



MANDELA MINING PRECINCT
MINDS FOR MINES

SUCCESSFUL APPLICATION OF TECHNOLOGY CENTRED AROUND PEOPLE (SATCAP) - 2021

WORK PACKAGE 2.1: FOUNDATIONAL SUPERVISORY LEADERSHIP DEVELOPMENT

Summary Report



**CLOSE-OUT SUMMARY REPORT -
FOUNDATIONAL SUPERVISORY LEADERSHIP DEVELOPMENT**

PROGRAMME	SATCAP	WORK PACKAGE	2.1
FINAL REPORT- MILESTONES 3 & 4 CONSOLIDATED			
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PROJECT SUMMARY

Project Overview

For 2021-2022, the Successful Application of Technology Centred Around People (SATCAP) programme has a skills-related focus. The work packages (WP) are related to immersive learning experiences to support modern training for modern mining. The aim is to investigate engaging learning contexts that are virtually and physically interactive, allowing for learners to be immersed in the learning experience.

The aim of WP 2.1 is to demonstrate the “art of possibility” by supporting the development of supervisors in mining modernisation through an exemplar foundational supervisory leadership development module(s). The intent is to support supervisors in mining towards leading and driving mining modernisation.

The project outputs include:

- Two exemplar training modules;
- A training slide deck;
- A facilitator guide;
- A training video and
- Final report.

The study has considered an existing supervisory leadership development programme, which is used in industry by major mining companies. The modules were reviewed and found to be applicable for supervisory leadership development. The study identified potential gaps in the existing programme and opportunities to enhance the programme through modernising the training methodology, through potential digitalisation of the programme, thereby allowing for self-learning opportunity and refresher of the modules.

It must be noted that two digitised modules were developed for industry-use to demonstrate the art of possibility relating to a modernised training approach. It supports a blended training approach. The two modules may be used as stand-alone modules or as complementary to existing modules. The two modules were enhanced with additional content where there were gaps evident in the existing programme. The enhancements were made to ensure the content supports supervisors’ development to lead and drive modernisation.

The two modules that were digitised are generic and can be used by multi-commodity mines, including gold (Au) and platinum-group metals (PGM), as ‘stand-alone’ modules but may not completely equip supervisors with leadership skills and training that a full programme is meant to. They provide an introduction and the basic principles for supervisors to lead and drive mining modernisation.

To note, the scope of this project was to provide one foundational supervisory leadership development module, which has been met. Provision of an entire supervisory leadership development programme exists and is being used in industry, so such provision was not necessary. The project

intent was not to 'reinvent the wheel' but enhance what exists, which has been accommodated through this project.

Further to note, digitisation of all seven existing modules is not in the scope of work of this project. Should mines (who do not use the existing modules) consider uptake of the remaining five modules, they would need to incur the usual development, training and licensing costs with a relevant service provider. It is understood that the remaining five modules as used in industry currently is in a traditional, undigitised training format. For supervisors to be 100% equipped to lead and drive modernisation these five modules may still be used in conjunction with the two digitised modules.

The two modules developed will offer mines a baseline/ start-up foundational supervisory leadership development programme. They provide an introduction and the basic principles for supervisors to lead and drive mining modernisation. Mines without a supervisory leadership development programme may use the modules on offer, and those who have other supervisory leadership development programmes may use the two modules as complementary to their existing offering.

The status of the modules with regards to Intellectual Property (IP) and licensing is as follows:

- Module 1 – Accessible by the industry through the Mandela Mining Precinct. No IP and no licensing required by the client;
- Module 2 – Accessible by the industry through the Mandela Mining Precinct. IP belongs to the service provider. No licensing required by the client; and
- As optional, Modules 3 to 7 – IP belongs to the service provider. As per usual, licensing costs will be required for uptake by the mine, should the mine consider implementation of the modules 3-7. Customisation may also be possible according to mine's specific needs. To note mines may use any other supervisory leadership development programme as complementary to the two modules offered to industry.

Methodology

A mixed methods approach was adopted for this work package. The objectives of the study were achieved by conducting a desktop study (a mini literature review), data gathering through reviews of the existing solution, interviews and surveys, development of the digitised training solution, a pilot study, and review and validation of the solution through a SATCAP exhibit/workshop. The Historically Disadvantaged South African (HDSA) student strongly contributed to the mini literature review, providing key insights presented in this report.

