theme has two code groups: company-specific skills and industry-wide trends, both national and global.

5.5.2.1 Sub-theme 2.1: Company-specific

Participants emphasised that mandatory courses need to be related to their tasks and the department in which they work. They noted that some of the mandatory courses have no relevance to their jobs or their career aspirations. Some mentioned that surveys and one-on-one discussions need to be facilitated to determine skills gaps. They noted that a skills matrix or profile of critical skills could guide their career decisions in the company.

IIP3: *"I think the organisation first needs to understand the different departments and their needs and, with that, develop programmes that can then be implemented based on the needs of the employees within the company. You know, if you don't know what your people need, it's very difficult to set certain programmes or courses for them."*

IIP8: *"The nature of the work and various roles is very diverse. To implement the skills development programme, it needs a lot of work and planning. It has to add value and be meaningful. Not everyone will require those same skills, so you really need to be careful. Who is your audience and what are you trying to develop them in? So, I think, in*

delivering a skills development programme, [there] *can be a lot of challenges that come with the programme, because it can't be a programme that is applicable to everyone. One shoe does not fit all. It must be specifically related to the person's profession."*

FG1P4: *"…and in order to fill the gaps. If you want to move from a financial area to a mining, or from an engineering to legal, at least you understand the requirements in the skills level at that area. And you can actually work towards it."*

FG1P7: *"Number one … the skills demand. I think Human Resources needs to identify those skills that are in demand at the mine, and obviously create a profile for those skills and then communicate it to us. That's one way to make skills development effective. Number two is the transparency, and number three is to develop a skills matrix."*

One participant noted that these skills audits should also examine overlaps in skills in areas, to ensure that skills are better distributed across the organisation.

IIP7: *"In my opinion, yes, the organisation is too big now to be managed, and there's a lot of overlap in responsibilities. As a result, a lot of things are like basically just falling short or not being attended to. In terms of training, I think a lot could have been done better when the merger happened."*

From the above, it is clear that there is a lack of buy-in with regard to skills development initiatives, as participants consider many of these irrelevant to their job tasks. The situation is exacerbated by a lack of development that is specific to their career paths, both current and future.

5.5.2.2 Sub-theme 2.2: Industry-wide (national and global)

Participants indicated that, to be able to compete in the local and international mining industry, the organisation's skills development needs to keep abreast of innovation in the industry. Some suggested that better educated and more skilled people be brought in to train the current workforce, particularly in specialty areas.

FG1P2: *"…so we will have more trained players within the organisation* [and] *we can compete in the international market."*

IIP2: *"Bring better people in to train us. Bring people in from outside to train us, those people who have specialised skills."*

IIP8: *"Clear objectives with clear outcomes for every professional within the mining organisation. It must add value. It must come with structure and adequate guidance as well as a formal programme. Constant support is critical to ensure that there are no deviations or going off track."*

IIP7: *"Most of our internal training programmes should be revised. Most of them are not really relevant. I think they were developed maybe around the late 90s … and they are no longer relevant at this stage."*

IIP7: *"Maintenance, repairs, has evolved over the years. In a world-class organisation, for example, the condition monitoring is a process where you basically look at the condition of your equipment and how it operates. Other world-class organisations have basically developed their artisans into specialists. In that organisation, they will tell you this machine is going to fail more or less in the next five days. But in our organisation, the interventions are so delayed because we are so far behind that the equipment failures catch us off guard. It breaks. We were aware that there's probably something wrong with it, but because there is not enough skilled people to tell us this thing can still run for the next two days, then the machine breaks and catches us off guard."*

Participants were of the view that upskilling the current workforce would aid the mine in competing in the global market. Participants also mentioned that upskilling would make them more employable and propel their career growth. Participants indicated that the mine has to become more intentional about skills development, and that it should prioritise such initiative, in order to enhance its competitiveness.

5.5.3 Theme 3: Funding

Funding for skills development seems to be a challenge in the organisation. Participants noted that limited funds have resulted in their either waiting long periods for opportunities to study or not studying at all. One participant indicated that boredom and lack of opportunities have caused employees to leave the organisation, while other participants had to consider other avenues to obtain financial assistance. Only one participant suggested that management and the HR function co-operate in actively sourcing study funds and managing skills development budgets. Due to limited funds, managers have difficulty in deciding on who to send on courses.

IIP4: *"Yes, definitely. Sometimes, the company may not have the funds to develop everyone. People don't get opportunities immediately, and because they are bored, they go away to other companies. Maybe they also go because there's better opportunities on that side."*

IIP6: *"Time, funds, and opportunities for the company is limited to actually develop all the people."*

FG1P3: *"And then there is also the challenge of cost involved with skills development."*

FG2P6: *"I've seen that the company does post bursary opportunities for Master's and all of that. I was unfortunate that I didn't get assisted with that. I got assistance somewhere else with study financial assistance. But when opportunity presents itself for me to study again, I will try again in the company. Since we have merged, these opportunities are available. I think they don't have enough funds, maybe, to sponsor us."*

FG2P5: *"I just need to go and look for a course internally with HR. Sometimes you wait if there are fund limitations…"*

FG2P1: *"Well, obviously, I think it would be a tier system. So, it would start from the top, which is obviously management making funds available and a budget available for*

skilled development, and then we would move done to your HR teams, your skill management teams."

IIP6: *"However, time, funds, and opportunities for the company is limited to actually develop all the people. Who do you select and who do you leave out?"*

From the above, it is clear that a lack of funding hampers skills development in the organisation, causing staff attrition as employees seek jobs with better career-development prospects.

5.5.4 Theme 4: Time

Time is a major concern for those who want to participate in skills development courses. The merger caused a challenging situation in terms of a greater workload, making it difficult to attend skills development initiatives. Participants also noted that there are too many attendees in courses, making the pace of learning slow and cumbersome. This theme thus has two code groups: planned allocation of time during work hours to attend skills development programmes and class capacity.

5.5.4.1 Sub-theme 4.1: Allocate time for skills development during working hours

Some of the courses offered by the mine take place over an extended period. Many of the participants stated that they cannot be away from work for long periods, due to their heavy workload and pressing deadlines. They also mentioned that there is nobody to fill their place while they are on a course. If an employee does attend a course, it places pressure on other team members, who then have to do that person's work. Participants noted that part of the problem is that courses are not planned in alignment with pressing operational requirements. Courses are communicated through limited channels and at very short notice, leaving attendees little time to plan their attendance, or making it impossible to attend the course. As a result, employees miss out on development opportunities.

IIP3: *"The organisation needs to be very flexible when they offer these skills development courses. They must take into consideration that people are still working and can't take off for long periods of time. It should be facilitated online or in a way that doesn't affect employee work for very long."*

IIP3: *"The organisation should also plan or organise and prioritise with the department, and not just give dates out. They should agree with the departments on what is it that is practical for their own people and when can they attend, because we've got different production cycles. People end up losing out on courses because of dates they cannot be available because they need to have hundred percent of their time network to assess their operations."*

IIP4: *"Obviously, with work pressure, when you want to send someone, let's say, on a specific programme, sometimes it's difficult to pull that person from the work pressure, because, obviously, that's creating a gap in what he must do, putting more pressure on the rest of the team. So, time is a problem."*

FG1P2: *"…taking us longer learning to work on the new system."*

FG1P3: *"The amount of workload due to the restrictions on the new system. If we were using a superior system like we did previously, then we would have been bored and you can do so much more courses. Now, you don't have flexibility, so you are confined and feel suffocated. You cannot spread your wings. So that is a negative thing on development. Maybe if we were given a better system, then maybe we might feel like there's some learning to do."*

FG1P7: *"Usually, when those opportunities do come, they do come at very short notice. It is advertised or given to our senior management to let us know of it. But, I think, if they do long-term planning or communication of these opportunities for training, then people can make provision in terms of our own schedules so that we're able to attend. If you are busy, especially certain times in the year where you already have a lot of work and you won't have time or have leave, and training is done while you are gone, or you don't have sufficient time, then you miss out on those opportunities."*

FG1P8: *"Managing the workload. The two different organisations merged. They had different styles in terms of the number of people working in their departments. I am talking labour plans. I mean in our department, I'll make an example, we used to be six people, and now we are only two. You can just imagine the work. But we trying to carry the workload within this new organisation."*

FG2P5: *"I'm supposed to work 'til four PM in the afternoons, but I feel that, if I log off four o'clock, there is going be too much work tomorrow. So, I work 'til nine or ten in the evening, just to get through today's work. So, if you go on a training course, there will be even more work when you get back."*

FG2P6: *"…in terms of attending other courses, it is difficult. …since we merged, we are still trying to get the hang of things and we are learning a new system. We are integrating. Even if you want to attend courses, what about the workload? I mean, you feel that you going to lose a lot of time on your work. You won't be able to deliver on deadlines if we, say, take a week to attend a course."*

Linked to the themes of time allocated for skills development, the suggestions of job-shadowing and job rotation, the cumbersome administrative system, and staff shortages in certain areas, some participants indicated struggling to maintain a healthy work–life balance, making it very difficult to engage in skills development.

FG2P8: *"There's no time to do all of these courses. You are like debating in your head if you should leave your manager to attend a course or just do your work. It would be nice to have people and departments working stronger together so that we … find our place in and around our work and personal lives."*

FG2P9: *"I'm sure I'm not the only one that found that, working from home, you no longer have office hours. Previously, you used to close your computer and leave the office at four o'clock. Now, from home, it doesn't work like that way anymore. Your computer is*

there, so you kind of feel compelled to keep on working until the work is done. You … have to be available when anybody needs you. …I think time and work–home balance is a very big constraint. Another thing is that, since we've been working from home, we have meetings upon meetings upon meetings. And I don't always know why we have all these seven-hundred-thousand meetings. And that does take up a lot of time. We could have spent that time actually completing our work…"

Following the merger, many people were retrenched or left the organisation for better opportunities. This resulted in fewer people in each department handling a larger workload. Participants further noted that the new system that was implemented as a result of the merger has limited functionalities, making daily tasks more time-consuming, with some employees having to work late into the evening to complete their tasks, leaving no time for course attendance.

5.5.4.2 Sub-theme 4.2: Class capacity

Some participants stated that, since the merger, classes have become overcrowded, and that they have limited or no interaction with the trainers.

> IIP2: *"The thing is, what I've observed is that there was a lot of people who came in from other areas for the courses. There are too many people coming for training, and it is limiting our learning. Due to the fact that there we are a lot of people, we don't get the same individual time from the lecturers. A training that you would give twenty people is now for forty people. So, now we're not sure if everyone is being well trained or understanding."*
>
> IIP3: *"I think, since the merge has taken place, the organisation has expanded it's different training departments into different areas. It is not clear who must be contacted. If you want details for* [X] *area, they will push you to* [Y] *area or* [Z] *area. … I think because of the merge, we have expanded, and this has had a huge impact."*

It is thus clear that the merger led to different skills development departments in different areas, and a lack of co-ordination between these departments to ensure even distribution of attendees seems to exacerbate the problem.

5.5.5 Theme 5: Types of skills development required

Participants indicated that they and the organisation require development in both hard and soft skills, which are the two code groups.

5.5.5.1 Sub-theme 5.1: Soft skills

Participants noted that the development of soft skills is limited in the organisation. They indicated that they want to learn more about emotional intelligence, mental health, motivation, and problem-solving.

> IIP3: *"Yeah, I think, as a manager, normally, we are seen as those people that have got all the answers. We are lacking soft skills. I think we are more technical. We are very knowledgeable in the technical aspect of our work. The environment or the company that we work in is massive. We need to learn more about emotional intelligence."*
>
> IIP4: *"Traditionally, engineers step into a position, and if you think what is the job of an engineer, obviously to advise on maintenance schedules and all these kind of things. So, once the engineer is on a plant for, let's say, three to four years, management sees that he is doing an excellent job on maintenance, on proactiveness, the plant is running, breakdowns are coming down. So what do you do with that engineer not to stagnate on what he's doing right? Companies then think to promote this engineer to a manager position. So, now he is going into people management. Traditionally, a good engineer is not necessarily a good manager, right? We move him now from engineering to managing people. That's not necessarily the right move, but the problem is that there is no career path for an engineer going up the ranks. So, this engineer is now ending up a manager of people, and then what? So we need to develop him in people management. Currently, there isn't such a thing in place. He needs to know what is in the heads of his people to motivate them."*
>
> IIP3: *"How do we deal with perceptions? How do we deal with emotions? How do we deal with mental issues? This is important. We are a big organisation. We have been given these roles, and we are expected to just jump in and be mentally strong to continue. So, for me, it will be those soft skills. Managers need to be assisted with soft skills to manage better."*
>
> FG2P4: *"Recently, I've had the opportunity to train on the* [administrative] *system, which was great, and I feel they should be more training on soft skills like problem-solving and diverse and different training…"*

From the above, it is clear that participants believe that acquiring soft skills will enhance their productivity and efficiency in numerous areas, including the way in which they deal with challenges.

5.5.5.2 Sub-theme 5.2: Hard skills

Participants indicated that technical and specialised skills are lacking in the organisation. Furthermore, basic computer skills like proficiency in Microsoft Word and Excel are deemed critical in performing daily tasks.

> IIP3: *"Also, the organisation needs to make sure that the most basic programs within their organisation are shared and taught to everyone, for example, Microsoft and Excel."*

FG1P4: *"We still need to have a much better understanding of the value of skills development, especially in our area of engineering. Before the merger, we could negotiate on the specialised training we needed. This is key. You get better value. It's a little money spent for training, but the value the organisation gets is ten times more in terms of productivity."*

FG1P5: *"You can't just take a whole department of people and say, 'Now we're going to train you on payments'."*

Participants indicated that, currently, the courses offered are not task- or profession-specific, and that there is a need for more specialised development across all job roles.

5.5.6 Theme 6: Methods of development

Participants indicated a wide variety of developments to which they desire access, for different reasons. These are discussed below, under the code groups.

5.5.6.1 Sub-theme 6.1: Mentoring/Coaching/Job-shadowing

Participants noted that, while job-shadowing, mentoring, and coaching are available in the organisation, such opportunities are available to few employees. For example, those in non-managerial positions are not given job-shadowing opportunities. Participants indicated that their managers feel threatened by them in terms of job security. As a result, employees are stagnating in their current positions.

IIP3: *"Job-shadowing is also part of skills development. Especially someone at a lower level, because we want to retain people. We don't want to end up at an interview with a person that has worked with you for five years but does not have any skill development. Why are you not giving this person job-shadowing opportunities?"*

IIP3: *"One can also always find a mentor within the organisation. It depends on the career of that person within the operation. It should be well defined, the rules of the mentor and the mentee. There must also be a time period for this process that will take place between these people."*

IIP6: *"I think it was the second time yesterday I actually had a meeting with my team. This was with our lower guys who we need to train and mentor to move up the ranks. But, for myself, experience in terms of my skills development, none. None at this stage."*

IIP11: *"Micro-managing needs to be stopped, and trust employees more. … Allow subordinates to grow and explore. Don't be intimidated by them. There's nothing to fear when you've got new people coming in with all these aspirations and all these ideas. It will only help us improve."*

FG1P3: *"I suggest more on-the-job training. That is a clear way to succession planning. This eliminates frustrations that come from job stagnation. I've been listening to participants here who have been doing what they're doing for the past twenty-five years. Obviously, one would start getting frustrated and lose interest."*

FG2P4: *"… diverse and different training where we can learn from others."*

IIP8: *"Provide rewards and motivation in terms of job-shadowing or acting in positions."*

Some participants added implementing job rotation.

FG2P3: *"Let someone job-shadow in my place…"*

IIP4: *"You can have a kind of a shift. Move people out of a comfort zone and put them in a different position. It benefits the person relieving, because they learn more. Also, it helps the person that went on leave, as his work was being handled from the back."*

FG1P3: *"I think job rotation could also be something that can be more effective, if well implemented".*

Employee participants indicated that there is no motivation or support in the form of coaching or mentoring from management. There is also a perception of employment positions being filled by external candidates who have more experience, rather than developing current employees. Both employee participants and manager participants stated that mentoring, coaching, and job-shadowing will enable them to learn specialised knowledge from their managers, which will enable them to better support their managers and assist in dealing with crises or the manager's absence.

5.5.6.2 Sub-theme 6.2: Online

The mining organisation has various skills development centres throughout South Africa. However, participants stated that, depending on the situation and area of work, as well as the type of development, there should be more flexibility, for example, by providing certain courses online.

IIP2: *"On the skills training, like, the real skills underground, like drilling, it should be one on one, but on administrative training, that can be done online. You must remember, some guys have access to online training and others don't. It just depends on the situation of the underground employee."*

IIP3: *"The organisation needs to be very flexible when they offer these skills development courses. They must take into consideration that people are still working and cannot take off for long periods of time. It should be facilitated online or in a way that doesn't affect employee work for very long."*

IIP6: *"It depends on the type of development. Certain things you can't develop online. But, I think, sometimes, you can do the development online. But some of them you need to be there in person and have that one-on-one discussions or one-on-one training."*

FG2P6: *"Maybe we can develop a portal or chat channel where we can have guidance on the current system we're using, question-and-answer sessions. Alternatively, save frequently-asked questions and answers somewhere on the portal. Make it easy for us to access. Sometimes these back-to-back meetings prevents us from attending all training. Save something somewhere for us to access. Maybe even a cloud where we*

will dump the questions and answers specially regarding systems. If I am struggling, then I can refer to that section to find the answer."

Due to their workload, many participants could not attend the skills development sessions on the new administrative system, and indicated that online access to the sessions would be valuable.

5.5.6.3 Sub-theme 6.3: Refresher courses

With the merger, the administrative systems of the organisation underwent change, and employees had to learn many new functionalities. Participants noted the need for refresher courses, which should also contain updates on any additional changes.

> IIP9: *"The mine is already doing a lot. … However, they can focus on constant and continuous learning. Don't just train and forget. Update us on any functionalities or latest systems."*
>
> FG1P6: *"When we went over to the new system, employees had to do training for two weeks. Then the system was shut down for the implementation process. When we went live, they should have had a refresher course. First three weeks was hectic, and, luckily, they set up war rooms to assess the employees, and, luckily, we are a great group of employees in different departments assisting each other. That was quite amazing. But yeah, … like a refresher course just before we went live would have been fantastic."*
>
> FG2P4: *"I think it can be made more effective if we can do skill development more often. Maybe monthly or quarterly? Refresher courses or learning a new function on the system is great."*
>
> FG2P5: *"For me the system is great. To make it more effective, do it more often. Also keep it different, so that we can find it interesting."*

The above indicates a clear need for refresher courses, specifically on complex systems that employees and managers have to use on a daily basis.

5.5.6.4 Sub-theme 6.4: On-the-job/In-house

Many participants indicated a preference for practical on-the-job or in-house skills development, due to limited time and lack of access to the relevant centres. Some participants also highlighted that local community workers (unskilled and semi-skilled) have no internet connectivity to access online skills development, and would need to receive on-the-job instruction.

