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<https://www.miningweekly.com/article/immersive-mining-training-can-improve-learning-engagement-retention-performance-and-safety-2021-09-30>

## Immersive mining training can improve learning engagement, retention, performance and safety

30TH SEPTEMBER 2021 BY: [SCHALK BURGER](#) - CREAMER MEDIA SENIOR CONTRIBUTING EDITOR

**A** range of immersive and educational technology experts have said that immersive training, enabled by virtual and augmented reality and digital education technologies, can deepen learning retention, improve engagement with learning materials, improve safety awareness and responses, and improve the performance of employees in the mining industry.

Speaking during industry organisation Minerals Council South Africa's Reimagining Training in Mining conference, on September 30, digital content and training company Sea Monster Entertainment client services head **Lebo Lekoma** said learning by engaging as many senses as possible improves learning and retention.

Virtual reality (VR) and augmented reality (AR) are effective ways of placing trainees into learning experiences, such as simulated processes to teach them standard operating procedures or in a simulated dangerous situation, he said.

"Placing people in simulated dangerous environments enables them

to be made aware of the dangers presented by these situations, as well as allowing them to become familiar with these situations and practice their responses during these situations."

Digital innovation consultancy and services provider The Boiler Room CEO **Mark Hocker** said a training solution the company had developed for a multinational mining original-equipment manufacturer has led to a 50% reduction in the time to train its artisans by showing trainees how to perform tasks correctly.

"This training can include safety aspects and enables learning through doing. Another significant advantage of VR is that a company can simulate the consequences of incorrect actions and reinforce the importance of following standard operating procedures."

A fall-of-ground is one of the biggest dangers in underground mining, and The Boiler Room developed tactile gloves and vests that allow it to immerse trainees in a simulated situation and demonstrate the consequences of doing something wrong and, thereby, inculcate a healthy fear so that they do not make these mistakes underground, he pointed out.

The key to quick response times and effective responses in emergencies lies in experiential training, said Council for Scientific and Industrial Research mining cluster impact area manager **Riaan Bergh**.

"Conducting work in a simulated environment, similar to playing a game, enables a person to learn something quickly and efficiently.

Immersive technologies are an effective and safe means to provide experiential training and near-real training experience, learning and, importantly, practice," he noted.

Immersive training supports trainees to fully engage and focus on the scenario, which helps them to more effectively assimilate training materials. This improves recollection of training and presents the opportunity to practice responses to situations.

"Then, when they are faced with a real emergency, they can recognise it, recall the required responses, decide on the correct response and then activate the necessary actions. Because they have been in that - albeit simulated - situation where their fear and stress responses have been awoken and have practiced how to react even when they feel their adrenaline pumping, they can make better decisions and actions."

Mining technology firm NRR Mining and Consulting geologist **Phopi Marara** said the main impact of immersive technologies on the mining industry is to bridge the gap between traditional and proven training and new ways of training that can translate into practical competencies in the workplace.

"The mining industry is moving towards immersive training and application-based training and is getting more involved in its development and use. Further, after trainees have internalised the learning materials, they can also be tested on how to apply their knowledge within this immersive space," she said.

Immersive training engages more than just the auditory senses and

is increasingly including tactile elements to train equipment operators or engineering training in this simulated environment, she added.

Meanwhile, Minerals Council South Africa skills development head **Mustak Ally** noted that new approaches to training based on cognitive and behavioural sciences would enhance the effectiveness of training and improve the understanding of trainees, as well as increase their motivation and embed positive practices.

"In combination with the Fourth Industrial Revolution, these technologies present great potential to improve health and safety and productivity. Immersive technologies allow employees to learn in a safe environment fully immersed and interacting in real-time with information, equipment and hazards, among others. Combined with other devices, such as mobile devices, learning content can be provided in a more versatile and agile way," he said.

Innovation is about making better decisions and doing things in a better way, says Research Institute for Innovation and Sustainability (RIIS) CEO **Davis Cook**.

"The Minerals Council, of which RIIS is the main innovation partner, is looking at innovation and modernisation not only from a technology point of view, but to support societal and business model changes to move to a people-centric innovation model."

"Some systems and platforms are too complex or expensive for mining industry stakeholders to use. The Minerals Council is looking at developing common modernisation infrastructure that

can be used by all relevant stakeholders and trying to solve the challenge to support innovation in mining and mining education through collective action. Innovation is inherently risky and, therefore, engagement and inclusion are critical components of impactful innovation," he said. 🏠

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