Review of an existing supervisory leadership development programme

A supplier solution, as is currently used by selected Au and PGM mines, was reviewed and evaluated. The content forms the foundation of supervisory leadership development and provides a framework for understanding the core principles, concepts, techniques, guidelines, and vocabulary that all supervisors require. The programme is internationally recognised, Sector Education and Training Authority (SETA) accredited and has been delivered at various mines (including Au and PGM). The review advised that although the solution being used proves effective in content, it could be enhanced with aspects of digitalisation so as to offer a more modern mode of training. Such an option may allow for self-learning and support refresher training. The duration for classroom learning may pose an issue for mines, as supervisors may have to spend many days in training rather than focussing on mining as

the core business. A digital option may support self-learning or refresher training, and may support reduced training durations in the classroom. It was further uncovered that retention of learning may be minimised once the classroom training ends, implying that application at the workplace may not be implemented as expected. Use of a digital platform allows for more easy access to content so that concepts learned may be retrieved more readily back at the shaft. It was evident from the review that some key modules were missing to support leading and driving modernisation, as the focus of current modules leans heavily on planning, organising, leading and controlling. The modules needed to be supplemented, and hence the study devised the design of two additional modules to support supervisors' development, to lead and drive mining modernisation.

Ethics Clearance

The Council for Scientific and Industrial Research (CSIR) research ethics committee (REC) review meeting was held on the 23rd of September 2021 and feedback was received. The ethics application required modifications, following which clearance was received on the 11th of October 2021 (Ref. 376/2021).

Limitations

The coronavirus (COVID-19) pandemic resulted in limited physical meetings and liaison. This project predominantly relied on virtual communication and electronic data transfers to share information and engagements.

Contract approval delays resulted in delays in the project start date.

Modifications were required to the ethical clearance application, which resulted in delays in obtaining the clearance certificate. Data gathering was, however, not impacted as clearance was eventually obtained prior to commencing the data gathering.

Summary of key findings & recommendations

It is evident from the study that when it comes to digital training, a 'one size fits all' approach cannot be adopted. Mines are at varying maturity stages of modernisation. Findings identified were:

- Mines are using digital training methods to some extent for supervisory training;
- Mines cannot consider an 'one-size fits all' approach regarding digital training, as their contexts differ, and this suggests that a blended approach to training is preferred by mines;
- Classroom learning, on-job and on-shaft learning remains important;
- Digital learning may be used meaningfully for refresher training when back from leave, or for remote and self-learning more readily;
- Factors like literacy levels, ageing or a younger workforce, pitch and level of training needs consideration in terms of the approach around digital training;
- Mines have infrastructure differences, therefore Wi-Fi and other infrastructure needs for digital training will need the specific mine's consideration;
- Financial obligations for digital training needs consideration by mines. Licensing costs etc. will have an impact;
- Digital training may not always allow for physical factors to be taken into account, therefore digital training should be complemented with other training methods; and

- A blended learning approach is preferred by mines and may be used by mines. Blended learning is a combination of offline (face-to-face, traditional learning) and online learning in a way that one complements the other.

Although some of the above points may not be new to the mining industry experts/employees, this report serves to substantiate the findings based on the research done and to document the findings. Some findings were recorded based on more than one data source, hence providing reaffirmation.

Industry Transfer

The following outputs are being transferred to the industry:

- Training modules (2 modules);
- Training slides;
- A facilitator guide;
- Training videos;
- Final report.

Access to the above items through the Mandela Mining Precinct. See the links provided at the end of the report.

- **TRAINING MODULES, FACILITATOR AND LEARNER GUIDES**

The sections and content included in the **two training modules**, as developed in collaboration with an industry preferred supplier, are shown in Tables i and Table ii.

Table i: Module 1 ('Your role in modernisation') sections and topics

Section 1	Section 2	Section 3	Section 4
The concept of leadership	Becoming an effective leader	Self-awareness: key to effective leadership	The importance of effective leadership
<ul style="list-style-type: none"> • The definition of leadership 	<ul style="list-style-type: none"> • A leader's role in a team 	<ul style="list-style-type: none"> • The importance of self-awareness 	<ul style="list-style-type: none"> • Mining modernisation – a case for change
<ul style="list-style-type: none"> • Moving from Executor to Enabler 	<ul style="list-style-type: none"> • Team development stages 	<ul style="list-style-type: none"> • How you view others 	<ul style="list-style-type: none"> • Supervisors as a driver for change
<ul style="list-style-type: none"> • A leader's sphere of influence 	<ul style="list-style-type: none"> • Leadership behaviours 	<ul style="list-style-type: none"> • The importance of diversity and inclusion 	-
<ul style="list-style-type: none"> • Effective leadership 	<ul style="list-style-type: none"> • How we develop into effective leaders 	-	-