> IIP1: *"Online training makes it difficult for some people that sit in rural areas that have not got that opportunity or privilege to do online training. They need face-to-face training, interaction training, with a trainer."*

IIP1: *"I am studying in a field that I am not doing the physical work, so that is very difficult for me to understand the job role. If they can just bring me together with a couple of people that do understand it and are currently working within that job area, just for me to gain the knowledge to understand everything regarding my studies and the project I need to do at the end of the year."*

IIP3: *"We don't want people to be stagnant. When you are upskilled, you perform better, you get promoted, because you've learnt. And also the company itself benefits, because that person is the person that's been trained by the organisation in-house. So they don't need to go outside to look for people. The people that have been trained can be uplifted to the next level in their careers."*

IIP10: *"Many people are working from home, so there is no chance to get up and just go to someone else's desk to say, 'Explain to me, show me how to do ABC'. This is missing, and, many times, a person loses too much information with that sort of training which is online."*

A number of participants indicated that they were studying qualifications not related to their current occupations. These individuals suggested being placed with colleagues in similar occupations for a period, to gain experience. One manager indicated that succession planning and promotion would be easier if more effort were put into supervised in-house development. Another participant indicated that learning on the job is much more effective than learning online, as information is not always absorbed during online sessions.

5.5.6.5 Sub-theme 6.5: Knowledge-sharing

All participants agreed on the importance of knowledge-sharing. However, there were differences in their experiences regarding this aspect. A number of participants stated that a lot of their knowledge was gained through interaction with colleagues and different departments. Others felt that people in the organisational were deliberately hoarding information to prevent others from learning and getting ahead in their career.

IIP11: *"I feel like the whole hoarding of information or the mindset of dictatorship versus more liberal thinking is a challenge. …the moment I stifle someone else is the moment I'm stopping myself from growing. We need fresh perspectives constantly."*

FG1P4: *"…there was the whole standardisation of work processes across the gold and the and the platinum areas. So, you have a whole lot of standardisation of specifications, … it's not skill development per say, but your own personal development, because you're interacting with people from different areas, and you know that helps you."*

FG1P6: *"Whenever I experience an issue on the system, I send an e-mail to all the planners, designers to tell them this is what I experienced. Those that experienced similar issues will then guide me on what to do. Now the problem is solved. Our team shares knowledge. Not everyone feels the same."*

FG2P8: *"…it has been a positive spin, because there's other new people who have more knowledge that I can tap into, and which I wouldn't have had in the previous mine. So,*

having that access to say, 'How did you then manoeuvre around that?', that is actually an added skill."

The above indicates that participants desire that a culture of a learning organisation be fostered in the company under study.

5.5.6.6 Sub-theme 6.6: Short courses

In support of addressing the issue of time (Theme 4), the participants noted that the courses should be shorter. They noted that current courses require too much time away from work. They also noted that a variety of voluntary short courses will also enable them to develop in more areas.

> IIP3: *"The courses or skill development does not have to be over a long period of time. Maybe something over a week or two. …it's very important for the company to look at those little skills that people need to upskill themselves."*
>
> IIP3: *"People end up losing out on courses because of dates they cannot be available."*
>
> IIP4: *"Some more challenges is, maybe when you have a programme that's extending over a certain period, that again would again put pressure on our current team, and then not getting to the work. So, obviously you need to plan properly to curb that risk."*
>
> FG1P7: *"…you don't have sufficient time, then you miss out on those opportunities."*
>
> FG2P6: *"…what about the workload? I mean, you feel that you're going to lose a lot of time on your work. You won't be able to deliver on deadlines if we, say, take a week to attend a course."*
>
> FG1P3: *"*[If courses are short], *then … you can do so much more courses."*

From the above, it is clear that short courses may be appropriate in certain instances, and would be better aligned to the high work pressure of employees.

5.5.6.7 Sub-theme 6.7: Self-learning

Some participants expressed the desire to access opportunities for self-learning, particularly through videos, as they consider the mandatory courses very limited.

> FG1P5: *"On my side, what is working for me is the self-training. I believe that skill development takes time, and opportunities are limited in terms of courses. You're giving me what I need to train in. You're not asking if I already know that task or not. You're just giving me to retrain, retrain, and retrain, just so that I'm perfect according to your standards. But you are not giving opportunities for me to train on something else."*
>
> FG2P9: *"Skills development is currently only based on the skills that you require on systems that you're required to work on. However, it's very limited."*
>
> FG2P9: *"…there's not a follow-up session which you can attend to build up your skills."*

FG1P3: *"…you don't have flexibility, so you are confined and feel suffocated. You cannot spread your wings. So that is a negative thing on development."*

FG1P5: *"…the other thing that I've also noticed is that some departments mostly focus on self-training. They'll send you videos you train yourself. Some people can't grasp knowledge from videos. They need an actual person showing them how to do things so they can write it down. I am happy with the videos though, because I love just learning by myself."*

The excerpts indicate that participants value opportunities for self-learning, which should be encouraged and made possible, as it supports the notion of a learning organisation, which participants indicated is highly desirable.

5.5.7 Theme 7: Talent development and management

A number of participants indicated the importance of talent development and management, and noted that it has to be supported by the skills development being formally recognised, applied transparently, with fair access to such initiatives, in order to develop a sturdy talent pipeline.

5.5.7.1 Sub-theme 7.1: Recognition and certification

Participants expressed a desire for recognition of their development and certification for formal skills development, where appropriate.

FG1P2: *"…there must be proper courses in place, and they must give us recognised certifications."*

IIP4: *"…encouraging and recognising them is important. You are giving back to these people, and they will feel appreciated and perform."*

IIP5: *"… recognise them when they do good. We need to recognise our employees. That will encourage them more."*

FG1P4: *"…some of the other things, obviously, is to ensure that there's proper monitoring and evaluation or some sort of certification, to see that you competed in that level, and that helps you or encourages you to get involved in the training as well."*

FG1P7: *"The advantages of such development is that we can get recognised for different opportunities within or outside the organisation."*

FG1P6: *"I would say quality, because the quality of the training material must be up to standard…"*

FG1P8: *"The expectations are only to work. In the old organisation* [pre-merger]*, we learnt a course for a few days, and then we got the certificate to say at least you have been trained to deal with the conflict management. I haven't seen this in our new organisation."*

The above indicates participants' clear desire for recognition and certification in recognition of their efforts and to support their career development.

5.5.7.2 Sub-theme 7.2: Transparency

Participants noted that various stakeholders are not transparent about vacancies and available courses. Some managers seem disinterested in developing their teams, as they take no initiative in this regard. Processes are not standardised and equitable, and it seems that own discretion is used with regard to study grants.

> IIP11: *"From a management perspective, I am not here to do anyone's job. I'm here to encourage them to do better. I'm not a micro-manager. I prefer giving them the opportunity to discover and grow. The more you develop people and the more open and transparent you are with them, the more they want to work with you. When there are positions available, I let the team know."*
>
> FG1P5: *"If maybe management could also talk during the management meeting and include all different departments and hold discussions on what people learned and what they still need to learn. I think there's some managers who are not open to that skills."*
>
> FG2P9: *"I haven't received any skills development on the mining side. In the previous company* [the pre-merger organisation]*, it was made very clear that if it's not within the area that you work, they're not going to assist you. And I think a lot of it was also based on whether your manager would like to send you for skills development, or they just weren't interested. And, at this stage, well, up to date, I still haven't received anything. So, I think it's kind of the same comments that most of the participants made. There just isn't enough interest at this point from the company's perspective."*
>
> FG2P3: *"I would really think that there should be far more transparency in terms of chatting to the skills development team or even having a one-on-one with them. Involve our managers, encourage them to send us on courses."*
>
> FG2P8: *"We cannot be in a position where we are in asylum mode and hoping for things to work better. This whole view will have to be driven by transparency. Ultimately, transparency will then lead you to probably standardisation throughout the whole organisation. Ultimately, that's what you're aiming for, that everybody is standard. Everybody is doing things in a standard way, a big call will literally be transparency. When I speak of standardisation, I have noted that some of the study grants, when they are taken out, they're not given time. There's grants that were taken out on the other operations and they've had them like four months to look at those grants. And on the other operation, the time they're given is two weeks."*

The above views indicate a lack of transparency, which undermines trust in relationships and commitment to the organisation.

5.5.7.3 Sub-theme 7.3: Accessibility

Participants noted that accessibility to formal education is limited, which limits their career prospects. Employees who want to enrol for a Master's degree do not qualify for company sponsorship if they are below a Paterson D level.

> IIP11: *"….one thing I don't agree on is that you can only apply for a Master's degree study fund when you're on a specific Paterson grading. This is very limiting for other employees that want to study further. If they're not promoted to that level, then how do they get funding? They cannot afford it."*
>
> FG1P6: *"It's very important for those around us, perhaps the ones that we are reporting to, or perhaps the different HR sections, to actually just somehow communicate and give us greater access to these development opportunities."*
>
> FG1P7: *"Personally, on my side, the skill development that I have received have been more an exposure and experience type of development. It has not been so much on formal paper or whatever document that can be awarded."*

Participants noted that tertiary education is too expensive at the lower earnings levels, and that they will not be promoted without a higher education, creating a 'Catch-22' situation that causes them to stagnate.

5.5.7.4 Sub-theme 7.4: Talent pipeline

Participants stated that, to retain them and create a robust talent pipeline, there should be more development aligned with future positions within the organisation. The noted that they are constantly compiling individual development plans (IDPs), but that no action is taken. The participants referred to this as *"just a paper exercise"* for the sake of compliance.

> FG1P4: *"…there should be some sort of indication of, with the mine growing, what are the future resources that's going to be required in future, and just align the skills to that as well."*
>
> FG2P3: *"We have an IDP in place, but that is only in what I'm doing currently, my current job. Where is the analysis for our skills? Who does the psychometric assessment? …what your weaknesses are, what your strengths are."*
>
> FG1P5: *"You tend to be bored. Previously, I was doing a hundred recons, and I was also processing a thousand invoices and clearing accounts. I was also following up on payments or on purchase orders, and I was also helping vendors with queries. Now, I'm just doing recons, that's it. And if I've got eight, I do them in a week, and there's nothing else to do."*
>
> FG1P6: *"Another challenge is we are now sitting with all these trained and developed employees, but they are actually not being developed into positions…"*
>
> FG1P1: *"I've done IDP succession plans. I have been through all of those things. At the end of the day, I would say there's lots of unfairness, and I think it's lots of buddy-buddy*

issues. I don't know if other people agree with me, but then I've experienced it through the years. It doesn't matter what your qualifications are or the training that you had. At the end of the day, if they like you, you can be promoted. They don't like you, you're not promoted, you stay where you are. …that's the experiences that I've had to deal with through the years."

FG2P3: *"I would like to see where their identifying talent, where people have very strong skills. You might be sitting with another skill set that could be used somewhere else in the organisation. I've never actually been privy to any of the talent management programmes."*

Participants noted the absence of skills analyses, grooming, and succession planning to motivate them. The also expressed boredom due to having to perform a single task over and over, with nothing to spark their interest. Another challenge mentioned was that some employees in the organisation are highly educated, but are nevertheless not earmarked for higher positions. Some participants alluded to favouritism in promotions.

5.5.7.5 Sub-theme 7.5: Feedback

Participants stated that support and feedback are critical to their career growth. They noted gaps in follow-ups and monitoring between managers and employees regarding skills gaps and development.

IIP3*: "…spend time with employees to find out from people, 'How you doing? What is it that you're studying now at this level? What is your plan going forward? Do you see yourself doing the next job level?'"*

IIP5: *"We need to set up the goals to skill people. Note those objectives down. What is the objective of doing that? What are the goals that we need to meet after this? So, for those things, maybe you can work out a time period and say, 'I'll be training you for three months, and I am going to monitor you'."*

IIP8: *"Set objectives with clear outcomes for every professional within the mining organisation. It must add value. It must come with structure and adequate guidance, as well as a formal programme. Constant support is critical to ensure that there are no deviations or going of track. I mean, ultimately, it is a real formal programme."*

IIP9: *"We need to make it measurable. We can't send people on courses and not check if they are developed. Are they still struggling? Are people improving or not?"*

FG1P6: *"I would say completion, making sure that whatever training material that people are starting that they do complete it."*

Participants indicated concerns about the fact that no clear objectives or goals of skills development are set, and that there is neither monitoring nor support through feedback.

These findings are discussed in detail in the next chapter.

5.6 CHAPTER SUMMARY

The data revealed numerous challenges with regard to skills development. There is a lack of initiative from all stakeholders, including the HR function. Participants, including managers, noted that the HR department and managers are not sufficiently committed to employees' skills development, the skills matrix, and career growth into higher positions. Lack of transparency regarding vacancies and career growth has also resulted in participants feeling inadequate and demotivated.

Participants emphasised the importance of skills audits in order to facilitate career growth and career-related decisions. Participants indicated that some of the courses offered internally are not task- or profession-specific. Limited funding has resulted in some participants being denied development opportunities. Non-managerial employees are unable to apply for funding for a Master's or doctoral degree until they are on a certain managerial level while, at the same time, they cannot be promoted to such levels without a tertiary education.

Limited time, high work pressure, and work overload are some of the other reasons that participants noted are preventing them from physically attending courses at the various skills development centres across the different organisational areas. The duration of courses is another concern; many participants indicated that some courses are run over an extended period, and most indicated that the classes were overcrowded, which made the process cumbersome and time-consuming, and also limited personal attention when needed. Participants further noted that, at present, there are limited or no options with regard to online courses, especially for those who cannot attend these courses in person at the different venues. In addition, self-learning methods such as online videos are not available.

Participants indicated that courses offered internally are focused purely on hard skills, with no attention paid to soft skills, and that there was a lack of consideration of international developments in the industry. Mentoring, coaching, job-shadowing, and job rotation are options that seem to be mentioned on IDPs but, according to the participants, never really materialise. Following the merger, a new system that integrates all operations was implemented, and participants indicated that limited functionalities of the new system, together with poor trainers and limited super-users, have added more pressure to their work. Refresher courses on the new administrative system are not provided, and employee participants noted having to rely on each other to get guidance on how to complete their work.

Participants noted the importance of sharing knowledge as part of ensuring a rich talent pipeline. Participants indicated that only some colleagues and managers are willing to share knowledge, and that those who do not perhaps fear a loss of status and job security.

Participants also indicated their desire for recognition and certification when they have successfully completed a course.

This concludes the reporting of the findings. The next chapter, Chapter 6, discusses the findings with regard to the elements of comprehensive skills development that emerged from the literature review, specifically the models discussed. The discussion indicates the elements that were included from these models, together with the elements that emerged from the current study's data, some of which are not present in the models reviewed, together with recommendations. This is followed by the presentation of a proposed theoretical framework for skills development for a mining company in South Africa.

CHAPTER 6: DISCUSSION, RECOMMENDATIONS, AND LIMITATIONS

6.1 INTRODUCTION

Chapter 5 provided detailed insights into participants' perceptions of the organisation's skills development system (Section 5.2, addressing EO1), the perceived adequacy of the skills development system (Section 5.3, addressing EO2), their perceptions regarding the perceived challenges and advantages of skills development for the organisation (Section 5.4, addressing EO3), and their suggestions regarding elements of an effective, customised skills development system for the organisation (Section 5.5, in addressing EO4).

This chapter presents a discussion of the findings, addressing EO5: *To draw conclusions and make recommendations regarding a skills development model for the organisation.* The discussion incorporates relevant findings related to EO1 to EO4, together with extant literature, with a focus on the elements drawn from the models discussed and elements that are not included in these models. This is followed by the presentation of a proposed theoretical framework of skills development, towards developing a custom model, based on the findings, the models discussed, and extant literature. The chapter concludes with a discussion of the study's limitations and recommendations for future research.

6.2 ORIENTATION AND MINDSET

The current study's findings show a need to foster an orientation and mindset of a continuously learning organisation on all levels, which requires all individuals taking ownership of and committing to skills development, both their own and that of their subordinates. This finding is aligned with extant literature. This element was not included in any of the models reviewed in the current study's review of the literature, although the ASTD's (2006) Action Plan to Take Charge of the Skills Gap does emphasise the importance of skills development being fostered — and seen to be supported — from the executive level down to the rest of the organisation. It is important that the culture of a learning organisation be driven and fostered from the top.

To create a learning organisation, the organisation as a whole should commit to employee development, with top management leaders visibly setting the tone and encouraging commitment by fostering a culture of a learning organisation (Suknunan & Bhana, 2022). Continuous organisational learning is imperative to the competitiveness and innovativeness of the organisation (Benton, 2020). Farmer (2023) notes that clearly indicating to employees that skills development that is not just aimed at compliance, but also at personal development, will enhance their commitment to development initiatives. It is important that this process be

facilitated and co-ordinated in collaboration with the HR team, to ensure cohesion and the offering of high-quality skills development (Suknunan & Bhana, 2022).

Engmann et al. (2017) and Suknunan and Bhana (2022) note that a sense of ownership enhances the long-term effects and sustainability of skills development programmes. Participants indicated that the lack of such ownership and commitment is hampering the organisation in becoming a learning organisation. The participants also said that the organisation needs to show greater commitment to appropriate skills development, which should be based on leadership's visible orientation towards a learning organisation. Participants added that leadership, managers, and employees should take ownership of and commit to ongoing, high-quality skills development. In this regard, Engmann et al. (2017) and Sundari and Kusmiati. (2022) state that it is imperative that skills development not be framed as addressing employees' shortcomings; it should be clear to employees that the development is to their benefit.

It is critical that organisations foster continuous learning in order to gain a competitive advantage and flourish, especially with regard to employees staying abreast of technological innovation (Binsaeed et al., 2017; Gallie, 2021). Furthermore, an organisation that is committed to a culture of continuous learning and developing employees enjoys greater attraction and retention of employees (Gallie, 2021). Lifelong learning also helps employees to successfully navigate changes in the industry, thereby enhancing organisational performance and sustainability (SAQA, n.d.). Participants indicated that their skills development should be clearly linked to career opportunities and aligned to the organisational strategies and goals.

Participants indicated a widespread and persistent lack of communication at all organisational levels on various aspects related to skills development. They noted a lack of communication and information on available courses, and also that there are no channels for communicating their development needs with regard to their career progression. Participants, further noted that it is critical that the learning culture of the organisation be underpinned by transparency and fairness in the allocation of skills development opportunities, to enable relationships built on trust between the role players, a view that is supported by Edezaro (2022). They also noted insufficient communication of the skills matrix and career advancement possibilities. Engmann et al. (2017) and Sundari and Kusmiati (2022) note the importance of clarity regarding skills development initiatives, including the objectives, which should be tied to the larger organisational objectives. This aspect is also included in the Training Model of Camp et al. (1986), Nadler's (1982) Critical Events Model for Training and Development Planning, and the ASTD's (2006) Action Plan to Take Charge of the Skills Gap.

6.3 SKILLS AUDITS

Aspects related to programme development such as a skills audits and analyses of job roles are addressed in all the models reviewed in Chapter 2.

The majority of the participants noted that skills audits should be conducted on two levels: company-specific and industry-wide, and that the results of both exercises should be integrated into skills development initiatives. This element of skills audits is addressed in the Training Model of Camp et al. (1986), Graham and Mihal's (1986) Model for Determining Training Needs (for managers only), Nadler's (1982) Critical Events Model for Training and Development Planning, Bandaranaike and Willison's (2010) Work Skill Development Framework, and the ASTD's (2006) Action Plan to Take Charge of the Skills Gap. However, only the ASTD's (2006) model takes soft skills into consideration.

