

## Stemming slow progress in science & tech requires encouragement

In an era where South African women have become increasingly prominent in medicine, law and business, why are there so few women scientists and engineers? Encouragement vs. acumen seems to be the key to speeding up the take-up of careers in science, technology, engineering and maths (STEM).

In this digital age of progress, it seems that old-fashioned stereotypes, gender bias, and the climate of science and engineering departments in universities continue to be a worldwide challenge. Only **23% of STEM talent globally is female** according to UNESCO Statistics – this lack of women in the industry is mirrored in South Africa. While some debate exists around the exact shortfall, there is near-unanimous agreement that we simply do not have enough qualified women scientists and engineers. And to add to the challenge, only a few remain to practice in their field of study advancing to the knowledge base including acting as role models.

“Today marks International Day of Women and Girls in STEM. STEM skills are the foundation upon which our country's development and future prosperity is built”, says Bongzi Ntsoelengoe, Technology Manager at Anglo American's Kumba Iron Ore. “Not only are they the skills that will take the mining sector forward, but a groundswell of new engineering talent is imperative to liberate our country from underdevelopment. It is imperative that we do everything within our power to instill a passion for the STEM fields in our young people.”

Ntsoelengoe encourages that those already working in related fields need to find ways of showing learners, especially young women, the real power of STEM to build a better future. “Take them on site visits, invite them for job shadowing, encourage internships, get involved in problem solving platforms such as hackathons, expose and encourage development of digital skills —do whatever it takes to engage and prepare young people to adopt to the 4th industrial revolution that we find ourselves in.. The future of our country, will be built on the work of these young engineers, technologists, and technicians.”

Anglo American is committed to growing and developing STEM skills in South Africa:

- **Science Centre at Parktown High School for Girls:** In late 2015, Anglo American made a multi-million Rand investment at the Science Centre at Parktown High School for Girls that is already impacting this skills gap. Following the company's contribution, the construction of two conjoined laboratory and classroom facilities for life sciences, physics and chemistry was opened in late 2016 to the school's 1 100 pupils. Its effect was almost immediate: 30% more Grade 9 girls chose the sciences as matric subjects.
- **The Anglo American Science, Career Guidance and Information Communication Technology (ICT) Resource Centre in eMalahleni:** The Centre has engaged, entertained and inspired no less than 34,000 young people since its inception in 2010. The R19 million facility – launched in partnership with the Mpumalanga Department of Education, the National Department of Basic Education and the Eskom, MTN and Vodacom Foundations – provides young people with vital information on subject and job requirements in the world of work. It also nurtures a passion for the sciences and ICT, and provides access to a range of computer courses through which they can gain fully accredited qualifications and, subsequently, employment.
- **Kumba Iron Ore's R18.8 million investment at the University of Pretoria is Africa-first Virtual Reality facilities, and has changed the face of mining engineering education:** The University of Pretoria has changed how mining engineering students are taught. Kumba worked with the university to enhance the students' learning experience by creating the first Virtual Reality (VR)

Centre for Mine Design on the African continent. The center was inaugurated in August 2015. The VR Centre comprises a state of the art 75-seater lecture hall with a 3D Stereoscopic theatre, and a 'cylinder' room enclosed by a 360-degree 3D screen, is an innovative approach to optimising and visualising information.

- **Kumba's Bridging school:** Kumba runs a 12 month bursary programme where learners from the local communities are awarded the opportunity to improve their Maths and Science matric marks to allow the learners to gain access to Tertiary Education with their improved marks. In 2018 Kumba placed 19 students from previously disadvantaged areas around our mining communities at Edumap college. Of the 19 learners, 11 were female.

The school not only focusses on Maths and Science but also hosts courses in Engineering Drawings, Entrepreneurship and Computers. In 2018 all Kumba students showed a about of 10% - 20% increase in both Maths and Science results.

- **Bursary programme:** In addition, Kumba runs a bursary programme to support students with their Tertiary Education which focusses on Engineering and Geosciences to ensure a proper feeder pipeline into the Company's graduate programme. The bursary programme ensures we develop good technical skills and providing the students the opportunity to obtain the technical qualifications required to enter the market place.
- In terms of female participation Kumba has exceeded the 30% target with more than half (55%) of bursary holders being female and the majority of the bursary pool (48%) are African Females.

- **Professionals in Training**

Kumba also runs a programme for Professionals in training after completion of the bursary programme. Which allows the students to obtain work experience to ready them for the job market. A good example is the Mining programme is that we allow our Mining graduates access and training to obtain underground experience at other mines even though Kumba we are an open cast mine as we want our PITs to obtain the best experience but also be able to register for professional registrations and formal qualifications such as the Mine Managers Certificate of Competency (MMCC).

Furthermore, we host an annual PIT Symposium where PITs are offered the opportunity to showcase their projects to stakeholders. In 2018 two of the 3 winners were ladies, one with a project on Cycle Mining focusing on Improving Production in Underground Mining and the other with a project on structural inspections using innovative RPAS technology (drones).

If "Creativity is the secret sauce to science, technology, engineering and math's" as quoted by science evangelist Ainissa Ramirez – then women have the intellect and soft skills to innovate. All they need is encouragement.