Table ii: Module 2 ('A system's approach') sections and topics

Section 1	Section 2
Systems approach	The LA management system
<ul style="list-style-type: none"> • Systems Thinking 	<ul style="list-style-type: none"> • The Needs, Results and Work Model
<ul style="list-style-type: none"> • Input-Throughput-Output Process 	<ul style="list-style-type: none"> • Understanding Stakeholder Needs
-	<ul style="list-style-type: none"> • Classification of Results

-	<ul style="list-style-type: none"> • Classification of Work
-	<ul style="list-style-type: none"> • The Management Gap
-	<ul style="list-style-type: none"> • The Management Wheel
-	<ul style="list-style-type: none"> • Applying the Management System

The **training slides** offered are in MS PowerPoint format and are to be used by the facilitator in the classroom in conjunction with the **Facilitator Guide**, as well as the **Learner Guide** (Figure i).

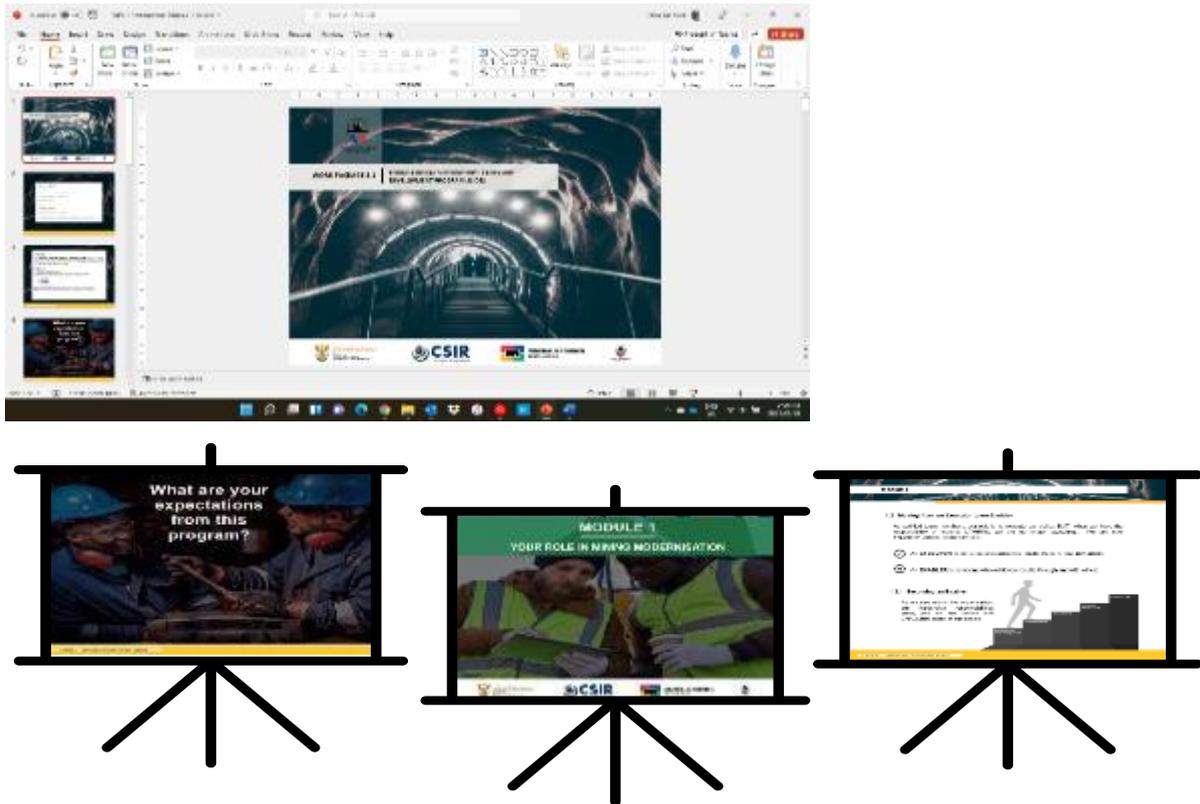


Figure i: Example of training slides

The Facilitator Guide assists with the preparation and facilitation of the program. It includes additional content, explanations, and timing guidelines to help the facilitator during the program (Figure ii).