Some participants noted that not all courses in the organisation are related to employees' field of work. Some noted that the course contents are very generalised, and that skills development seems to follow a 'one-size-fits-all' approach. Numerous participants noted that their development should be relevant, that is, aligned to their areas of expertise and/or career progression. All the models discussed in the review of models, except that of Bird and Cassel, include analyses, but with no specific reference to the need to ensure that skills development is related to the job. None of the models address career enhancement in this regard, and they make no specific reference to this consideration with regard to the viewpoint of employees.

Meyer et al. (2019) posit that a skills audit helps to identify any deficits between current skills and those required going forward. Skills audits should be conducted for individuals, departments, and professional areas, as it is vital that the skills development programme be context-specific and with consideration of the organisational goals (Engmann et al., 2017; Sundari & Kusmiati 2022). This process also aids organisations in identifying factors that are contributing to skills gaps, poor performance, and obstacles to learning (Van Der Waldt, 2020). Skills audits are a useful tool in ensuring that the courses for which employees are enrolled are needs-specific (Engman, 2017; Meyer, 2019), and not a 'shotgun approach'. Participants noted that these concerns were exacerbated by the grouping of differently skilled individuals into teams post-merger, indicating the need for a renewed effort in determining skills gaps.

One participant, a senior engineer, mentioned that there are very few courses available that are related to the engineering field. This participant further pointed out that the few courses that are available are outdated and not in line with global requirements. Participants also noted that there are no clear objectives in terms of what skills are required going forward in each field of expertise, and that trainers seem to lack knowledge of global trends. Participants

indicated that the lack of updated industry skills is having a deleterious effect on the company's performance. Rather than being able to pro-actively foresee issues, employees simply react to problems as they arise. This was noted to be particularly prevalent in the technical fields, which aligns with industry reporting (Parker, 2023; PricewaterhouseCoopers, 2023). For an organisation to remain sustainable, the knowledge of the workforce must be continuously revisited and updated, in line with industry requirements worldwide (Gallie, 2021). This is critical in ensuring that the organisation remains relevant and competitive (Mining Prospectus, 2019).

6.4 FUNDING

The majority of participants noted that a lack of funding is limiting the development of employees. HR practitioners who design skills development programmes should carefully consider the resources required to execute a programme, including costs (Engmann et al., 2017). This aspect is addressed in Training Model of Camp et al. (1986), Nadler's (1982) Critical Events Model for Training and Development Planning, and the ASTD's (2006) Action Plan to Take Charge of the Skills Gap.

Erasmus and Loedolff (2015) and Sundari and Kusmiati (2022) state that skills development must focus on minimal costs, coupled with high returns on investment in terms of productivity and profits. Mining organisations receive funding for skills development from the NSF and MQA (SARS, n.d.). The DMR&E also contributes by providing bursaries to mining organisations for various specialised mining, engineering, safety, and environmental professions (DMR&E, 2022b).

6.5 TIME

None of the models reviewed in Chapter 2 reflect this aspect, although they might be able to identify the issue in analyses of the results, which is addressed in all the models.

Participants noted that, following the merger, their work pressure increased tremendously, with some noting a doubling of their workload and responsibilities. Consequently, these employees have little or no time for skills development. They also noted the slow pace of courses, due to the large numbers of attendees.

The courses offered by the mining house under study require extensive periods away from work, a situation that is exacerbated by internal skills development centres being spread across the various provinces in which the mine operates. Participants noted that courses with a long duration and the required travel make it difficult for them to complete their tasks and

adhere to work deadlines. Furthermore, they noted that courses are communicated at the last minute, through limited channels, making it difficult to plan ahead. Following the merger, many employees either left the organisation or were retrenched, which further increased remaining employees' workload. Participants also noted that the newly implemented system with its limited functionalities makes tasks more time-consuming to complete, which limits their time to attend courses.

One participant (IIP2) noted that, following the merger, there was an increase in the number of employees attending classes, and that individual attention from trainers or facilitators is no longer possible. This makes it difficult to determine whether learning has indeed taken place. Participants noted the further complication of there being numerous skills development facilities in different areas, with no co-ordination or communication between them.

Pow and Wong (2017) note that smaller classes facilitate better learning, as trainers enjoy greater flexibility in delivery and are able to provide personalised attention. Pow and Wong (2017, p. 68) explain this approach as follows:

> *It is commonly believed that small class teaching can greatly enhance student learning because the individual needs of each student can be better addressed, the students can learn more through more innovative and flexible teaching methods and the students have more time to interact with each other and to gain feedback from their teachers*.

Sardinha et al. (2020) note that flexibility is vital in the modern world of work in which employees are under constant pressure.

6.6 TYPES OF SKILLS DEVELOPMENT REQUIRED

Of the models reviewed in Chapter 2, only Bandaranaike and Willison's (2010) Work Skill Development Framework address soft skills. All the models include the development of hard skills, except for Graham and Mihal's (1986) Model for Determining Training needs. Participants noted the unmet need for the development of both hard and soft skills, noting that both are critical to their development. Farrugia and Wingard (2021) note that many skills development programmes do not include soft skills, as organisations focus on employees' knowledge. This concern is particularly pertinent with regard to professionals who have highly developed professional skills but lack, for example, interpersonal and management skills (Farrugia & Wingard, 2021).

Mining organisations need more than technical skills to achieve success and remain sustainable (Engmann et al., 2017; Farrugia & Wingard, 2021). Participants noted a lack of soft skills in the workforce, such as communication, team-building, networking and relationship-building, problem-solving, emotional intelligence, motivation, and interpersonal communication, as well as the ability to deal with issues related to mental health. Hirudayaraj et al. (2021) note the overreliance on hard skills, and Bholane (2022) posits that the development of soft skills should commence at school level and continue through tertiary education and work.

Bholane (2022) suggests continuous workplace sessions and workshops, combined with courses offered by educational institutions, to enhance employees' soft skills. Hafit et al. (2022) note that acquiring soft skills is a lifelong learning process, and that these skills are crucial in enabling the workforce to navigate complex situations and co-operate in order to achieve organisational goals.

Participants noted concerns regarding technical courses not being aligned to either their job tasks or profession. This is of particular concern when considering the time constraints under which they work and the hard deadlines they have to meet. They also noted that innovation and technology are constantly changing, evident in changes in even in the most basic of software packages such as Microsoft Word and Excel, through updates and newer versions. Participants deem the skilled use of these software systems critical in effectively performing daily administrative tasks. Binsaeed et al. (2017) and Bholane (2022) support this strategy by indicating that hard skills are technical competencies that have to be regularly updated in order to perform specialised tasks. Hafit et al. (2022) note that, in order to keep up with innovations, organisations should commit to continuous learning in this area, as it enhances productivity. It is critical that courses and curricula be updated regularly, in alignment with specific professions or tasks and developments in the global mining industry (Binsaaed et al., 2017; Sundari & Kusmiati, 2022).

6.7 METHODS OF SKILLS DEVELOPMENT

None of the models reviewed in Chapter 2 mention specific methods of skills development. The sections below review the desired methods that emerged from the participant interviews.

6.7.1 Mentoring, coaching, and job-shadowing

A few participants in the present study noted that, while mentoring, coaching, and job-shadowing are mentioned in individual employees' development plans, there seems to be little

co-ordinated effort to ensure that such opportunities materialise. Participants noted that they are either not aware of these opportunities, or managers are not willing to provide such opportunities because they perceive such development as a threat to their status and job security. Participants also noted some managers lacking trust in their subordinates, evident in the micro-managing of their teams. Participants also noted that, because they are not mentored for career growth, external candidates have a greater chance of securing a position in the company. It is crucial that organisations employ various platforms for learning, including mentoring, coaching, and job-shadowing (Ruder et al*.,* 2018).

6.7.2 Online courses

Many participants mentioned the desire for online courses as both a method of delivery of formal skills development and a strategy to promote self-learning. Advancing technology is making flexible online learning increasingly easy, and various tertiary education institutions and organisations support and make use of online learning (Santiago et al., 2021). This method of delivery is also much more cost-effective than personal attendance at a venue (Engmann et al., 2017; Santiago et al., 2021).

All participants expressed at least some frustration at not being able to attend courses at skills development centres, due to work commitments. They perceive this as limiting their career growth. Participants believe that online learning will provide flexibility, enhance their time management, and give them greater opportunities for career advancement. Kokoç (2019) posits that online learning (also called ‘e-learning’) will play an increasingly important role in skills development, but warn that successful implementation requires the support of top management, and has to be aligned with the organisational goals.

Kokoç (2019) also emphasises that such online skills development should be of a high quality with regard to both content and facilitators. Integrated online learning is a strategic choice (Phiri et al., 2019). It provides flexible opportunities, so that employees are able to learn at their own pace and in their own time (Kokoç, 2019).

6.7.3 Refresher courses

Following the merger, a new system was implemented across all operations in the organisation under study. Participants noted that limited skills development was provided, and employees subsequently had to figure out use of the system using training manuals. Many participants noted the urgent need for refresher courses, which are not currently available, and also indicated a lack of knowledge of newly implemented system functionalities that could enhance their productivity.

The International Labour Office (2010) and Attri (2019) note that regular revision helps employees to become more efficient in using organisational systems, which boosts the productivity of the workforce and ultimately, the organisation as a whole. The Five-stage Model of Adult Skill Acquisition of Dreyfus (2004) indicates the importance of task repetition and its contribution to employees becoming proactive in making decisions and resolving challenges (Attri, 2019). According to Attri (2019), employees desire refresher courses to achieve better efficiency, as this will aid their career advancement.

6.7.4 On-the-job instruction

Participants aired different perspectives regarding this method of skills development. One of the interview participants emphasised that learning could be improved through observing and working with experienced employees. Some participants even indicated a preference for practical, on-the-job instruction, rather than online skills development. One participant posited that the applicability of on-the-job instruction depends the type and level of skills required, as well as the task being taught. The participant stated that physical or manual labour is more suited to on-the-job skills development, whereas administrative tasks should be learned online. Engmann et al. (2017) and Solaja et al. (2022) note that practical application of what has been learned enhances long-term retention, more so than rote learning. Solaja et al. (2022) indicate that on-the-job skills development makes employees more confident, because they are given opportunities to learn through trial and error. This confidence then has a positive impact on their attitude, the quality of their work, and their loyalty to the organisation (Solaja et al., 2022).

6.7.5 Information-sharing

The participants had diverse perspectives with regard to information-sharing. Many confirmed that they were able to learn from their colleagues, while others expressed resentment because of knowledge-hoarding. Sharing information is a strategy that ensures greater work efficiency and improved organisational knowledge, and also promotes a better understanding of different perceptions, and is thus beneficial in developing both hard and soft skills (Boyes, 2018; Labafi, 2017).

6.7.6 Short courses

A large number of participants indicated that courses should be shorter to facilitate their attendance. They noted that long courses are unfeasible due to their workload. Short courses offer flexibility and affordability while simultaneously allowing employees to update their

knowledge in a shorter span of time, rather than studying for a formal degree or qualification (London Training for Excellence, 2019). It is an excellent way to fill gaps in knowledge and enhance employability (London Training for Excellence, 2019). London Training for Excellence (2019) states that short courses that are intensive and firm-specific are highly effective in rapidly enhancing performance.

6.7.7 Self-learning

Many participants noted that self-learning opportunities would allow them to invest in skills development in their own time. They noted that these courses could be delivered in the form of online videos. Engmann et al. (2017) note that self-learning is empowering, as it allows employees to become involved in enhancing their development, which will support the culture of a learning organisation and ownership.

6.8 TALENT DEVELOPMENT AND -MANAGEMENT

Participants made a number of observations regarding the organisation's development and management of talent. These are discussed below.

6.8.1 Recognition and certification

None of the models discussed in Chapter 2 incorporate recognition and certification. Participants noted that mangers do not encourage or initiate skills development. They further noted that, when development does occur, employees are often not recognised for their efforts, and no certification is provided. This lack of recognition has contributed to stress and negativity amongst employees. Formal assessment and accreditation also provide a means to track progress and assess success of the programme (Engmann et al., 2017). Constructive feedback and recognition strengthen virtuous behaviour and enhance job satisfaction and morale, all of which positively impact organisational performance (El Masri & Suliman, 2019). El Masri and Suliman (2019, p. 130) note:

> *Any individual is always in need of being recognized by his colleagues, family members, supervisors and customers, regardless of his job status or level. It is therefore unsurprising that, in previous studies recognition of efforts was ranked as the most important organizational practice*.

Based on the perceptions of the various participants, it is evident that recognition and certification should be considered in skills development, as these play a vital role in enhancing productivity and improving employee morale, a view that is supported by El Masri and Suliman

(2019). Recognition is associated with enhanced productivity, and certification widens opportunities with regard to career development within the organisation (El Masri & Suliman, 2019). Recognition is also important in motivating employees to achieve organisational performance goals and long-term objectives, as it improves loyalty and morale, thereby enhancing employee retention (El Masri & Suliman, 2019).

6.8.2 Transparency

None of the models reviewed in Chapter 2 address this aspect. Participants noted a lack of transparency regarding courses and the process of applying for study grants. Some added that vacancies are also often not communicated openly. Managers should also be seen to encourage participation in the skills development of their teams by providing assistance in accessing such opportunities (Bratley & Alloysius, 2017; Engmann et al., 2017; Ruppel et al., 2022). Transparency brings increased awareness of what the organisation requires, and builds coherence and trust between the various parties within an organisation, which aids in achieving aims (Norval et al., 2022; Walters & Rodriguez, 2017).

6.8.3 Accessibility

One participant noted that organisational policy allows only management employees to apply for grants for Master's and doctoral degrees, leaving employees on other levels unable to further their education, due to the high costs involved in studying at a university or college. These employees feel trapped in their current position. They are not sponsored to pursue a higher education because of their organisational level, and they cannot be promoted without further education, creating a 'Catch-22' situation. Learning and development opportunities are an appealing benefit and have a significant impact on retention of employees (Walters & Rodriguez, 2017). Engmann et al. (2017) and Sundari and Kusmiati (2022) also indicate that the key to retention is opportunities for progress, empowerment, hands-on learning, and skill development for employees to gain the necessary skills to perform their jobs with confidence and satisfaction.

6.8.4 Talent pipeline

A majority of participants noted that, currently, Individual Development Plans (IDPs) seem to be an exercise that is done for auditing purposes only, and that the IDPs are not based on actual skills analyses. Furthermore, they noted that there is no alignment of skill development with future positions or areas with skills shortages. Participants noted that this lack of a long-term vision has led to the demoralisation of employees and a lack of commitment to skills

development, as employees do not see any value in terms of their careers in the skills development courses they are obliged to attend. In this regard, the International Labour Organization (2018, para. 1) notes:

> *Anticipating skill needs assists informed and strategic choices by policy makers as well as labour market participants, and improves the functioning of the labour market. Availability of skills and access to training relevant to labour market needs are important factors for enabling productivity, economic growth and social inclusiveness*.

Participants noted that these factors are contributing to the loss of valuable staff, causing a leaky talent pipeline.

6.8.5 Feedback loops

Feedback is specifically addressed in Training Model of Camp, Blanchard, and Huszczo (1986) and the ASTD's (2006) Action Plan to Take Charge of the Skills Gap.

A number of participants highlighted managers' lack of support through feedback regarding their teams' skills development. Participants also mentioned the lack of monitoring in order to determine whether learning has indeed occurred, or if there are still gaps that need to be addressed. Employees need an avenue for communicating their needs, making suggestions, and providing feedback on the courses they attended. This view is supported by Engmann et al. (2017) and Kwon and Jang (2021).

This process thus requires continual feedback loops or feedback spirals to ensure improvement skills development initiatives that ultimately enhance organisational knowledge. A feedback loop is the process of information continuously being enhanced from a number of sources, and is required from initiation to implementation of an initiative (Akbar et al., 2017). Akbar et al. (2017) and Kwon and Jang (2021) note that feedback loops are invaluable in management decision-making and successful implementation. Feedback loops also enable decentralisation of the design of skills development initiative, to ensure that issues are addressed promptly and in an appropriate and targeted manner (Engmann et al., 2017; Kwon & Jang; 2021).

This concludes the discussion of the findings. The next section offers recommendations for practice.

6.9 RECOMMENDATIONS FOR PRACTICE

Executive leaders, in co-operation with the HR team, should ensure that the goals and objectives of the overall skills development strategy are clearly and transparently aligned to the strategic direction of the organisation (Suknunan & Bhana, 2022). Participants indicated that leadership, managers, and the HR function should ensure that managers and employees receive the required skills development, which should not only be aligned with the organisation's goals and mission, but also with career possibilities within the organisation. This requires clarity regarding the organisational structure, which participants pointed out was lacking. The importance of continuous learning should be impressed upon employees by leadership and managers, and both managers and employees should be encouraged to take ownership of and commit to continuous learning.

Organisational learning is a social and relational concept that is reliant on a conducive environment and positive interpersonal relationships on all levels of the organisation. Managers spend a significant amount of time with their subordinates, and are therefore able to influence employees' level of engagement and commitment (Suknunan & Bhana, 2022). Managers are also ideally positioned to monitor employees' performance and determine shortcomings in skills by observing task performance, and should therefore commit to filling gaps in their personnel's skills and foster commitment to ongoing skills development (Suknunan & Bhana, 2022).

Both managerial and non-managerial participants noted that active involvement by managers is critical in identifying and addressing skills gaps. Participants noted that managers and the HR function need to monitor development, and expressed a desire for more involvement, monitoring, and constructive feedback regarding their development from managers. Employee participants also expressed the desire for channels to communicate the skills they require or would like to acquire to their managers and the HR function. Suknunan and Bhana (2022) note that the HR function and managers need to interact with each other and with employees, to ensure that everyone is kept updated on all aspects of skills development and how to access such opportunities.

The organisation could establish formal channels to facilitate the two-way flow of information regarding skills development. Due to the size of mining organisations, it may be advisable to formalise these platforms and inform employees of the communication channels, to enable employees to address issues with the correct department or person. All members should be able to communicate skills development needs — their own and subordinates' — and should be aware of development opportunities. Attendees should also be able to provide feedback

on the courses they completed. Course information could be communicated across various platforms, such as electronic mail, posters, and websites and other online platforms, to facilitate attendance and time management. All courses and curriculums that are available could be made visible and kept updated on the online platform, where employees could also be notified of changes or additions. Billboards and posters could be placed in areas where employees do not have access to electronic communication, e.g., underground. Participants noted that more dedicated and transparent efforts needs to be made to inform employees of opportunities to further their skills through courses and gain formal qualifications through study grants. Vacancies advertised on the organisation's public website could also be communicated via email and posted on various billboards and centres across the operations, to ensure visibility and enhance transparency.

A few participants noted that one-on-one discussions between employees and managers on required skills could also steer skills development. Gaps in communication hinder the achievement of goals (Campbell et al., 2020), while effective communication facilitates transparency, which, in turn, builds respect and trust (Sarker et al., 2021). Effective communication also reduces human error, and keeps the workforce knowledgeable regarding events and developments in the organisation (Sarker et al., 2021). As a support strategy, managers should facilitate regular discussions with their teams in determining what skills are required to excel at their current jobs (Suknunan & Bhana, 2022). The aim should be to create a virtuous cycle of feedback — i.e. continuous feedback loops with the aim of improvement.

