# STEAM

Geita Gold International School

*The first day of STEAM at the Lapa.*

Learning is often associated with the traditional classroom, school and educational institutions. But learning goes far beyond the classroom. The world is really one big classroom for all children.

What is STEAM?

STEAM stands for Science, Technology, Engineering, Arts and Maths. STEAM is important because it permeates every part of our lives. Science is ubiquitous in the world around us. Technology is continuously spreading into every aspect of our lives. Engineering is the basic design of roads and bridges, as well as meeting the challenges of global weather changes and eco-friendly changes in our homes. The arts are key to unlocking the creative potential in all of us. By integrating the arts, learning becomes more relevant to 'real life' and mathematics is found in every job, in every activity we do in our lives.

For a whole week, all the children at Geita Gold International School got out of the classroom and celebrated STEAM with the help of some of the staff from Geita Gold Mining Limited who took the time to talk to the children about the role STEAM plays in their work.

Saida Manane, Acting Head teacher, gives us an overview of what happened with some highlights...

The week began and the children made their way to the Lapa, the venue for the first ever Geita Gold International School STEAM week, where we were joined by;

*And we're off.*

*The children and teachers of GGIS make their way to the Lapa.*

*Annastazia explains how the big drone works in underground mining operations.*

Waziri Maembe and Annastazia Semeni, who are both from the mining technical services department at GGM, explained to the children that STEAM plays an important role in virtually all aspects of their work. Annastazia said, “As a surveyor, I use STEAM in all my daily activities, from collecting, processing and computing positioning data in and around the mine.” She went on to explain to the children that all the instruments and equipment she uses on a daily basis, such as drones and scanners, are powered by technology and science. The children got to see a live demonstration of the drones and watched spellbound as the drone soared high above Mchauru village.

*Up and away. The Children looking at the drone take to the skies.*

*Children marvelling at the pictures and videos the drone is taking.*

*The drone “eye in the sky” captures the juniors and seniors.*

*Is it a bird, is it a plane…oh, it’s a drone, and we are on camera!!!*

*Dominic Marandu answering the children's questions.*

Dominic Marandu from Organisational Development and Human Resources department gave the children a fascinating insight into his role as HR Superintendent and described some of the ways the HR department often use maths in their work, for example in estimating the number of buses we should have for staff, or making sure there are enough people on a shift to successfully operate heavy mining equipment

*"Can we see more buses?", the children ask (again).*

*Dominic explains how they use maths to plan employee wellness programs.*

*Children listening attentively.*

Sia Maele, from the Health Section, came equipped with an array of instruments that she uses in her daily work. She explained to the children: “My job is to monitor and check the controls that the company has put in place to prevent hazards or risks that can lead to work-related illnesses”. The children were very curious about the many devices that Sia brought and explained how to use them during a demonstration. Sia continued: “I believe that technology should be taught to children from the grassroots level because we live in an age that is driven by technology.”

*Sia Maele showing children how to check for noise levels.*

*Sia Maele asks, “Have you ever seen this gadget before?”*

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Doreen Denis from the Community Affairs Department explained to the children the history of GGML from 1930 until today, the location on the Tanzanian map and the square kilometres within the mining licence. The children learnt about all the community projects that GGML does in health, education, water and sanitation, Kilimanjaro Challenge (climbing and cycling), agriculture, transport and construction. The presentation highlighted how and the community affairs team use STEAM in their daily work.

*Doreen Denis tells the children that long before the mine that the area used to be a large forest.*

*Doreen Denis shows children the different community projects and explains how STEAM is vital in the work of the community affairs team.*

*Doreen Denis emphasises the importance of education.*

*"Whoa, that's even before my Mum was born", says one of the children, as Doreen recites the history of the mine.*

All areas of STEAM are represented in the daily work of Salma Mhina, a member of the Finance Department, with mathematics and technology playing an important role. She emphasised the benefits of teaching financial literacy to children at an early age by introducing them to financial matters, including topics such as money, budgeting, saving and banking.

*The children tell Salma Mhina that they want to keep the ten thousand note she used to explain to them about the value of Tanzanian currency... Think of it as an investment in our future!*

*Salma Mhina discusses with our younger learners the importance of saving money.*

*Salma Mhina explains the importance of budgeting to the children.*

Neema Ngodagula and Elizabeth Karua from the Legal Unit opened the children's eyes regarding law. They explained who lawyers are, what they do and why GGML needs a Legal Unit at the mine. They also explained that their profession is seen as an art, but also has other aspects of STEAM depending on the legal issues being addressed at that time.

*Neema Ngodagula explains what lawyers do and the importance of confidence in public speaking to be able to put your argument across audibly and intelligently.*

*In unison with the children, Neema Ngodagula sings "Lawyers", a nursery rhyme used to teach children about what lawyers do.*

*Maimuna Amri showing children some of the heavy mining equipment she works on.*

*It was all smiles as the session wrapped up.*

Maimuna Amri from Heavy Mining Equipment (HME) section of the Engineering Department artfully explained the heavy machinery they have, what it is used for, how it is maintained and who and how one is authorised to operate each machine. The daily work has a lot to do with engineering, but technology and mathematics are also important parts of the job.