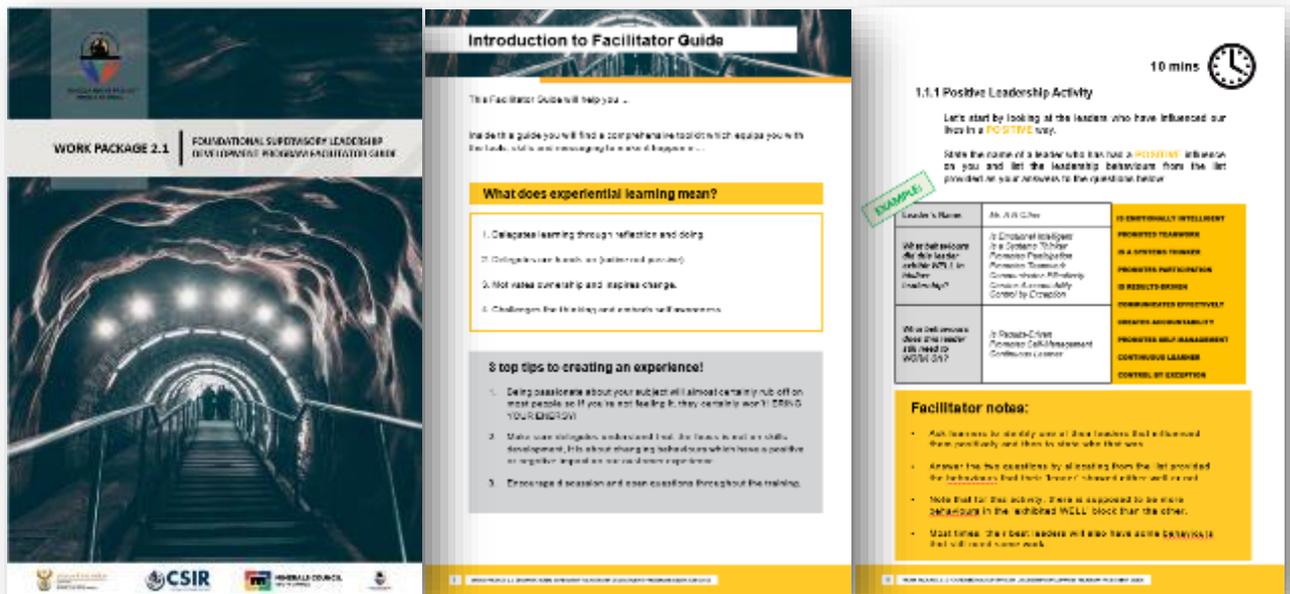


Figure ii: Example of facilitator guide content

TRAINING VIDEOS

As part of the industry transfer, two training videos are provided (Figure iii):

- Training Video #1 – A “How To-Guide” video on navigating through the modules using the Digital Solution.
- Training Video #2 – A video of the service provider’s facilitator facilitating Module 1 of the original ‘as-is’ SETA accredited program. This video was captured during the pilot study.

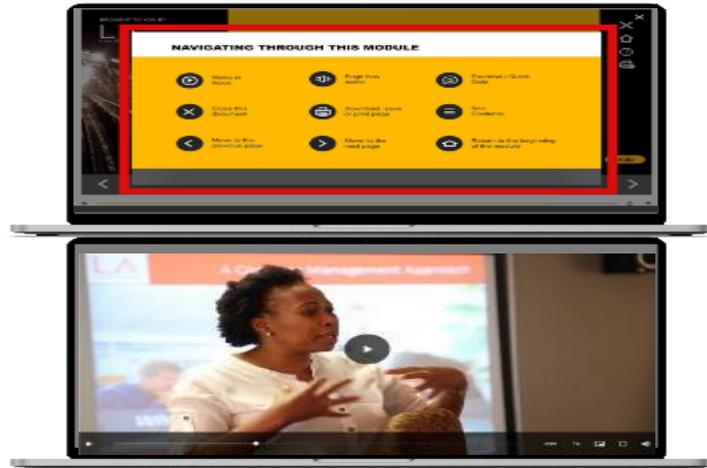


Figure iii: Screenshot from training videos

Conclusions

Based on the research findings, it may be concluded that both the traditional classroom training as well as the new digitised online learning solution offer advantages for supervisory leadership development. Hence a 'modernised' training solution may consider a 'blended' learning approach that combines traditional training with digital methods. The mine's transition to modern training methods will be informed by their needs, specific contexts, modernisation strategy, and stakeholder inclusion.

Links to access the training module, facilitator and learner guide and video is as below:

- i. [Work Package 2.1: Foundational Leadership Development Program - Overview | Rise 360 \(articulate.com\)](#)