Forecasting skills shortages is noted as an important step (Step 3) in the ASTD (2006) Model. Based on this model, forecasting skills shortages and addressing these shortages significant lower the risk of skills scarcities (ASTD, 2006, 2012). Based on the findings of the current study, it is recommended that courses be continuously revised and that employees consistently update their skills in line with national and global trends and advancements in technology. A holistic skills audit should include considerations related global developments, so that the organisation is able to forecast what skills that will be required at a certain point in the future and adapt its skills development programmes accordingly (Blair et al., 2023).

During the interviews, some participants recommended that surveys or questionnaires be used as a mechanism to identify individual and departmental skill gaps. One manager suggested a deliberate drive to discuss skills in weekly managerial meetings. The results of such skills audits should be used to align skills development with employees' jobs and career progression. It is important that managers be involved in this process, as they can greatly influence the applicability of a programme and how it is perceived by their subordinates (Engmann et al., 2017; Suknunan & Bhana, 2022). Participants further noted that a needs

analysis should not be a once-off exercise. The process should be continual, as this will assist in mitigating the effects of skills gaps due to new employees and transfers within the organisation, which will, in turn, ensure sustained performance (Erasmus & Loedolff, 2015; McGuire et al., 2022). Employees should be given opportunities to pursue a career path, with development goals linked to their IDPs, which should be monitored and adjusted by managers and HR practitioners when needed, to ensure a study talent pipeline, which the International Labour Organization (2018) refers to as 'foresight'.

Skills audits should pay particular attention to critical and scarce skills (McGuire et al., 2022). According to the MQA (2023b), scarce skills in the mining industry include mangers in the fields of engineering; metallurgy; medicine; finance; and safety, health, and the environment (SHE). Participants also indicated an urgent need for the development of soft skills. Participants noted that the organisation should ensure that the hard skills of the workforce are regularly revised and updated across all the software or systems personnel use to perform their tasks.

While the mine under study receives funding from the NSF and is awarded bursaries from the DMR&E (2022b) for the development of hard skills development, there seems to be a lack of sufficient funding to meet employees' developmental needs. The organisation, in conjunction with the supply chain team, could investigate the possibility of negotiating better rates and discounts with various tertiary institutions to secure skills development at a lower cost. In addition, HR practitioners could consider less costly options such as delivery through technology, which could significantly reduce the costs of programmes and enable repeated delivery without additional expenses (Engmann et al., 2017).

The mining organisation could also liaise with the DMR&E for bursaries and learnerships in various engineering and mining professions (DMR&E, 2022b). In addition, the organisation could consider making funding available to employees based on merit, irrespective of their Paterson grading. In this regard, some participants mentioned the possibility of employing psychometric testing. The organisation could also make successful programmes available to industry partners, which could offset some of the costs (Engmann et al., 2017).

Most of the participants emphasised that the duration of courses should be revised to ensure that they are not kept away from work for extended periods. This would require programme flexibility, which also ties in with the use of technology to deliver programmes. The organisation could explore the possibility of consolidating its skills development centres' initiatives where possible. Centralising communications and record-keeping could also aid in co-ordination of the delivery of initiatives and provide greater clarity regarding which centre to attend for a

specific course. Short, more regular courses will enable the organisation to limit the number of attendees per class, thereby increasing attendees' pace of learning and, thus, the time required to deliver a course. This could also enhance the impact of the learning through more personal interaction with trainers. The organisation could also liaise with tertiary institutions in providing such courses.

Mining organisations needs to bear in mind that different people learn differently, indicating a need for a variety of delivery methods, as noted by the participants. Participants suggested that managers and the HR function initiate and support alternative methods of development, such as mentoring, coaching, job-shadowing across all job positions in the organisation, to give employees the opportunity to learn the tasks of others, including their managers. This approach is supported by the HSRC (2017) and Oswald et al. (2023). These methods will also facilitate the sharing of information, and will provide vital hands-on experience, which is valuable in times of crisis or when a manager is absent (Boyes, 2018). Managers should be encouraged to move away from micro-managing, towards trusting their teams. Micro-managing frustrates employees, lowers productivity, and negates opportunities to learn from mistakes (Solaja et al., 2022). Managers are thus encouraged to support the career growth of their employees (Oswald et al., 2023)

Online videos could be made available on an in-house online platform. These could include videos on skills that are task-specific and those that are relevant to all employees, such as safety, health considerations, and ethics, and could be valuable in educating employees regarding the functioning of the organisation. One of the main benefits of online development is that it provides employees with ongoing access to key resources while saving the organisation costs (Al Rawashdeh et al., 2021). Online skills development will also help mitigate the problem of some employees not being able to attend venue-based courses. However, this method leads to less social interaction, and it is therefore important that attendees understand the difference between physical and online attendance and the associated benefits and disadvantages (Al Rawashdeh et al., 2021).

The mining organisation could employ online refresher courses that employees can access whenever the need arises. According to Attri (2019) and the International Labour Office (2010), regular revision aids employees in developing a facility in the use of a system, which enhances both their and the organisation's productivity. The organisation could also develop a portal or chat channel where frequently-asked questions and answers could be accessed when employees face system errors or difficulties executing a particular task.

Employees could be paired with more knowledgeable employees in providing on-the-job skills development. Such opportunities should also be facilitated for employees who are looking at moving in another career direction or simply want to improve their current skills (Dreyfus, 2004).

Participants noted that information-sharing is vital to the fostering of a learning organisation. They suggested the establishment of dedicated platforms, such as internal cloud-sharing and internal websites, as well as the organisation making available easily accessible super-users. The sharing of knowledge could be encouraged through rewards. A study by Ahuja (2020) found that tangible rewards, such monetary rewards and promotion, and psychological rewards, such positive feedback and recognition, are effective in encouraging knowledge-sharing. However, monetary rewards should be applied with caution, as it may cause resentment amongst employees who are not in a position to contribute to knowledge-sharing (Ahuja, 2020).

It is imperative that employees are recognised for developing their skills and that certification is awarded where appropriate, which can be effected through informal recognition, certification, and/or adjustments to their personal development plans. Courses should be SAQA-accredited and aligned with the NQF. Employees should also take this into consideration when funding their own skills development (SAQA, n.d.). The NQF is a strategy to instil lifelong learning through integrated education and skills development (SAQA, n.d.). It is a framework of policies and regulations that provides recognition for skills development and educational achievements (SAQA, n.d.). This requires monitoring of progress, to ensure the programme does not, over time, ‘drift’ from its aims (Engmann et al., 2017), which would detract from the value of certification.

Participants indicted that the organisation stands to lose talented and dedicated employees because they are not offered development opportunities that will support career advancement within the organisation. Participants suggested that the organisation identify talented and suitable individuals on all levels, irrespective of Paterson grading, for development. Based on volume, the organisation could then consider actively negotiating with tertiary institutions regarding the cost of programmes. Building a sturdy talent pipeline dovetails with proactively forecasting skills shortages and managing the talent pipeline based on skills audits. Development opportunities should then be linked to appropriate career paths within the organisation. Employees should be given opportunities to pursue these careers, with development goals linked to their IDPs, which need to be monitored and adjusted when needed by managers and HR practitioners (International Labour Organization, 2018).

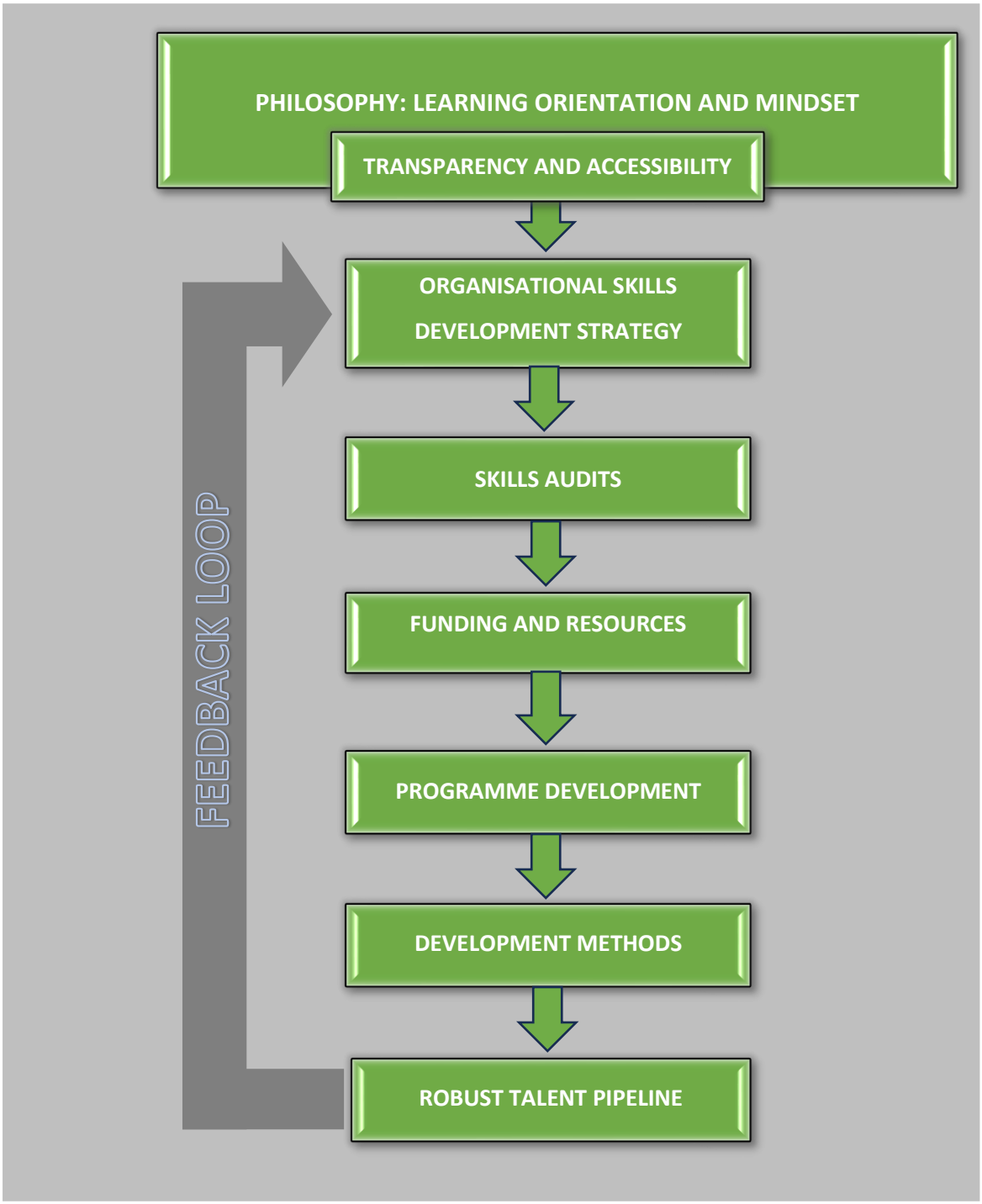
The next section presents the proposed theoretical framework for skills development for a mining company in South Africa.

6.10 PROPOSED THEORETICAL FRAMEWORK FOR SKILLS DEVELOPMENT FOR A MINING COMPANY IN SOUTH AFRICA

The proposed Theoretical Framework for Skills Development in Figure 6.8 depicts important aspects and processes to facilitate successful skills development within a learning organisation. The framework is based on the elements gleaned from the literature review, the review of existing models in Chapter 2, and the findings of the current study. The framework is presented in Figure 6.6 and discussed in detail below.

Figure 6.5

Proposed Theoretical Framework for Skills Development for a Mining Organisation in South Africa



6.11 DISCUSSION OF PROPOSED THEORETICAL FRAMEWORK

6.11.1 Philosophy: Learning organisation and mindset

Companies seek highly skilled workers who are able to deliver high-quality outputs faster in increasingly complex environments. Appropriate knowledge of the organisation, it context and its products and services, coupled with productive customer and stakeholder interactions, is critical. Building such human capital requires knowledge-sharing and ongoing learning (Mans-kemp & Flanegan, 2022). None of the models reviewed (i.e., Bandaranaike & Willison, 2010; Bird & Cassel, 2013; Camp et al., 1986; Graham & Mihal; Nadler, 1982) include the philosophy of a learning organisation underpinning skills development efforts. Furthermore, none of these authors note that the learning organisation philosophy should be anchored in transparency regarding strategies and accessibility of opportunities.

A true learning organisation is one in which all employees are offered opportunities to learn and proactively share information (Sarker et al., 2021). Learning organisations focus on continuous improvement and establishing life-long learning across all professions, to ensure efficiency in organisational systems and processes (Gallie, 2021). Mining organisations are struggling to remain sustainable in the highly competitive mining market, and continuous learning has become critical in this industry (Gallie, 2021). A qualified and well-structured workforce is essential for an organisation's success in terms of productivity, profitability, and gaining a competitive edge (Kwon & Jang, 2021). While an organisation is required to facilitate skills development, it is important to note that all employees (managers and non-managerial staff) have to take responsibility for their own career growth (Ahuja, 2020). With this orientation, the organisation forms a strong foundation for its future sustainability (Kwon & Jang, 2021).

The framework proposes that the creation of a learning organisation be accelerated by encouraging both managerial and non-managerial staff to take ownership of their own and their subordinates' skills development, a view that is supported by Ahuja (2020). Employees can be encouraged to take ownership of their skills development by impressing upon them the importance of being competent in their areas of work in order to enhance their career progression (Ahuja, 2020; Patacsil et al., 2017). It is also imperative that organisational structures that are barriers to skills development be identified and communicated, in order to ensure that they are addressed as a matter of urgency (Kucharcíkova et al., 2023).

6.11.2 Organisational skills development strategy

For an organisational skill development strategy to be successful, top management needs to be involved in the implementation of the strategy (Sarker et al., 2021). None of the models reviewed (i.e., Bandaranaike & Willison, 2010; Bird & Cassel, 2013; Camp et al., 1986; Graham & Mihal; Nadler, 1982) refer to skills development as a strategic imperative driven by top management. However, Graham and Mihal (1986) do note that skills development initiatives should be prioritised according to the organisation's existing strategic objectives. The areas that management needs to focus on include individual, task, and organisational analysis. Individual analysis should be a consistent process of collecting information on barriers to learning, in order to ensure sufficient learning interventions as part of the skills development programme (Erasmus & Loedolff, 2015; Kwon & Jang, 2021). Job-specific skills development equips employees with the competence they currently need to boost their productivity, which ultimately enhances the organisation's competitive edge (Li, 2022). Job-specific skills development also enhances employees' employability and career prospects (Li, 2022). Investing in and improving the technical and managerial competencies of the workforce improve both individual and organisational performance, and also enhance employees' chances of promotion (Farid & Taher, 2021). Skills development plans should include an analysis of both current and future skills needs related to a position (Asaram, 2022; Farmer, 2023). Such analyses should be iterative and also take into account innovation, as disruptive technologies lead to jobs evolving, causing skills gaps (Li, 2022).

It is also vital that organisations remain abreast of international developments in the industry, in order to remain competitive and sustainable (Oviawe, 2018). This forward-looking approach is not noted in any of the models reviewed (i.e., Bandaranaike & Willison, 2010; Bird & Cassel, 2013; Camp et al., 1986; Graham & Mihal; Nadler, 1982). All the models are focused on the organisation's current skills needs. Well-planned reskilling and upskilling of the workforce can help an organisation reduce current shortages of rare and critical skills, and also to prevent future skills shortages (Li, 2022). In this regard, it is important to note that most professions in the mining industry are deemed specialised, and skills development is highly regulated. Therefore, courses and curricula should be focused on the mitigation of employment-related risks and ensure that the organisation remains compliant with sector legislation, specifically with regard to health and safety (Meyer et al., 2019).

Continuous two-way communication on many levels and across departments is also vital in fostering a learning organisation. The importance of which is underscored by Camp et al. (1986), Nadler (1982), and Bandaranaike and Willison (2010), while the model of Bird and Cassel (2013) limits communication to informing employees of the benefits of training and the

consequences of non-completion or failure. Managers and their staff should communicate regularly to ensure that development needs are appropriately and successfully addressed, and all individuals need to be provided avenues through which to address concerns (Campbell et al., 2020).

6.11.3 Skills audit: Hard and soft skills

A skills audit is the process of analysing and monitoring skills needs across an organisation, in order to identify deficiencies that hinder business growth (Van Der Waldt, 2020). Skills audits should, first and foremost, be related to individuals' job description, with the results forming the basis for decisions regarding immediate skills development (Besic et al., 2018; McGuire et al., 2022). However, skills audits are also a useful tool to determine progression in learning, talent management, education advancement, and career changes (Besic et al., 2018; McGuire et al., 2022). Skills audits also facilitate awareness amongst employees regarding their needs in order to advance professionally (Besic et al., 2018). Bandaranaike and Willison's (2010) Framework notes the importance of soft skills such as problem-solving and communication, and the ASTD (2006) model infers that skills development leads to enhanced decision-making. The models of Camp et al. (1986), Graham and Mihal, and Nadler (1982) focus on addressing gaps in managerial and non-managerial employees' task-related knowledge, i.e., hard skills.

Hard skills form the basis for creating a curriculum for a job profile according to the practical skills required to perform the job (Patacsil et al., 2017). While some organisations still perceive hard skills to be the only requirement in performing tasks, organisations are increasingly becoming aware of the importance of well-developed soft skills (Besic et al., 2018; Lamri & Lubart, 2023). Many employees, especially recent graduates, lack soft skills (Lamri & Lubart, 2023; Patacsil et al., 2017). The productivity of an organisation is highly dependent on the quality of its human capital and employees' ability to upgrade their skills to meet constant changes in innovation and the work environment, which requires various interpersonal skills (McGuire et al., 2022). Soft skills should include effective negotiation, communication, team-building, critical thinking, problem-solving, and conflict management, to name a few (Besic et al., 2018; Patacsil et al., 2017). These skills also support the preservation of organisational knowledge (McGuire et al., 2022). Due to ongoing changes in technology, certain skills may need to be redefined or may become obsolete, indicating the need for ongoing learning (Mining Prospectus, 2019; Oviawe, 2018). Such ongoing learning needs to be informed by evaluation and review against industry standards and global developments (Binsaeed et al., 2017; McGuire et al., 2022).

6.11.4 Funding and resources

Mining organisations in South Africa receive funding for skills development through the NSF and SETAs (SARS, n.d.). Mining organisations can claim back 20% of their levy by submitting an annual training and workplace skills plan (Services Seta, n.d.). Securing bursaries from the DMR&E (2022b) and other sponsors (see, e.g., *Bursaries South Africa 2023–2024*) thus saves costs. Organisations could also liaise with various educational institutions and partner with other organisations in the industry to negotiate better rates and obtain learnerships and sponsorships. These efforts, when combined, may yield substantial savings in the cost of skills development. The models of Camp et al. (1986), Nadler (1982), and the ASTD (2006) underscore the importance of securing sufficient resources to execute the necessary skills development initiatives.