With the advent of the internet and social media, cyberbullying has caught the attention of the public and has become a major problem in the educational world as children are exposed to the internet at a much younger age. Zuhura Khamis from the Digital Technology Unit of the Engineering Department was pleased that the children at GGIS know what cyberbullying is and what action can be taken if they feel threatened online. Zuhura stressed the importance of both children and adults being vigilant on the internet.

*Children marvel at the online booking system. "That means now we can bookourselves on a Coastal charter plane, right?"*

*With Zuhura Khamis, children pledged to be on the lookout for cyberbullies and report any suspicious activity when online.*

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Cosmas Festo, from the Process Plant Department, shared how he uses science in his profession and described to the children the process and chemicals used in gold refining. He explained the process and chemicals used in gold refining and how we can use these chemicals safely. The children asked him some insightful questions at the end - the answers will most certainly help them in their studies and future career paths.

*Cosmas Festo showing children a video of how gold is processed into gold bars.*

One of the few things that sends children into uncontrollable excitement is the sight of a big, bright red fire truck. The children of Geita Gold International School were no different when the red Emergency Response Team (ERT) fire truck pulled into the car park - yes, you guessed it... the air was suddenly filled with the high, shrill sound that only a child can make with excitement. Three Emergency Response Team (ERT) members from the Health, Safety, Environment and Training Department, Misese Ndulwa, Michael Nkwabi and Michael Sylvester, got out and demonstrated some of the equipment that they use to the children. And there was no shortage of volunteers who wanted to get their hands on the fire hose as soon as it was connected to the water tank of the ERT fire truck.

*Misese Ndulwa demonstrates the use of some of the equipment found in the fire truck.*

*A lesson on how to handle the fire hose.*

*Happy to pose next to the fire truck.*

*This is how we do it!*

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Casmiry Petro and his colleague Adam Maragiro from GGML's Security Department, showed the children some of the state-of-the-art camera technologies used to monitor activities at the mine, such as the CCTV system they have at their disposal to monitor activities inside the mine and also around the mine site. The children were impressed by how the cameras are able to capture night-time activities on video in low light conditions and from a great distance.

*Adam Maragiro explains the different cameras and their uses.*

*Children's own CCTV station where they saw what other people were doing outside the Lapa.*

*With the security team of Adam Maragiro (left) and Casmiry Petro (right) around, everyone feels secure.*

*Digital technology on display. Adam Maragiro explains how powerful these cameras are.*

As a paramedic, Johnson Mwoleka from the Health Section is the first to reach the scene of a medical emergency. To ensure that an operation runs smoothly, before his shift starts, his first task is to check all medical supplies, equipment and medicines, and to complete his checklist and assess the condition of the ambulance to ensure that everything runs smoothly. The children got to see all the items in a paramedic medical kit, and they were shown how to perform first aid measures such as cardiopulmonary resuscitation (CPR) and how to help a choking person.

*Johnson Mwoleka with the children.*

*Children practised resuscitation.*

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*Johnson Mwoleka explains how to check for heartbeat on an unconscious patient.*

*Johnson Mwoleka cautioned children against sticking things in their mouths, ears or noses.*

Frank Charles from the Environmental Section of the Health, Safety, Environment and Training department introduced the children to the environmental issues they focus on such as water quality monitoring and management, air quality monitoring and management, weather monitoring, waste management and rehabilitation. The children were excited to learn that all the flora and fauna in GGML and the surrounding areas are fully protected.

*Frank Charles explains the process of land rehabilitation.*

*Children participating in a discussion about water quality and monitoring.*

*Frank Charles encourages the children to name all the animals they have seen within our environment.*

Greenkeepers Edward Samson and Simon Mlelwa, who are responsible for the maintenance of the golf course, explained to the children the equipment they use for their work, including a tractor, a water bowser, a quad bike and a lawn mower. Of course, the children had no interest in climbing on the quad bike...which we were gravely mistaken. They also learned a few secrets from Edward and Simon about how they keep the golf course in pristine condition.

*Oops! Here we are!*

*Keen children learning about the tractors.*

*Who knew that tractors could be so interesting.*

Using a human body model, Dr Nzagi Matobera from the Health Section, showed the children the internal and external parts of their bodies and explained their function. He talked about different diseases that affect humans and explained the importance of vaccinations.

*Children naming body parts they know.*


*Unpacking the human body.*

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Naetwe Seushi explained to the children the main functions of the Supply Chain Department, namely procurement and contractors, inventory management, materials management, warehousing and other functions such as contract optimisation and local business development, which also provide support within and outside the department. The children were very interested to learn how all the school resources they use are purchased by the supply chain department, which required a lot of maths!