6.11.5 Programme development

Courses or curricula need to be developed based on identified skill gaps, specialised tasks, or departmental needs, in alignment with the organisation's long-term strategic objectives (McGuire, 2022). This process is also indicated in all the models reviewed (ASTD, 2006; Bandaranaike & Willison, 2010; Bird & Cassel, 2013; Camp et al., 1986; Graham & Mihal; Nadler, 1982), but the models do not specify a long-range horizon. The focus is on addressing current skills gaps in order to enhance organisational performance. A curriculum audit can also be performed to identify the goals, objectives, learning methods, learning content, and learning outcomes of the recommended courses (Gupta, 2021; McGuire, 2022). The courses should include both hard and soft skills (Gupta, 2021), and should be followed up with formal and informal development skills development initiatives. Less formal initiatives could include mentoring, coaching, job-shadowing, acting in positions, and pairing more skilled employees with those who require development.

Courses should be administered in harmony with operational requirements, and preferably take place during office hours, with time specifically allocated in advance. This will allow attendees to arrange replacement staff and, in collaboration with the HR function, could provide other staff with opportunities to broaden their skills through job rotation and acting in positions.

Work stress due to an overwhelming workload limits employees' ability to participate in skills development, which negatively affects their current performance and future development (Munandar et al., 2022). Online learning is an option that can save time, as employees can study at their own pace without having to physically attend a course at a specific venue (Kokoç,

2019). Pow and Wong (2017) note that smaller classes facilitate better learning, as trainers can provide personalised attention while enjoying greater flexibility in presenting the course. Camp et al.'s (1986) model indicates that all employees should be developed by trainers who are well qualified. Qualified trainers should also be able to assess whether an employee is ready to perform certain tasks or take critical decisions.

6.11.6 Development methods

The methods of development should be comprehensive in scope and aligned to employees' job requirements and the time they have available for training, and should address specific needs. This element of skills development is supported by the ASTD (2006) model and those of Bandaranaike and Willison (2010), Bird and Cassel (2013), Camp et al. (1986), Graham and Mihal (1986), and Nadler (1982), but the models do not specify methods of skills development. Based on the current study's findings, effective methods include formal education, online courses, short courses, and refresher courses. Less structured methods should include coaching, mentoring, job-shadowing, job rotation, and on-the-job instruction. Some of these development methods could be supported by remedial and support tools such as dedicated avenues to get immediate assistance to resolve pressing problems ('instant assist' functionalities) and information-sharing platforms. Consistent communication throughout remedial exercises also enhances knowledge-sharing, which reduces the loss of organisational knowledge (Sanyal & Hisam, 2018). Behme and Becker (2021) confirm that most employees prefer online tools such repositories to access and share information. They further emphasise that employees need to be taught how to use these online tools to effectively search for desired information and knowledge (Behme & Becker, 2021).

6.11.7 Robust talent pipeline

A talent pipeline that enables agile and adaptable succession planning with regard to leadership and critical and scare skills is vital to an organisation's competitiveness and, thus, its sustainability (Karthik, 2023). Learning and development opportunities should be made available to all employees, as this not only enriches the organisation's human capital and aids retention (Allais, 2022; Engmann et al., 2017), but also pro-actively creates opportunities for fresh talent to emerge and be identified, thereby aiding succession planning (Kaliannan et al., 2022; Karthick, 2023). Building a robust talent pipeline should also integrate formal assessments and accreditation in order to track employee progress and assess the success of programmes (Engmann et al., 2017; Karthick, 2023). Of the models reviewed (i.e., ASTD, 2006; Bandaranaike & Willison, 2010; Bird & Cassel, 2013; Camp et al., 1986; Graham & Mihal; Nadler, 1982), only the ASTD (2006) model refers to mitigating staff attrition. None of

the models address skills development specifically with a view to building a robust talent pipeline with which to plan succession.

Norval et al. (2022) emphasise that transparency entails providing accurate and relevant information. Transparency has a positive effect on employees' attitudes and creates trust (Bratley & Alloysius, 2017; Campbell et al., 2020), which contribute to employee loyalty, involvement, and acceptance of future changes (Bratley & Alloysius, 2017; Ruppel et al., 2022). Ruppel et al. (2022) posit that transparency creates an environment of mutual respect while minimising job disengagement and communication gaps, ultimately enhancing performance. Establishing a learning culture supported by transparency between managers and employees fosters open communication and trust, as it reduces the power distance and limits nepotism (Al-Alawneh et al., 2019). Constructive feedback and recognition enhance productivity, job satisfaction, and morale, all of which positively impact organisational performance (El Masri & Suliman, 2019). To ensure the engagement of internal stakeholders in the process, management should also always maintain transparency and provide continuous feedback, as well as offer employees opportunities to communicate information to higher levels, thereby creating virtuous feedback loops, thereby ensuring continued improvement of processes (Karthick, 2023).

The current study's theoretical framework proposes that the aspects that support fair and transparent allocation are:

- all employees having clarity regarding the organisational structure that the skills development system serves, thereby supporting allocation decision;
- that employees are assisted in meeting the requirements of their jobs;
- that skills development is augmented with psychometrics to identify talented individuals who merit development despite not qualifying based on their organisational position; and
- that some initiatives are aimed at specifically developing talent, particularly with regard to scarce and critical skills.

Opportunities for skills development could also serve as a highly desired component of rewards.

The framework also indicates the importance of continual feedback loops and spirals. Of the models reviewed (i.e., ASTD, 2006; Bandaranaike & Willison, 2010; Bird & Cassel, 2013; Camp et al., 1986; Graham & Mihal; Nadler, 1982), Nadler's (1982) model indicates the importance of feedback to those undergoing development, while Camp et al.'s (1986) model illustrates the need for two-way feedback. However, none of the models address ongoing

loops and spirals to ensure continuous improvement of skills development in the organisation. Feedback is the process of providing information about a particular performance in order to inform corrective actions and determine the efficacy of interventions (Carless, 2018). In a feedback loop, information continually flows between all the parties involved, with the aim of ensuring continuous improvement (Baker et al., 2022). Therefore, feedback loops are bidirectional interactions. The nature and process of the loops keep changing as the various parties communicate. New information and goals are also created as the various parties collaborate and take action, thereby enhancing output and benefits. The framework includes this vital step to encourage all stakeholders (managers, HR practitioners, and non-managerial employees) to communicate requirements for skills development and gather feedback on the quality of interventions. Such collaboration will create a virtuous spiral that is iterative and transformative (Baker et al., 2022).

The outcome of the above dimensions is a robust talent pipeline that will support the philosophy of a learning organisation.

This concludes the discussion of the proposed Theoretical Framework of Skills Development for a Mining Company in South Africa. The next sections discuss the study's contributions to the body of knowledge in this field.

6.12 CONTRIBUTIONS OF THE STUDY

6.12.1 Theoretical contributions

The terms *training* and *skills development* are often used interchangeably in the literature. The current study distinguished the two concepts, based on literature. Training focuses on the skills and knowledge that employees require to perform a specific task (Giday & Perumal, 2022), while skills development is a process focused on identifying gaps in the existing knowledge with regard to both hard and soft skills (Lamri & Lubart, 2023) and then implementing the required measures to close these gaps in order to improve overall competence (Hafit et al., 2022).

The current study also highlights the importance of skills development (formal or informal) for all employees in an organisation. A challenging work environment supported by opportunities for continuous learning is of significant importance in the attraction and retention of talent (Gallie, 2021). This study also contributes theory to the importance employees and managers attach to a learning organisation in which all take responsibility for and ownership of their own skills development and that of their subordinates. The study also highlights the importance of transparency and fairness in the skills development system. None of the latter aspects are

reflected in any of the models reviewed. In addition, the study contributes knowledge regarding the importance of creating effective and widely accessible feedback loops on various levels between multiple stakeholders to continuously enhance the skills development system as a whole, in order to support the creation of a learning organisation.

6.12.2 Practical contributions

The proposed Theoretical Framework for Skills Development for a Mining Organisation in South Africa makes a contribution to skills development in practice. The framework is based on the study findings, extant literature, and elements of the models reviewed. The framework also contains practical solutions to problems identified in the study, including providing formal platforms for feedback and knowledge-sharing, and providing instant assistance. A major consideration is the importance of sufficient time to attend skills development initiatives, without which no initiative would yield the desired outcomes. None of the models reviewed address this aspect. Furthermore, none of the models propose mentoring and coaching at various organisational levels, which is another useful contribution of the current study. Communication could be vastly enhanced by employing feedback loops, rather just focusing on top-down communication (Kwon & Jang, 2021).

The next section summarises the achievement of the research objectives in answering the research questions.

6.13 RECONCILIATION OF RESEARCH QUESTIONS AND RESEARCH OBJECTIVES

RQ1 (*How are skills development and related concepts conceptualised?*) was answered by achieving LO1 (*To conceptualise skills development and related concepts*) through the review of extant literature in Chapter 2, Sections 2.3 and 2.4.

RQ2 (*How is skills development conceptualised within the mining industry in South Africa?*) was answered by achieving LO2 (*To conceptualise skill development in the mining industry in South Africa*) through the review of extant literature in Chapter 3, Section 3.3.

RQ3 (*What are the advantages and challenges associated with formal skills development in the South African mining industry?*) was answered by achieving LO3 (*To determine the advantages and challenges associated with formal skills development in South Africa and specifically in the South African mining industry*) through the literature reviewed in Sections 3.4 and 3.5.

RQ4 (*What are the elements of an effective skills development model?*) was answered by

achieving LO4 (*To identify elements of an effective skills development system*) through the discussion of the literature in Chapter 2, Section 2.10, and by achieving EO4 (*To investigate the perceptions of management and employees regarding the requirements for an effective, customised skills development system for the organisation*) through the findings reported in Chapter 5, Section 5.5.

RQ5 (*What are the perceptions and lived experiences of employees and management with regard to skills development in the organisation?*) was answered by achieving EO1 (*To explore and understand the perceptions of employees and management with regard to skills development in the organisation under study*) through the findings reported in Chapter 5, Section 5.2.

RQ6 (*How adequate is the skills development system in the organisation perceived to be?*) was answered by Achieving EO2 (*To understand the perceived adequacy of the skills development system of the organisation*) through the findings reported in Chapter 5, Section 5.3.

RQ7 (*What are the perceived challenges and advantages of skills development for the organisation?*) was answered by achieving EO3 (*To explore and understand the perceived challenges and advantages of skills development in the organisation*) through the findings reported in Chapter 5, Section 5.4.

RQ8 (*What are the perceptions of management and employees regarding requirements for an effective, customised skills development system for the organisation?*) was answered by achieving EO4 (*To understand the perceptions of management and employees regarding the requirements for an effective, customised skills development system for the organisation*), through the reporting of the findings in Chapter 5, Section 5.5.

RQ9 (*What conclusions can be drawn and recommendations be made on a customised skills development model for the organisation?*) was answered by achieving EO5 (*To draw conclusions and make recommendations regarding a skills development model for the organisation*) through the discussion of the findings, together with extant literature, in Sections 6.1 to 6.8 and the theoretical framework proposed in Section 6.10.

Therefore, the primary aim of the current study: *To explore the beliefs and lived experiences of management and employees regarding skills development, in order to make suggestions towards a skills development model for the organisation*, was achieved.

The next section discusses the study's limitations and suggests avenues for further research.

6.14 LIMITATIONS RECOMMENDATIONS FOR FUTURE RESEARCH

The study was limited to a single organisation in one industry in South Africa. The study was cross-sectional and qualitative, meaning that the researcher did not gather data for comparison over time, and the findings are not generalisable. Future research could gather longitudinal data to enable comparisons (Creswell & Creswell, 2022) regarding the bolstering of human capital through a skills development, as evident in a robust talent pipeline that enables responsiveness to industry demands — especially with regard to scarce and critical skills in mining in South Africa. Such research could also include gathering the views of external stakeholders with regard to engagement before and after skills development initiatives were employed.

Future studies could consider other industries in other regions and countries, and augment the qualitative data with quantitative data, in order to yield generalisable results (Creswell & Creswell, 2022). Researchers could also conduct a similar study in other less industrialised countries in Africa and abroad, as well as in more industrialised countries, to enable comparisons.

6.15 CHAPTER SUMMARY AND CONCLUSION

The current study found that skills development is hampered by a number of factors that negatively impact the motivation, mental health, and productivity of employees on all levels. The loss of skilled employees to lucrative positions abroad has added fuel to the crisis of limited skills. These factors negatively impact organisations' human capital (Sundari & Kusmiati, 2022) with which to ensure a healthy talent pipeline and plan succession, and have a dire impact on the engagement of both internal and external stakeholders through sub-optimum company performance (Mahajan, 2023).

The current study's findings highlight the importance of creating a learning organisation supported by commitment and ownership regarding skills development. Organisations need to address workloads that make it difficult for employees to attend skills development initiatives, ensure that development is relevant and career-enhancing, and set aside sufficient funding to realise the intended benefits of skills development plans.

Development initiatives should include both hard and soft skills, and efforts should be aligned to creating a sturdy talent pipeline to feed into the learning of the organisation. Skills development systems should be constantly revisited and updated to ensure relevance and compliance with industry regulations, and to address issues that hamper optimum performance.

Enhanced communication in the form of feedback loops could be of great value in this regard. Courses and curricula in mining should be upgraded in line with local and international industry developments and requirements, including advances in disruptive technologies, to ensure that the organisation maintains a competitive edge and enhances its sustainability.

Mining as an industry is known for suffering the effects of shortage occupations, and an organisation being visibly committed to developing employees will assist in attracting talented individuals to a career in mining. This will enhance not only the sustainability of mining organisations, but also their critical contribution to the country's economy.

LIST OF REFERENCES

Abdalla, M., Oliveira, L., Azevedo, C., & Gonzalez, R. (2018). Quality in qualitative organizational research: Types of triangulation as a methodological alternative. *Administration: Teaching and Research*, *19*, 66-98. https://doi.org/10.13058/raep.2018.v19n1.578

Achanya, J., & Dickson, N. (2022). Employee training and employee development in an organization: Explaining the difference for the avoidance of research pitfalls. In: *Public administration: Theory and practice in Nigeria*. Department of Public Administration, Federal University of Wukari, 1-11.

Adu-Baffoe, E., & Bonney, S. (2021). The role of non-governmental organizations in basic education delivery in Ghana: Implications for theory, policy, and practice. *International Education Studies*, *14*(4). DOI: 10.5539/ies.v14n4p35

Ahuja, A. (2020). A study on the impact of rewards on knowledge sharing in education sector. *Studies in Indian Place Names, UCG Care Journal*, *40*(27). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3673841

Akbar, H., Yehuda, B., & Tzokas, N. (2017). Feedback loops as dynamic processes of organizational knowledge creation in the context of the innovations' front-end. *British Journal of Management*, *4*(29). DOI: 10.1111/1467-8551.12251

Al-Alawneh, M. K., Al-Hawamleh, M. S., Al-Jamal, D., & Sasa, G. S. (2019). Communication skills in practice. *International Journal of Learning, Teaching and Educational Research*, *18*(6), 1-19. http://ijlter.org/index.php/ijlter/article/view/1406/pdf

Allais S. M. (2022). Beyond 'supply and demand': Moving from skills 'planning' to seeing skills as endogenous to the economy. *Journal of Vocational, Adult and Continuing Education and Training*, *5*(1). DOI: 10.14426/jovacet.v5i1.246

Al Rawashdeh, A. Z., Mohammed, E. Y., Al Arab, A. R., Mahmoud, A., & Al-Rawashdeh, B. (2021). Advantages and disadvantages of using e-learning in university education: Analyzing students' perspectives. *The Electronic Journal of e-Learning*, *19*(2), 107-117. https://files.eric.ed.gov/fulltext/EJ1296879.pdf

American Society for Training and Development (ASTD). (2006) https://www.conference-board.org/pdf_free/bridgingtheskillsgap.pdf

ASTD (2012). *Bridging the skills gap. Help wanted, skills lacking: Why the mismatch in today's economy?* https://www.nist.gov/system/files/documents/mep/Bridging-the-Skills-Gap_2012.pdf

Amrutha, A., & Myneni, K. K. (2023). Impact of emotional intelligence on project managers' competency. *International Journal of Engineering and Science Technologies*, *7*(3), 23-41. https://doi.org/10.29121/ijoest.v7.i3.2023.501

Asaram, L. S. (2022, November 4). Skills shortages detrimental to mining projects. *Mining Weekly*. https://www.miningweekly.com/article/skills-shortages-detrimental-to-mining-projects-2022-11-04

Asenahabi, B. M. (2019). Basics of research design: A guide to selecting appropriate research design. *International Journal of Contemporary Applied Research*, *6*(5), 76-89.

Attri, R. K. (2019). *The models of skill acquisition and expertise development: A quick reference of summaries*. Speed To Proficiency Research: S2Pro: Singapore Government. ISBN: 978-981-14-1130-4

Baker, A., Weisgrau, J., & Brister Philyaw, K. (2022). Feedback loops: Mapping transformative interactions in education innovation. *Digital Promise*. https://files.eric.ed.gov/fulltext/ED622549.pdf

Bandaranaike, S. (2018). From research skill development to work skill development. *Journal of University Teaching & Learning Practice*, *15*(4). https://ro.uow.edu.au/jutlp/vol15/iss4/7/

Bandaranaike, S., & Willison, J. (2010). *Work Skills Development Framework: An innovative assessment of work integrated learning.* In: Proceedings of the ACEN (Australian Collaborative Education Network) National Conference 2010, Perth, Australia, 27 Sept. – 1 Oct. 2010 (pp. 1-19). https://digital.library.adelaide.edu.au/dspace/handle/2440/65446

Behme, F., & Becker, S. (2021, January 29). The new knowledge management. Mining the collective intelligence. *Deloitte Insights*. https://www2.deloitte.com/xe/en/insights/focus/technology-and-the-future-of-work/organizational-knowledge-management.html

Benton, D. (2020, May 17). Global mining industry suffering a major skills shortage problem, Chamber of Mines finds. *Mining*. https://miningdigital.com/supply-chain-and-

operations/global-mining-industry-suffering-major-skills-shortage-problem-chamber-mines-finds

Besic, A., Carta, E., Curth, A., Murphy, I., Regan, K., Richardson, M., McGuire, D., Scott, D., Souto-Otero, M., & Ulicna, D. (2018). *Skills audits: Tools to identify talent*. European Commission. https://ec.europa.eu/social/BlobServlet?docId=20609&langId=cs

Bholane, K. (2022). *Soft skills for today's business world*. https://www.researchgate.net/publication/366324169_SOFT_SKILLS_FOR_TODAY'S_BUSINESS_WORLD

Binsaeed, R., Syeda, T., & Javed, L. (2017). The big impact of soft skills in today's workplace. *International Journal of Commerce and Management*, *5*(1), 456. https://ijecm.co.uk/wp-content/uploads/2017/01/5123.pdf

Bird, T., & Cassell, J. (2013). *Financial Times guide to business training*. Financial Times Publishing & Pearson.

Blair, G., Woodcock, H., & Pagano, R. (2023). Skills development in a volatile environment: A systems view of the learning process. *Apex Journal of Business and Management*, *1*(1), 21-32. ISSN 3021-9159-3

Boyes, B. (2018, November 22). Why do employees hoard their knowledge and what can be done to prevent this? *Real KM*. https://realkm.com/2018/11/22/why-do-employees-hoard-their-knowledge-and-what-can-be-done-to-prevent-this/

Bratley, M., & Alloysius, S. M. C. M. (2017). *Employees' perception of transparency in management and their commitment: A special reference to education management*. ISSN (Online): 2455-7838.

Brothwell, R. (2020, February 5). South Africans are leaving the country in big numbers — here's why that's not good. *BusinessTech*. https://businesstech.co.za/news/finance/370470/south-africans-are-leaving-the-country-in-big-numbers-heres-why-thats-not-good/

Bryman, A., Bell, E., Hirschsohn, P., Dos Santos, A., Du Toit, J., Masenge, A., Van Aardt, I., & Wagner, C. (2019). *Research methodology: Business and management contexts* (11th ed.). Oxford University Press.

Burns, M., Bally, J., Burles, M., Holtslander, L., & Peacock, S. (2022). Constructivist grounded theory or interpretive phenomenology? Methodological choices within

specific study contexts. *International Journal of Qualitative Methods*, *21*. https://doi.org/10.1177/16094069221077758

Bursaries South Africa. (n.d.). *List of all bursaries in South Africa 2023–2024*. https://www.zabursaries.co.za/

BusinessTech. (2022, August 7). *Yes, skilled South Africans are quitting their jobs to move overseas*. https://businesstech.co.za/news/business/614243/yes-skilled-south-africans-are-quitting-their-jobs-to-move-overseas/

Camp, R. R., Blanchard, P. N., & Huszczo, G. E. (1986). *Toward a more organisationally effective training strategy and practice*. Prentice Hall.

Campbell, S., Campbell-Phillips, S., & Phillips, D. (2020). Lack of communication between management and employees. *SIASAT*, *5*(3), 32-39. DOI: 10.33258/siasat.v4i3.67

Caputo, A., Marzi, G., Maley, J., & Silic, M. (2018). Ten years of conflict management research 2007–2017: An update on themes, concepts and relationships. *International Journal of Conflict Management*, *30*(4). DOI: 10.1108/IJCMA-06-2018-0078

Carless, D. (2018). Feedback loops and the longer-term: Towards feedback spirals. *Assessment & Evaluation in Higher Education*, *44*(5), 705-704. https://doi.org/10.1080/02602938.2018.1531108

Cassim, Z., Goodman, S., & Rajagopaul, A. (2019). *Putting the shine back into South African mining: A path to competitiveness and growth.* McKinsey & Company. https://www.mckinsey.com/featured-insights/middle-east-and-africa/putting-the-shine-back-into-south-african-mining-a-path-to-competitiveness-and-growth

Castleberry, A., & Nolen, A. (2018). Thematic analysis of qualitative research data: Is it as easy as it sounds? *Currents in Pharmacy Teaching and Learning*, *10*, 807-815. https://doi.org/10.1016/j.cptl.2018.03.019

Chirgwin, P. Skills development and training of future workers in mining automation control rooms. (2021). *Computers in Human Behaviour Reports*, *4*(August–December), 100115. https://www.sciencedirect.com/science/article/pii/S2451958821000634

Cho, K. S., & Lee, S. H. (1978). Occupational health hazards of mine workers. *Bulletin of the World Health Organization*, *56*(2), 205-218. https://apps.who.int/iris/handle/10665/261731

Consolidated Employers Association. (2020, August 12). Skills development in the workplace — a forgotten concept? https://ceosa.org.za/skills-development-in-the-workplace-a-forgotten-concept/

Creswell, J. W., & Creswell, J. D. (2022). *Research design: Qualitative, quantitative and mixed method approaches* (6th ed.). Sage Publications.

Dagnew, G. G., & Elantheraiyan, P. (2023). A study on the effect of training on employee performance in the case of Mekelle City, Tigray, Ethiopia. *Social Sciences & Humanities Open*, *8*(1), 100567. https://www.sciencedirect.com/science/article/pii/S2590291123001729?ssrnid=4257987&dgcid=SSRN_redirect_SD

Denzin, N., & Lincoln, Y. (2018). *The Sage handbook of qualitative research* (5th ed.). Sage Publications.

Department of Higher Education and Training (2022). *Skills supply and demand in South Africa. Labour Market Intelligence research programme*. https://lmi-research.org.za/wp-content/uploads/2022/05/DPRU-LMI-1-1-B2-Skills-Supply-and-Demand-2022.pdfDreyfus, S. E. (2004). The Five-Stage Model of Adult Skill Acquisition. *Bulletin of Science, Technology & Society*, *24*(3), 177. https://doi.org/10.1177/0270467604264992

Dube, S., & Maroun, W. (2017). Corporate social responsibility reporting by South African mining companies: Evidence of legitimacy theory. *South African Journal of Business Management*, *48*(1), 23-34. https://doi.org/10.4102/SAJBM.V48I1.17

Dunbar, N. E. Burgoon, J. K., Chen, X., Wang, X., Ge, S., Huang, Q., & Nunamaker, J. (2023). Detecting ulterior motives from verbal cues in group deliberations. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1166225

Du Plooy-Cilliers, F., Davis, C., & Bezuidenhout, R. (2019). *Research matters*. Juta.

Durai, P., & Thomas, S. (2022). Constructive conflict management in work from home scenario. *International Journal of Early Childhood Special Education*, *14*. https://doi.org/10.9756/intjecse/v14i5.430

Edezaro, P. O. (2022). Relationship between organizational justice, job satisfaction, perceived trust, employee voice, and organisational citizenship behaviour. The mediation role of organisational communication. *International Journal of Social Science and Education Research Studies*, *2*(1), 22-28.

Ediriweera, A., & Wiewiora, A. (2021). Barriers and enablers of technology adoption in the mining industry. *Resources Policy*, *73*(Oct), 102188. https://www.sciencedirect.com/science/article/abs/pii/S0301420721002026

Education, Training and Development Practices [ETDP] SETA (2021). *ETD Sector Skills Plan 2022–2023*. https://www.etdpseta.org.za/etd/sites/default/files/2022-12/2022-2023%20ETDP%20SETA%20Sector%20Skills%20Plan.pdf

El Masri, N., & Suliman, A. (2019). Talent management, employee recognition and performance in the research institutions. *Studies in Business and Economics*, *14*(1), 127-140. https://doi.org/10.2478/sbe-2019-0010

Engmann, M., Rao, A., & Adamson, B. (2017). Principles of successful skills development models. In: *Bridging the skills gap* (pp. 123-141). DOI: 10.1007/978-3-319-49485-2_7

Erasmus, B., & Loedolff, P. (Eds.). (2015). *Managing training and development* (8th ed.). Oxford.

Erasmus, B. J., Loedolff, P. v. Z., Mda, T., & Nel, P. S. (2007). *Managing training and development in South Africa* (4th ed.). Oxford University Press.

Farid, K., & Taher, J. (2021). The impact of skills development on employee performance. *International Journal of Computer Science and Network Security*, *21*(11), 276-286. http://paper.ijcsns.org/07_book/202111/20211138.pdf

Farmer, J. (2023, January 11). Addressing industry skills shortages in the mining sector by engaging in the new QCTO Framework. *Engineering News*. https://www.engineeringnews.co.za/article/addressing-industry-skills-shortages-in-the-mining-sector-by-engaging-in-the-new-qcto-framework-2023-01-11

Farrugia, C., & Wingard, J. (2021). *The Great Skills Gap: Optimizing talent for the future of work*. Stanford University Press.

Faulkner, L., & Trotter, S. (2017). *Data saturation*. Wiley Online Library. https://doi.org/10.1002/9781118901731.iecrm0060

Fusch, P., Fusch, G., & Ness, L. (2018). Denzin's paradigm shift: Revisiting triangulation in qualitative research. *Journal of Social Change*, *10*(1), 19-32.

Galal, S. (2023, January 9). South Africa's mining industry employment by commodity 2021. *Statista*. https://www.statista.com/statistics/241420/south-african-mining-key-facts/

Gallie, D. (2021). *Working conditions. Employee involvement, work engagement and skill development*. Working Paper WPEF19061. Eurofound.

https://www.researchgate.net/publication/355889308_Employee_involvement_work_engagement_and_skill_development

Gaskel, J. (2012). South African coal industry plagued by skill shortage. *Mining.com*. https://www.mining.com/south-african-coal-industry-plagued-by-skill-shortage/

Ghebrihiwet, N. (2019). FDI technology spillovers in the mining industry: Lessons from South Africa's mining sector. *Resources Policy*, *62*, 463-471. https://www.sciencedirect.com/science/article/pii/S0301420717301356

Giri, L. G., Deepak, G., Manjula, S. H., & Venugopal, K. R.(2018). *OntoYield: A semantic approach for context-based ontology recommendation based on structure preservation.* In: Proceedings of International Conference on Computational Intelligence and Data Engineering: ICCIDE 2017 (pp. 265-275). Springer Singapore.

Graham, J. K., & Mihal, W. L. (1986). Can your management development needs surveys be trusted? *Training and Development Journal*, *40*(3): 38-42.

Gupta, B. (2021). *Curriculum audit*. https://www.researchgate.net/publication/348740448_Curriculum_audit

Habiyaremye, A., Habanabakize, T., & Nwosu, C. (2022). Bridging the labour market skills gap to tackle youth unemployment in South Africa. *The Economic and Labour Relations Review*, *33*(4). https://doi.org/10.1177/10353046221138400

Hafit, N. I. A., Anis, A., Zaimy J. J., Othman, N. A., & Munir, Z. (2022). Examining the role of organisational learning theory and learning organisations in the era of digitalization: A literature review. *International Journal of Academic Research in Business and Social Sciences*, *12*(5), 740-752. DOI: 10.6007/IJARBSS/v12-i5/13071

Heather, S. (2020). Data shows mining's skills shortage is biting — and industry is to blame. *MPI*. https://www.miningpeople.com.au/news/Data-shows-minings-skills-shortage-is-biting-and-industry-is-to-blame

Hermanus, M. A. (2017). Mining redesigned — innovation and technology needs for the future — a South African perspective. *Journal of the Southern African Institute of Mining and Metallurgy*, *117*(8), 811-818. DOI: 10.17159/2411-9717/2017/v117n8a12

Hirudayaraj, M., Baker, R., Baker., F., & Eastman, M. (2021). Soft skills for entry-level engineers: What employers want. *Education Science*, *11*(10), 641. https://doi.org/10.3390/educsci11100641

Human Sciences Research Council. (2017). *Skills development legislation as a lever of change to reduce poverty, inequality and unemployment*. https://www.parliament.gov.za/storage/app/media/Pages/2017/october/High_Level_Panel/Commissioned_reports_for_triple_challenges_of_poverty_unemployment_and_inequality/Diagnostic_Report_on_Skills_Development_Part_1.pdf

International Labour Office. (2010). *A skilled workforce for strong, sustainable and balanced growth*. https://www.oecd.org/g20/summits/toronto/G20-Skills-Strategy.pdf

International Labour Office. (2010). *World of work report 2010. From one crisis to the next?* https://ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_145078.pdf

International Labour Organization. (2015a). *Mining: A hazardous work*. https://www.ilo.org/global/topics/safety-and-health-at-work/areasofwork/hazardous-work/WCMS_356567/lang--en/index.htm

International Labour Organization. (2015b). *World employment and social outlook 2015: The changing nature of jobs*. https://www.ilo.org/global/research/global-reports/weso/2015-changing-nature-of-jobs/WCMS_368626/lang--en/index.htm

International Labour Organization. (2018). *World employment social outlook*. ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_615594.pdf

International Labour Organization (2022). *World employment and social outlook: Trends 2022*. https://www.ilo.org/global/research/global-reports/weso/trends2022/WCMS_834081/lang--en/index.htm

IT News Africa. (2023, January 4). *Slow progress in digital skills development is stalling South Africa's digital revolution*. https://www.itnewsafrica.com/2023/01/slow-progress-in-digital-skills-development-is-stalling-south-africas-digital-revolution/

James, N. (2023, June 15). Mining's inability to absorb youth raises questions about its sustainability. *Engineering News*. https://www.engineeringnews.co.za/article/minings-inability-to-absorb-youth-raises-questions-about-its-sustainability-2023-06-16

Johnson, J. L., Adkins, D., & Chauvin, S. (2020). A review of the quality indicators of rigor in qualitative research. *American Journal of Pharmaceutical Education*, *84*(1), 7120.

Kabeyi, M. J. B. (2019). Organizational strategic planning, implementation and evaluation with analysis of challenges and benefits for profit and nonprofit organizations.

International Journal of Applied Research, *5*(6). 27-32. https://www.allresearchjournal.com/archives/?year=2019&vol=5&issue=6&part=A&ArticleId=5870

Kakilla, C. (2021). Strengths and weaknesses of semi-structured interviews in qualitative research: A critical essay. *Preprints.org*. https://doi.org/10.20944/preprints202106.0491.v1

Karthick, V. (2023). Role of HR in talent management and succession planning. *International Journal of Research Publication and Reviews*, *4*(5), 3421-3415. ISSN 2582-7421.

Khwam, A. M., DiDona, T., & Hern, B. S. (2017). Effectiveness of teamwork in the workplace. *International Journal of Sciences: Basic and Applied Research*, *32*(3), 267-286. https://gssrr.org/index.php/JournalOfBasicAndApplied/article/view/7134

Kivunja, C., & Kuyini, A. B. (2017). Understanding and applying research paradigms in educational contexts. *International Journal of Higher Education*, *6*(5), 26-41. https://doi.org/10.5430/ijhe.v6n5p26

Kokoç, M. (2019). Flexibility in e-learning: Modelling its relation to behavioural engagement and academic performance. *Themes in eLearning*, *12*(12), 1-16. https://eric.ed.gov/?id=EJ1251161

Kotze, C. (2019, May 30). DMR reports marginal decrease in fatalities in 2018. *Mining Review Africa*. https://www.miningreview.com/health-and-safety/dmr-decrease-fatalities-2018-safety/

Kucharčíková, A., Mičiak, M., Tokarčíková, E., & Štaffenová, N. (2023) The investments in human capital within the human capital management and the impact on the enterprise's performance. *Sustainability*, *15*, 2015. https://doi.org/10.3390/su15065015

Kwon, K., & Jang, S. (2021). There is no good war for talent: A critical review of the literature on talent management. *Employee Relations: The International Journal*. https://www.researchgate.net/publication/353103049

Labafi, S. (2017). Knowledge hiding as an obstacle of innovation in organizations a qualitative study of software industry (pp. 131-148). *AD-Minister*. DOI: 10.17230/ad-minister.30.7

Lamri, J., & Lubart T. (2023). Reconciling hard skills and soft skills in a common framework: The generic skills component approach. *Journal of Intelligence*, *11*(6), 107. https://doi.org/10.3390/jintelligence11060107

Lane, A., Sekgota, K., Mdluli, S., & Nel, E. (2019). *2018 Mining Charter analysis: Finding a happy medium*. Deloitte. https://www2.deloitte.com/content/dam/Deloitte/za/Documents/energy-resources/za_deloitte_mining_charter_May2019.pdf

Li, L. (2022). Reskilling and upskilling the future-ready workforce for Industry 4.0 and beyond. *Information Systems Frontiers.* https://link.springer.com/article/10.1007/s10796-022-10308-y

Liedtke, S. (2019, March 1). Mine fatalities decrease by 10% in 2018. *Mining Weekly*. https://www.miningweekly.com/article/mine-fatalities-decrease-by-10-in-2018-2019-03-01

London Training for Excellence. (2019, January 03). The long-term benefits of short courses. *London Training for Excellence*. https://www.londontfe.com/blog/The-long-term-benefits-of-short-courses

Fraser, L. (2023, August 6). Skilled South Africans are leaving — this is where they're going. *BusinessTech*. https://businesstech.co.za/news/lifestyle/708378/skilled-south-africans-are-leaving-this-is-where-theyre-going/

Macnamara, S. (2022, May 3). Stemming fatalities on South African Mines: Part 3. *African Mining*. https://www.africanmining.co.za/2022/05/03/stemming-fatalities-on-south-african-mines-part-3/

Maher, C., Hadfield, M., Hutchings, M., & Eyto, A. (2018). Ensuring rigor in qualitative data analysis: A design research approach to coding combining NVivo with traditional material methods. *International Journal of Qualitative Methods*. https://doi.org/10.1177/1609406918786362

Mahmood, R. (2022). *Importance of Human Resources for development of employees*. [Research Paper]. https://www.researchgate.net/publication/366177647_Importance_of_Human_Resources_for_Development_of_Employees

Majid, U. (2018). Research fundamentals: Study design, population, and sample size. *Undergraduate Research in Natural and Clinical Science and Technology (URNCST) Journal*, *2*. http://dx.doi.org/10.26685/urncst.16

Majid, S., Eapen, C. M., Aung, E. M., & Oo, K. T. (2019). The importance of soft skills for employability and career development: Students and employers' perspectives. *IUP Journal of Soft Skills*, *13*(4), 7-39. https://www.proquest.com/openview/28f3fdc656495e20ca6045487a09f193/1?pq-origsite=gscholar&cbl=2029989

Makhubela, S., & Ngoepe, M. (2018). Knowledge retention in a platinum mine in the North West Province of South Africa. *South African Journal of Information Management*, *20*(1), 1-8. https://journals.co.za/doi/abs/10.4102/sajim.v20i1.905

Makri, C., & Neely, A. (2021). Grounded theory: A guide for exploratory studies in management research. *International Journal of Qualitative Methods*, *20*. https://doi.org/10.1177/16094069211013654

Maluleka, R. (2020). Covid-19 pandemic in South Africa. Demography volume. *Statistics South Africa*. https://www.statssa.gov.za/publications/Report%2000-80-05/Report%2000-80-052020.pdf

Mans-Kemp, N, & Flanegan, J. N., (2022). Prudent and proactive board succession planning: A case of selected companies in South Africa. *Acta Commercii*, *22*(1), a970.00. https://doi.org/10.4102/ac.v22i1.970

Marjan, M. (2017). A comparative analysis of two qualitative methods: Deciding between grounded theory and phenomenology for your research. *Vocational Training: Research And Realities*, *28*(1), 23-40. DOI: 10.2478/vtrr-2018-0003

Mathews, C. (2019, October 1). SA mining on course for best ever safety record after horror regression of 2017/18. *Miningm^{x}*. https://www.miningmx.com/news/markets/38660-sa-mining-set-for-best-ever-safety-record-after-horror-regression-of-2017-18/

Mauthner, N. S. (2020). Research philosophies and why they matter. In: *How to keep your doctorate on track* (pp. 76-86). Edward Elgar.

McCombes, S. (2019, August 25). How to write a research methodology. *Scribbr*. https://www.scribbr.com/dissertation/methodology/

McGinley, S., Wei, W., Zhang, L., & Zheng, Y. (2021). The state of qualitative research in hospitality: A 5-year review 2014 to 2019. *Cornell Hospitality Quarterly*, *62*(1), 8-20. https://doi.org/10.1177/1938965520940294

McGuire, D., McVicar, O., & Tariq, U. E. H. (2022). Skills audits: An integrative literature review. *Industrial and Commercial Training*, *55*(1), 34-46. https://doi.org/10.1108/ICT-06-2021-0042

Merriam-Webster dictionary. 'skill'. https://www.merriam-webster.com/dictionary/skill

Meyer, M., Bushney, M., Katz, M., Knoke, G., Ludike, J., Meyer, M., Nel, B., Schenk, H., Smith, S., & Wolfson, R. (2019). *Managing human resources development* (5th ed.). Pinetown Printers.