*Naetwe Seushi of the Supply Chain Department.*

*Naetwe Seushi explains how the procurement process works.*

*How we pose when we feel enlightened.*

Four members of the SGA Security, Isack Mugisha (Trainer), Mwajuma Sabuni (HR), Abdalla Msika (Contract manager) and Ernest Ndege (Driver), came to Lapa and showed the children the equipment they use to check people for hidden metal objects as they leave the mine. The children were lucky enough to try out the metal detectors. The children also learned how to adjust the settings on the devices, how the ID cards work and why not all cards have the same access rights.

*Mwajuma Sabuni explains how a baton works.*

*Children learn the correct way to do a body search.*


*Children conducting a search on each other.*

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Timoth Kihombo from the Training section of the Health, Safety, Environment and Training Department gave a short safety briefing to prepare the children and staff for their visit to the mine. He talked about PPE and general safety rules to follow.

*Morning Safety brief with Timoth Kihombo at the school basketball pitch.*

*Timoth Kihombo explains why safety is our number one value.*

Paul Lusato and Steven Madaha both from the Training Section gave a briefing on the simulators and the dump truck. They went on to explain what a simulator is, its functions and why simulators are used. Steven Madaha then demonstrated the simulator to the children and the children had the opportunity to observe someone operating the simulator.

*Children diligently taking notes.*

*GGIS pictured with MIS just before being briefed on the simulator.*

*Paul Lusato and Steven Madaha ready to do a simulator session with the children.*

*Steven Madaha explaining how the simulator works.*

At the Nyankanga open pit mine, Katakyie Tenkorang from the Mining Operations Department talked to the children about the mining processes, conservation of the area and rehabilitation. The children had the opportunity to see the large water pipes that pump water from the pits and the water reservoir.

*Katakyie Tenkorang with the children at the Nyankanga viewing point.*

*Katakyie Tenkorang explains Take 5 and its importance.*


*Now that's a big truck!*

*View of the mines.*

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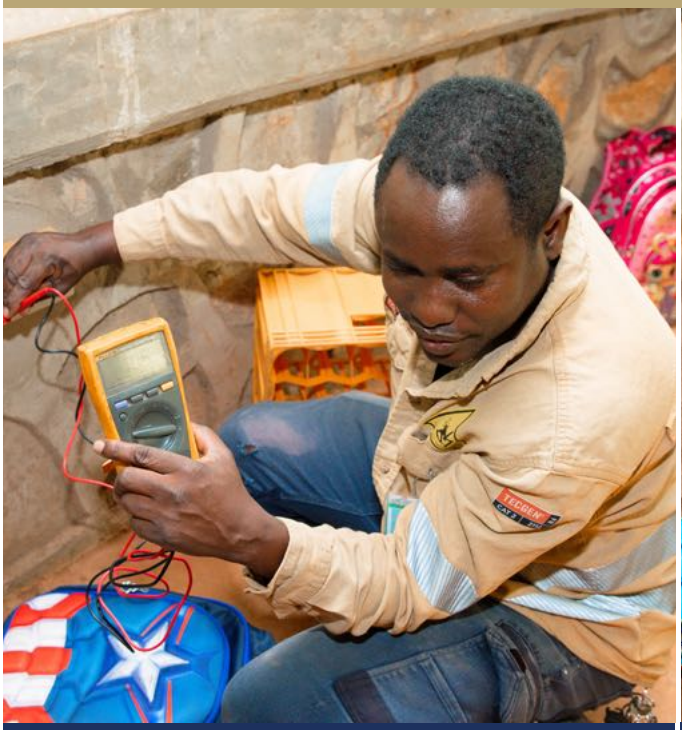
Abednego Mufuluka from the Infrastructure section of the Engineering Department discussed with the children what electricity is, how it is made and its uses. He emphasised on the importance of using electricity safely and encouraged children to give examples of how they use electricity at home.



*Abednego Mufuluka showing children how to measure the electric voltage.*

*Abednego Mufuluka demonstrating how sockets are used.*

*Abednego Mufuluka explains to the children how to use electricity safely.*

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Anthony Lucas from the Digital Technology section of the Engineering Department brought a desktop computer and explained to the children all the major components that make up a computer and the importance of the "heart" of the computer, the CPU. He also brought other computer peripherals and explained their respective functions to the children. Unsurprisingly the children showed that they are computer literate, typing away on the keyboard, doing simple calculations and searching the internet.

Anthony Lucas said, "As an IT technician, it was a privilege for me to teach with the children of GGIS how to use technology. We use technology in our daily lives and it is important that young children know that technology is useful. It was great to see young children, especially girls, getting excited about becoming a technician. There are very few female technicians in my profession and I hope that in the future some of them will choose to learn about IT and computer hardware and become computer technicians".

*Anthony Lucas explaining the different types of computers used on site.*

*Anthony Lucas explains how to use a desktop computer.*

*The juniors closely scrutinise the inner workings of a desktop computer.*