Mine Health and Safety Council (2018). *Mine Health and Safety Act No. 29 of 1996 and Regulations*. https://www.mhsc.org.za/sites/default/files/public/publications/Mine%20Health%20and%20Safety%20Act%2029%20of%201996%20and%20Regulations%20Final%20Booklet.pdf

Minerals Council South Africa. (n.d.a). *Mining in SA*. https://www.mineralscouncil.org.za/sa-mining

Minerals Council South Africa. (n.d.b). *Skills development in the South African mining industry. Fact sheet*. https://www.mineralscouncil.org.za/industry-news/publications/fact-sheets/send/3-fact-sheets/742-skills-development

Mining.com. (2018, March 22). *Engineers need to start mining soft skills*. https://www.mining.com/web/engineers-need-start-mining-soft-skills/

Mining.com. (2023, February 14). *Mining industry faces aging workforce and retirement challenges — report*. https://www.mining.com/mining-industry-faces-aging-workforce-and-retirement-challenges-report/

Mining Prospectus. (2019, October 8). *Skills shortage at the coal face. The mining sector in South Africa faces a myriad of challenges — chief among them, the lack of an effective skills development programme*. http://www.miningprospectus.co.za/articles/skills-shortage-at-the-coalface-29564.html

Mining Qualifications Authority. (n.d.a). *News Quarter 4 2019–2020.* https://mqa.org.za/mqa-news-quarter-4-2019-2020-2/

Mining Qualifications Authority. (n.d.b). *Sector skills planning*. https://mqa.org.za/

Mining Qualifications Authority. *Annual Reports. Annual Report 2021–2022*. https://static.pmg.org.za/download.pdf

Mining Qualifications Authority. (2019). *The MQA's research projects for 2019–2020*. https://mqa.org.za/wp-content/uploads/2021/08/The-MQA-Research-Projects-for-2019-2020-1.pdf

Mining Qualifications Authority. (2021a). *Sector Skills Plan for the mining and minerals sector submitted by the Mining Qualifications Authority (MQA) to the Department of Higher Education and Training. Update 2015–2020*. https://mqa.org.za/wp-content/uploads/2021/08/MQA-SSP-Final.pdf

Mining Qualifications Authority. (2021b). *Sector Skills Plan for the Mining and Minerals Sector Update for 2022–2023*. https://mqa.org.za/wp-content/uploads/2022/08/Final-SSP-2022-23-Update-02-August-2021.pdf

Mining Qualifications Authority. (2023a). *Bursaries*. https://mqa.org.za/bursaries/

Mining Qualifications Authority. (2023b). *Scarce skills*. https://mqa.org.za/scarce-skills/

Moodley, N. (n.d.). Is mining investing sufficiently in training and skills development? *SA Mining*. https://businessmediamags.co.za/mining/sa-mining/is-mining-investing-sufficiently-in-training-and-skills-development/

Moodley, R. (2020, January 24). Mining sector records 51 fatalities. *South African Government News Agency*. https://www.sanews.gov.za/south-africa/mining-sector-records-51-fatalities

Moraka, N. V., & Jansen van Rensburg, M. (2015). Transformation in the South African mining industry — looking beyond the employment equity scorecard. *Journal of the South African Institute of Mining and Metallurgy*, *115*(8), 669-678. http://dx.doi.org/10.17159/2411-9717/2015/v115n8a2

Morse, J. M., & Mitcham, C. (2023). Exploring qualitatively-derived concepts: Inductive–deductive pitfalls. *International Journal of Qualitative Methods*, *1*(4), 28-35. https://www.researchgate.net/publication/277149256_Exploring_Qualitatively-Derived_Concepts_Inductive-Deductive_Pitfalls

Munandar, A., Hermawan, A., & Syihabudhin, S. (2022). Effect of workload and organizational justice on employee performance through job satisfaction: Case study on employees of Perumda Air Minum Tugu Tirta, Malang. *International Journal of Economy, Education and Entrepreneurship*, *2*(2), 356-366. http://ije3.esc-id.org/index.php/home/article/view/68

Musingwini, C. (2017). The brighter side of career cyclicality in the mining professions in South Africa. *Journal of the Southern African Institute of Mining and Metallurgy*, *117*(2). http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2225-62532017000200002

Nadler, L. (1982). *Designing training programs: The Critical Events Model*. Addison-Wesley.

Nagy, S., Pelser, A.-M., & Vaiman, V. (2023). *The improvement of skills & talents in the workplace*. Axiom Academic Publishers. ISBN: 9781991239068

Nandan, S., & Kushwaha, A. (2017). Role of NGOs in skill development and promotion of micro-entrepreneurship among women: A study of Allahabad District. *Management Dynamics*, *17*(2), Article 4. DOI: https://doi.org/10.57198/2583-4932.1052

National Government of South Africa. (n.d.a). *Mining Qualifications Authority (MQA)*. https://nationalgovernment.co.za/units/view/120/mining-qualifications-authority-mqa

National Government of South Africa. (n.d.b). *National Skills Fund (NSF)*. https://nationalgovernment.co.za/units/view/259/national-skills-fund-nsf

National Government of South Africa. (n.d.c). *SETAs*. https://nationalgovernment.co.za/units/type/8/seta

Neingo, P., & Tholana, T. (2016). Trends in productivity in the South African gold mining industry. *Journal of the Southern African Institute of Mining and Metallurgy*, *116*(3), 283-290. DOI: 10.17159/2411-9717/2016/v116n3a10

Niselow, T. (2018). 20 deaths so far in 2018: The Sibanye-Stillwater blame game. *News24*. https://www.fin24.com/Companies/Mining/20-deaths-so-far-in-2018-the-sibanye-stillwater-blame-game-20180621-2

Norval, C., Cornelius, K., Cobbe, J., & Singh, J. (2022, June). *Disclosure by design: Designing information disclosures to support meaningful transparency and accountability*. In: Proceedings of the 2022 ACM Conference on Fairness, Accountability, and Transparency (pp. 679-690). https://dl.acm.org/doi/abs/10.1145/3531146.3533133

Organisation for Economic Co-operation and Development [OECD]. (2019). *Fostering students' creativity and critical thinking. What it means in schools*. OECD. https://onderwijsdatabank.s3.amazonaws.com/downloads/19-5-Fostering-Students-creativity-and-critical-thinking-what-it-means-in-schools-2.pdf

Oswald, F. L., & Courey, K. A., & Liu, Z. (2023). Knowledge, skills, and workforce development: Commentary on Ackerman (2023). *American Psychologist*, *78*(3), 298-300. DOI: 10.1037/amp0001127 Oviawe, J. I. (2018). Revamping technical vocational education and training through public–private partnerships for skill development. *Makerere Journal of Higher Education*, *10*(1), 73-91. DOI: 10.4314/majohe.v10i1.5

Palladan, A. A., & Adamu, A. M. (2018). An overview of strategic management practices. *Austin Journal of Business Administration and Management*, *2*. https://www.researchgate.net/publication/325736717_An_Overview_of_Strategic_Management_Practices

Park, Y. S., Konge, L., & Artino, A. R. (2020). The positivism paradigm of research. *Academic Medicine, Journal of the Association of American Medical Colleges*, *95*(5), 690-694. DOI: 10.1097/ACM.0000000000003093

Parker, D. (2023, June 7). Tech skills shortage an existential threat to the global mining industry. *Mining Weekly*. https://www.miningweekly.com/print-version/tech-skills-shortage-an-existential-threat-to-the-global-mining-industry-2023-06-07

Parliamentary Monitoring Group. (2000). *The Skills Development Act, 1998*. Parliamentary Information Services: Research. https://static.pmg.org.za/docs/2000/appendices/000229SDASummary.htm#:~:text=SETAs%20have%20the%20function%20to,and%20its%20income%20and%20expenditure

Patacsil, F. F., & Tablatin, C. L. S. (2017). Exploring the importance of soft and hard skills as perceived by IT internship students and industry: A gap analysis. *Journal Of Technology And Science Education*, *7*(3), 347-368. https://www.redalyc.org/pdf/3311/331152600006.pdf

Patino, C. M., & Ferreira, J. C. (2018). Inclusion and exclusion criteria in research studies: Definitions and why they matter. *The Brazilian Journal of Pneumonology*, *44*(2), 84. https://www.scielo.br/j/jbpneu/a/LV6rLNpPZsVFZ7mBqnzjkXD/?format=pdf&lang=en

Phiri, W., Ng', E., Mukutu, I., Moono, D., & Kapapi, P. (2019). A critical analysis of strategic management process. *International Journal of Commerce and Management Research*, *5*(1), 12-12. https://www.managejournal.com/archives/2019/vol5/issue1/5-1-45

Pow, J. W., & Wong, M. W. (2017). Effect of workplace factors in professional teacher development on the implementation of small class teaching. *Journal of Education and Training Studies*, *5*(8), 68-76. https://doi.org/10.11114/jets.v5i8.2441

Prat-Sala, M., & Van Duuren, M. (2022). Critical thinking performance increases in psychology undergraduates measured using a workplace-recognized test. *Teaching of Psychology*, *49*(2), 153-163. https://doi.org/10.1177/0098628320957981

Preis, E. P., & Webber-Youngman, R. C. W. (2021). Identification of cost factors relating to mining incidents. *Journal of the Southern African Institute of Mining and Metallurgy*, *121*(1), 39-46. http://www.scielo.org.za/scielo.php?script=sci_abstract&pid=S2225-62532021000100007

PricewaterhouseCoopers (2023, June 6). *Mine 2023: 20th edition. The era of reinvention*. https://www.pwc.com/gx/en/industries/energy-utilities-resources/publications/mine.html

PSETA. (2017). *PSETA: Skill programmes*. https://pseta.org.za/wp-content/uploads/2017/12/PSETA-registered-skills-programmes.pdf

Rahman, M. M. (2019). 21st century skill 'problem solving': Defining the concept. *Asian Journal of Interdisciplinary Research*, *2*(1), 64-71. https://doi.org/10.34256/ajir1917

Rajaram, S. D. (2017). *Unlocking training and skills development for sustainability in small and medium enterprises (SMEs): An explorative South African study*. [Doctoral dissertation, University of South Africa, Pretoria, South Africa]. https://uir.unisa.ac.za/handle/10500/24337

Ramdoo, I. (2020, June). *The impact of Covid-19 on employment in mining*. Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development. https://www.iisd.org/system/files/publications/covid-19-employment-mining-en.pdf

Raturi, P. (2019, May 31). Experience vs qualifications. *Business Standard*. https://www.business-standard.com/article/management/experience-vs-qualifications-104100501002_1.html

Reddy, V., Wildschut, A., Luescher, T., Petersen, I., & Rust, J. (2018, March 29). *Skills development legislation as a lever of change to reduce poverty, inequality and unemployment*. Human Sciences Research Council. https://repository.hsrc.ac.za/handle/20.500.11910/11895

Mahajan, R., Lim, W. M., Sareen, M., Kumar, S., Panwar, R. (2023). Stakeholder theory. *Journal of Business Research*, *166*, 114104. https://doi.org/10.1016/j.jbusres.2023.114104

Rosenburg, E., & Ward, M. (2020, May 31). *SETA performance management & standards*. SA Department of Higher Education and Training. https://www.ru.ac.za/media/rhodesuniversity/content/elrc/documents/2019/setadeliverables/Project_3_Final_Report.pdf

Ruder, S. M., Stanford, C., & Gandhi, A. (2018). Scaffolding STEM classrooms to integrate key workplace skills: Development of resources for active learning environments. *Journal of College Science Teaching*, *47*(5), 29-35. https://eric.ed.gov/?id=EJ1178126

Ruppel, C., Stranzl, J., & Einwiller, S. (2022). Employee-centric perspective on organizational crisis: How organizational transparency and support help to mitigate employees' uncertainty, negative emotions and job disengagement. *Corporate Communications: An International Journal*, *27*(5), 1-22. https://www.emerald.com/insight/content/doi/10.1108/CCIJ-04-2022-0045

Ryklief, M. Y., & Tengeh, R. K. (2022). The importance of training and development for government officials in South Africa. *International Journal of Research in Business and Social Science*, 11(6), 642-656. DOI: 10.20525/ijrbs.v11i6.1990

Sacred Heart University Library. (n.d.). *Types of research designs*. https://library.sacredheart.edu/c.php?g=29803&p=185902#s-lg-box-wrapper-626732

Sahoo, P., & Pany, S. (2020). Exploring methods for reflective thinking: Synthesis of reviews. *Pedagogy of Learning*, *6*(4), 34-41. https://www.researchgate.net/publication/352062938_Exploring_Methods_for_Reflective_Thinking_Synthesis_of_Reviews

Sakamoto, A. (2019). Reconceptualizing skills development for achieving inclusive growth: The horizon of a new generation of policy. *International Journal of Training Research*, *17*(1), 69-82. https://doi.org/10.1080/14480220.2019.1632566

Salleh., K. M., & Sulaiman, N. L. (2013). Competencies from the American Society for Training and Development Workplace Learning and Performance Model: An empirical study. *International Journal of Human Resource Management and Research*, *3*(3), 2249-6874.

Santiago, C. S., Callanta, J., Ulanday, M. L. P., Centeno, Z. J., & Bayla, M. C. D. (2021). Flexible learning adaptabilities in the New Normal: E-learning resources, digital meeting platforms, online learning systems and learning engagement. *Asian Journal of Distance Education*, *16*(2), 38-56. DOI: 10.5281/zenodo.5762474

Sanyal, S., & Hisam, M. W. (2018). The impact of teamwork on work performance of employees: A study of faculty members in Dhofar University. *IOSR Journal of Business and Management*, *20*(3), 15-22. DOI: 10.9790/487X-2003011522

Sardinha, L., Sousa, Á., Leite, E., Ribeiro, H., & Carvalho, A. (2020). *A flexible time management model proposal*. 63rd International Scientific Conference on Economic and Social Development, Zagreb, Croatia, 11-12 December. (pp. 449-460). https://www.researchgate.net/publication/347943979_A_Flexible_Time_Management_Model_Proposal

Sarker, M. A. R., Hashim, J. B., Haque, A., & Juhdi, N. B. (2021). Graduate employability: Perception of graduate students on soft skills towards employability in Bangladesh. *Journal of International Business and Management*, *4*(4). DOI: 10.37227/jibm-2021-03-87

Schreuder, R., & Noorman, S. (2019). Strategic talent development — making the best people in crucial positions better. *Strategic HR Review*, *18*(6), 263-267. DOI: 10.1108/SHR-04-2019-0034.

Services SETA. (n.d.). *Services SETA Website*. https://www.servicesseta.org.za/

Sham, G. (2023, January 4). Slow progress in digital skills development is stalling South Africa's digital revolution. *IT News Africa*. https://www.itnewsafrica.com/2023/01/slow-progress-in-digital-skills-development-is-stalling-south-africas-digital-revolution/

Solaja, O. A., Oyalakun, D. O., Solaja, O. O., Olasubulumi, O. M., Itunuoluwa, O. A., & John, O.O. (2022). *Detrimental implication of micromanagement*. *Izvestiya. Journal of Varna University of Economics*, *66*(1-2), 60-73. https://www.ceeol.com/search/article-detail?id=1122924

Somfula, O., & Zhanda, E. (2023). Training and skills development in the wake of the Fourth Industrial Revolution: Evidence from Botswana borehole drilling companies. *SA Journal of Human Resource Management, 21*. DOI: https://doi.org/10.4102/sajhrm.v21i0.2125

Soratto, J., De Pires, D. E. P., & Friese, S. (2020). Thematic content analysis using Atlas.ti software: Potentialities for research in health. *Revista Brasileira de Enfermagem*, *73*(3): e20190250. http://dx.doi.org/10.1590/0034-7167-2019-0250

Soundering, S. (2017). *Management 101. From hiring and firing to imparting new skills, an essential guide to management studies*. F+W Media.

South African Government. (n.d.). *Register with AET centre*. https://www.gov.za/services/basic-education/register-aet-centre#:~:text=AET%20is%20an%20outcomes%2Dbased,you%20with%20nationally%2Drecognised%20qualifications

South African Government. (2020, January 24). *Minister Gwede Mantashe: 2019 Mine health and safety statistics*. https://www.gov.za/speeches/2019-mine-heatlh-and-safety-statistics-24-jan-2020-0000

South Africa. Government Communications. (n.d.). *South Africa Yearbook 2021/22*. Government Communication and Information System [GCIS]. https://www.gcis.gov.za/south-africa-yearbook-202122

South Africa. Department of Higher Education and Training. (n.d.a). *National Skills Authority*. https://www.nationalskillsauthority.org.za/

South Africa. Department of Higher Education and Training. (n.d.b). *National Skills Development Strategy III*. https://www.gov.za/sites/default/files/gcis_document/201409/national-skills-development-strategyiiia.pdf

South Africa. Department of Higher Education and Training. (2014, May 23). *General Notice 380 of 2014. Government Gazette*. Government Printing. https://www.gov.za/sites/default/files/gcis_document/201409/37678gen380.pdf

South Africa. Department of Higher Education and Training. (2019a). *National Skills Development Plan, 2030 — merSETA*. Government Gazette, 4, No. 42290, March 7. https://www.merseta.org.za/wp-content/uploads/2021/04/Promulgation-of-the-National-Skills-Development-Plan.pdf

South Africa. Department of Higher Education and Training. (2019b). *Skills Development Act, 1998 (Act No. 97 of 1998): Promulgation of the National Skills Development Plan (NSDP)*. Government Gazette 42290. Government Printing. https://www.merseta.org.za/wp-content/uploads/2021/04/Promulgation-of-the-National-Skills-Development-Plan.pdf

South Africa. Department of Higher Education and Training. (2019c). *Skills supply and demand in South Africa*. https://www.dhet.gov.za/SiteAssets/Report%20on%20Skills%20Supply%20and%20Demand%20in%20South%20Africa_%20March%202019.pdf

South Africa. Department of Higher Education. (2019d). *National Skills Development Plan 2030*. https://www.gov.za/documents/skills-development-act-national-skills-development-plan-nsdp-promulgation-6-mar-2019-0000

South Africa. Department of Higher Education and Training (2020). *Sector Education and Training Authority Report. SETAs Skills Journal*. https://cdn.lgseta.co.za/resources/tmgl/SETA%20Skills%20Journal.pdf

South Africa. Department of Labour. (1998). *Green paper on further education and training: Preparing for the twenty-first century through education, training and work.* https://www.gov.za/sites/default/files/gcis_document/201409/green-paper-further-education-and-training0.pdf

South Africa. Department of Mineral Resources and Energy (2017). *Department of Mineral Resources*. [Website]. https://www.dmr.gov.za/

South Africa. Department of Mineral Resources. (2018). *Implementation guidelines for the Broad-based Socioeconomic Empowerment charter for the mining and minerals industry, 2018*. Government Gazette no. 42122, 19 December. Government Printers. https://www.gov.za/sites/default/files/gcis_document/201812/42122gon1399.pdf

South Africa. Department of Mineral Resources and Energy (2022a). *Key facts and figures: Mine health and safety statistics*. https://www.dmr.gov.za/Portals/0/Resources/Other/Fact-sheet-of-2022-Mine-Health-and-Safety-statistics.pdf?ver=2023-02-01-113012-520#:~:text=1.,2022%20highlights%20Occupational%20fatalities%3A&text=In%20the%20year%202022%2C%2049,of%20fatalities%20year%20on%20year.&text=70%25%20reduction%20of%20mine%20deaths,six%20(6)%20in%202022

South Africa. Department of Mineral Resources and Energy. (2022b). *The Exploration Strategy for the Mining Industry of South Africa*. Government Gazette No. 46246, 14 April. Government Printers. https://www.gov.za/sites/default/files/gcis_document/202204/46246gon2026.pdf

South Africa. *Mine Health and Safety Act 29 of 1996*. https://www.gov.za/documents/mine-health-and-safety-act

South Africa. *Skills Development Act 97 of 1998, as amended by the Skills Development Levies Act 9 of 1999*. https://www.gov.za/documents/skills-development-act

South Africa. *Protection of Personal Information Act (POPI Act) 4 of 2013*. https://popia.co.za/

South Africa. *Skills Development Act 97 of 1998, as amended by the Skills Development levies Act 9 of 1999*. https://www.gov.za/documents/skills-development-act

South African Government. (2018). *Broad-based Socio-economic Empowerment Charter for the Mining and Minerals Industry*. Government Gazette No. 41934, 27 September. Government Printing. https://www.gov.za/sites/default/files/gcis_document/201809/41934gon1002.pdf

South African Revenue Service. (n.d.). *Skills development levy*. https://www.sars.gov.za/types-of-tax/skills-development-levy/#:~:text=SDL%20is%20a%20levy%20imposed,and%20improve%20skills%20of%20employees

South African Qualifications Authority. (n.d.) *Website home page*. https://www.saqa.org.za/

Statista. (2023). *Value added by the mining industry to the gross domestic product (GDP) in South Africa from 2016 to 2022*. https://www.statista.com/statistics/1121214/mining-sectors-value-added-to-gdp-in-south-africa/#:~:text=Mining%20sector's%20value%20added%20to%20GDP%20in%20South%20Africa%202016%2D2022&text=In%202022%2C%20the%20mining%20sector,Gross%20Domestic%20Product%20(GDP)

Suknunan, S., & Bhana, A. (2022). Influence of employee–manager relationship on employee performance and productivity. *Problems and Perspectives in Management*, *20*(3), 28-42. https://ssrn.com/abstract=4164625

Sundari, S., & Kusmiati, M. (2022). Training needs analysis of operational. *Perwira International Journal of Economics & Business*, 2(1). https://doi.org/10.54199/pijeb.v2i1.114 Gray, L., Wong, G., Rempel, G., & Cook, K. (2020). Expanding qualitative research interviewing strategies: Zoom video communications. *Qualitative Report*, *25*(5), 1292-1301. http://dx.doi.org/10.46743/2160-3715/2020.4212

Taquette, S. R., & Borges da Matta Souza, L. M. (2022). Ethical dilemmas in qualitative research: A critical literature review. *International Journal of Qualitative Methods*, *21*, 1-15. https://doi.org/10.1177/16094069221078731

Tomaszewski, L. E., Zarestky, J., & Gonzalez, E. (2020). Planning qualitative research: Design and decision making for new researchers. *International Journal of Qualitative Methods*, *19*. https://doi.org/10.1177/1609406920967174

Theus, I. C. (2019). *Strategies for succession planning and leadership training development for nonprofit organizations*. [Doctoral thesis, Walden University, Minnesota, United States of America]. https://scholarworks.waldenu.edu/dissertations/6490/

Tolici, D. (2021). Strategic management initiatives that promote organizational performance. *Management Dynamics in the Knowledge Economy*, *9*(2), 165-176. https://sciendo.com/article/10.2478/mdke-2021-0012

Torres, L., Bandaranaike, S., & Yates, S. (2022). *'What skills do I have? What skills will I need?' Building an employability skills profile through an online reflective learning program*. Paper presented to the 10th International Symposium on Cooperative & Work-Integrated Education, University West, Trollhattan, Sweden 2–4 June, 2014. https://www.researchgate.net/publication/363168891

Torres, M. J. Z., & Viejó, J. M. C. (2023). Emotional intelligence and leadership effectiveness in management. *Migration Letters*, *20*(S11), 854-865. https://migrationletters.com/index.php/ml/article/view/5790

Trochim, W. M. K. (2020). Research methods knowledge base. Nonprobability sampling. *Conjointly*. https://conjointly.com/kb/nonprobability-sampling/

Tsichla, K., & Adam, K. (2022). *The evolution of health and safety training needs of the mining sector in Greece and EU*. Paper presented at the International Conference on Raw Materials and Circular Economy, Athens, Greece, 5–9 September 2021. *Materials Proceedings*, *5*(1), 136. https://doi.org/10.3390/materproc2021005136

University of Pretoria. (n.d.). *Chapter 5: Education and training in the mining sector*. https://repository.up.ac.za/bitstream/handle/2263/24196/04chapter5.pdf?sequence=5&isAllowed=y

Van der Waldt, G. (2020). Conducting skills audits in local government: Lessons from a South African case study. *Administratio Publica*, *28*(2). 42-60. https://journals.co.za/doi/pdf/10.10520/ejc-adminpub-v28-n2-a4

Van der Walt, J. L. (2020). Interpretivism–constructivism as a research method in the humanities and social sciences — more to it than meets the eye. *International Journal of Philosophy and Theology*, *8*(1), 59-68. DOI: 10.15640/ijpt.v8n1a5

Van der Walt, F., Thasi, M. E., Jonck, P., & Chipunza, C. (2016). Skill shortages and job satisfaction — insights from the gold-mining sector of South Africa. *African Journal of Business and Economic Research*, *11*(1), 141-181. https://core.ac.uk/download/pdf/222967769.pdf

Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterising and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*, *18*(148). https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/s12874-018-0594-7

Venter, J., Parsons, R., Strydom, P., Stroebel, L., Naude, W., Moeng, M., Mukhithi, L., Mmutle, L. V., & Ramakokovhu, T. (2022). *WTO Policy Brief Series. Policy uncertainty: How it affects South Africa's growth and development prospects*. https://commerce.nwu.ac.za/sites/commerce.nwu.ac.za/files/files/TRADE/Media/News%20Print/WTO-Trade%20Policy%20Brief%20Series_1.pdf

Walters, K., & Rodriguez, J. (2017). The importance of training and development in employee performance and evaluation. *World Wide Journal of Multidisciplinary Research and Development*, *3*(10), 206-212. https://wwjmrd.com/upload/1509114292.pdf

Williams, M. & Moser, T. (2019). The art of coding and thematic exploration in qualitative research. *International Management Review*, *15*(1). http://www.imrjournal.org/uploads/1/4/2/8/14286482/imr-v15n1art4.pdf

Williams, M., & Moser, T. (2022, April 27). *The art of coding and thematic exploration in qualitative research*. LinkedIn. https://www.linkedin.com/pulse/art-coding-thematic-exploration-qualitative-research-michael

Williams, R. (2022, August 16). *The importance of "soft skills" in today's workplace*. LinkedIn. https://www.linkedin.com/pulse/importance-soft-skills-todays-workplace-ray-williams

Woiceshyn, J., & Daellenbach, U. (2018). Evaluating inductive vs deductive research in management studies: Implications for authors, editors, and reviewers. *Qualitative Research in Organizations and Management: An International Journal*, *13*(2), 183-195. https://www.emerald.com/insight/content/doi/10.1108/QROM-06-2017-1538/full/html

Xingwana, L., Smith, E. E., & Mazibuko, N. E. (2019). Working environment and employment conditions and their impact on skills shortage in South African gold mines. *Journal of Economics and Management Sciences*, *2*(1), 1. https://doi.org/10.30560/jems.v2n1p1

Zhuwakinyu, M. (2013, March 29). African mining facing huge shortage of South African skills. *Mining Weekly*. https://www.miningweekly.com/article/africa-desperate-for-engineering-skills-in-mining-2013-03-29

Žukauskas, P., Vveinhardt, J., & Andriukaitienė, R. (2018, April 8). Exploratory research. In: *Management culture and corporate social responsibility*. InTechOpen. DOI: 10.5772/intechopen.70631

Žukauskas, P., Vveinhardt, J., & Andriukaitienė, R. (2018, April 18). Research ethics. In: *Management culture and corporate social responsibility*. InTechOpen. http://dx.doi.org/10.5772/intechopen.70629

APPENDIX 1: ETHICAL CLEARANCE

FROM:
Department of Human Resource Management
Research, Ethics and Innovation Committee (DREC)
UNISA

9 February 2021

To whom it may concern,

RE: CONFIRMATION OF RESEARCH PROPOSAL ACCEPTANCE

Student name and surname:	**Miss F Aboo**
Student number:	**36724696**
Degree:	**Master of Commerce in Business Management (Qualification code: 98582)**
Module code:	**MPEMS92**

This letter serves to confirm that the above student complied with the requirements for the research proposal module as approved by the human resource management research and ethics committee (a sub-committee of the college of economic and management sciences research committee) on the 9th of February 2021. The student may proceed to register for the research report and apply for ethical clearance.

Kind regards,

Dr Melissa du Plessis
DREC Research Proposal Portfolio Manager
Department of Human Resource Management (DREC)
UNISA

APPENDIX 2: PERMISSION TO CONDUCT THE STUDY

[Identifiers erased]

22 March 2022

Attention: UNISA Ethics Committee (University of South Africa)

The purpose of this letter is to inform you that I
hereby give *Fatima Aboo (Unisa Student number 3672-4696)* permission to conduct the qualitative research titled *"Towards a skill development model for a south African mining organisation" at Sibanye Stillwater*. Various employees (Mangers and non-managers) will be interviewed using snowball and convenience sampling as per discussion with Fatima Aboo.

MBA, Masters and PHD Research policy of the organisation signed and attached for Unisa's reference.

All information in the letter request for Approval has been noted and approved accordingly.

This letter also confirms that Fatima Aboo is a permanent employee

APPENDIX 3: INFORMED CONSENT FORMS

MANAGERS:

Master's study : Towards a skill development model for a South African Mining organisation

CONSENT TO PARTICIPATE IN THIS STUDY: MANAGERS

An email invitation will be sent to identified prospective participants who are recognized experts and adhere to the inclusion criteria set for this phase of the study.

Dear Mr/ Miss/ Mrs (name of participant)

You have been identified as an expert practitioner in the field of Skill development and I would therefore like to invite you to participate in this Masters research study.

The aim of this research is to determine whether the current organisational skill development programme is sufficient to empower current employees. The study aims to examine the views and perceptions of employees regarding general skills development and the organisation in specific. The research aims to recommend a customised skill development model for the organisation concerned. Various aspects regarding skill development will be investigated and your opinion on these aspects will be very valuable in recommending a skills development model.

I would like to conduct an interview with you lasting approximately 2 hours, during which I would like to gather information regarding your perceptions on skills development within our current organisation. Please see attached to this email a participant information sheet where detail of this study can be perused.

Please note that your participation is voluntary and that you are under no obligation to take part in the study. Participation is also anonymous and your name as well as the name of your organisation will not be made known in the published documentation. The researcher will take notes during the interview and an audio recording will be made of the interview. This is purely for research and transcription purposes and will be dealt with under the strictest adherence to confidentiality requirements. This information will not be share with anyone else than the transcriber which has signed a confidentiality agreement and will not be allowed to make known the content of the transcriptions to any other parties. The results of this study will be utilised for research purposes only and may be published as a research report, journal article or conference proceedings.

By replying to my email and confirming your availability for an interview:

- You confirm that you have been informed about the nature, procedure, potential benefits and anticipated inconvenience of participation.
- You have read and understood the study as explained in the information sheet attached to this email.
- You have carefully considered the information and are prepared to participate in the study.
- You are aware that the researcher will take notes during the interview as well as make an audio recording of the interview. This is purely for transcription and research purposes. Confidentiality will be ensured at all times.
- You understand that your participation is voluntary and that you are free to withdraw at any time without penalty (if applicable)
- You are aware that the findings of this study will be anonymously processed into a research report, journal publications and/or conference proceedings.

To qualify for participation, employees must have the following:

- Employees should be on a management level

- The participant should be a full time employee of the organisation.
- The participant should be in a position where he/she represents a portion of the employee compliment (such as a shop steward) or alternatively he/she should have experience of working within the skills development environment or alternatively he/she should have been exposed to the skills development system or perceived lack thereof in the organisation.
- Participants should be working within the organisation for two years or more.

It is not anticipated that participating in the study will harm you in any way. However, should you require further information or have any concerns, you are most welcome to contact me directly via email:

Thanking you in advance for our participation.

Yours faithfully
Fatima Aboo
36724696@mylife.unisa.ac.za

EMPLOYEES:

Masters study: Towards a skill development model for a South African mining organisation

CONSENT TO PARTICIPATE IN THIS STUDY: FOCUS GROUPS

An email invitation will be sent to identified prospective participants who are recognized experts and adhere to the inclusion criteria set for this phase of the study.

Dear Mr/ Miss/ Mrs (name of participant)

You have been identified as an expert practitioner in the field of Skill development and I would therefore like to invite you to participate in this Masters research study.

The aim of this research is to determine whether the current organisational skill development programme is sufficient to empower current employees. The study aims to examine the views and perceptions of employees regarding general skills development and the organisation in specific. The research aims to recommend a customised skill development model for the organisation concerned. Various aspects regarding skill development will be investigated and your opinion on these aspects will be very valuable in recommending a skills development model.

I would like to conduct an interview with you lasting approximately 2 hours, during which I would like to gather information regarding your perceptions on skills development within our current organisation. Please see attached to this email a participant information sheet where detail of this study can be perused. This interview will take place within a group of 8 people (Focus group). The researcher will request all participants to remain confidential regarding all discussions that take place within this group interview.

Please note that your participation is voluntary and that you are under no obligation to take part in the study. Participation is also anonymous and your name as well as the name of your organisation will not be made known in the published documentation. The researcher will take notes during the interview and an audio recording will be made of the interview. This is purely for research and transcription purposes and will be dealt with under the strictest adherence to confidentiality requirements. This information will not be share with anyone else than the transcriber which has signed a confidentiality agreement and will not be allowed to make known the content of the transcriptions to any other parties. The results of this study will be utilised for research purposes only and may be published as a research report, journal article or conference proceedings.

By replying to my email and confirming your availability for an interview:

- You confirm that you have been informed about the nature, procedure, potential benefits and anticipated inconvenience of participation.
- You have read and understood the study as explained in the information sheet attached to this email.
- You have carefully considered the information and are prepared to participate in the study.
- You are aware that the researcher will take notes during the interview as well as make an audio recording of the interview. This is purely for transcription and research purposes. Confidentiality will be ensured at all times.
- You understand that your participation is voluntary and that you are free to withdraw at any time without penalty (if applicable)
- You are aware that the findings of this study will be anonymously processed into a research report, journal publications and/or conference proceedings

To qualify for participation, employees must have the following:

- Employees should be on a non-management level
- The participant should be a full-time employee of the organisation.
- The participant should be in a position where he/she represents a portion of the employee compliment (such as a shop steward) or alternatively he/she should have experience of working within the skills development environment or alternatively he/she should have been exposed to the skills development system or perceived lack thereof in the organisation.
- Participants should be working within the organisation for two years or more.

It is not anticipated that participating in the study will harm you in any way. However, should you require further information or have any concerns, you are most welcome to contact me directly via email:

It is not anticipated that participating in the study will harm you in any way. However, should you require further information or have any concerns, you are most welcome to contact me directly via email:

Kindly do let me know if you are willing to participate. Your response will be required via email before

…….(Date)

Should your response be positive, please complete the other documents attached and send back to me on email (Non-disclosure agreement and Biographical information)

Yours faithfully
Fatima Aboo
36724696@mylife.unisa.ac.za

APPENDIX 4: INTERVIEW GUIDE

THE DEVELOPMENT OF A MODEL FOR SKILLS DEVELOPMENT IN A MINING ORGANISATION IN SOUTH AFRICA

SEMI-STRUCTURED INTERVIEW GUIDE

INTERVIEW INFORMATION

PARTICIPANT:			
DATE OF INTERVIEW:			
VENUE:		**PARTICIPANT NR.**	

INSTRUCTIONS TO PARTICIPANT

- Welcome to the interview. I want to thank you again for your willingness to participate in this study.
- I also want to confirm that this interview is strictly confidential. Information that you share with me today will only be used for research purposes and will not be shared with any parties outside the research team.
- You will remain anonymous for all intent and purposes of the study.
- I e-mailed you a consent form that I asked you to complete prior to the interview. Could you please provide me with a signed copy of that form now? (Collect the signed consent form from the participant)
- Do you have any questions or concerns about your participation and the consent that you provided?
- I attached a biographical information sheet to the e-mailed consent form. Did you manage to complete that? (Collect the completed biographical form from the participant)
- I will be making a voice recording of this interview. The voice recording will only be heard by myself and the transcriber (who signed a confidentiality agreement). The only purpose of the recording is to have a record of the interview for research purposes.
- I will also be taking notes during the interview, for documentation purposes. Please do not let this deter you from sharing information. You should feel free to share information as you would have during a normal conversation.

- You are welcome to ask me questions during the interview if you are concerned about some aspect of the interview. Do you have any questions now? If you are comfortable, then we can start:

NOTES

_____

_____

_____

1. Explain your personal experience of skills development within this organisation?

_____

_____

_____

   - *How often?*
   - *Alignment with skills?*
   - *Can anything be done differently?*

2. In your opinion, did the merger have an impact on skills development?

_____

_____

_____

Is skills development running smoothly? Has it improved or deteriorated since the merger? Is it aligned with your tasks?

3. What are the perceived advantages and challenges of skills development for our organisation?

_____

_____

_____

How do advantages/challenges help or limit the organisation?

4. What is working for you within our current skills development (system?), and what do you think should change to make it more effective?

5. In your opinion, what factors are important for a skill development system to be successful

Do we require commitment from people? Top management, line supervisors?
What needs to happen for it to be successful?

APPENDIX 5: CERTIFICATE OF LANGUAGE EDITING

TERESA KAPP
Phone:
+27 82 789 7878
E-mail:
tekapp@mweb.co.za
info@teresakapp.com

This serves to certify that I duly edited:

TOWARDS A SKILLS DEVELOPMENT MODEL FOR A SOUTH AFRICAN MINING ORGANISATION

by

FATIMA ABOO

3672-469-6

I am an accredited editor with the University of Johannesburg, University of Stellenbosch Business School, NWU, UP, UCT, and GIBS, and my clients include the United Nations Global Compact, Absa, FNB, Takealot, and various other universities and organisations in South Africa and Namibia.

Please note that all editing is done in *Track Changes*, and I therefore have no control over what is accepted or rejected by the author. Furthermore, I have no control over text added at a later stage.

Should there be any queries, please contact me on the number provided above.

Teresa Kapp