ANNUAL REPORT 2023

CENTRE FOR THE ADVANCEMENT OF SCIENCE & MATHEMATICS EDUCATION

CASME

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INNOVATIVE & COLLABORATIVE

This report contains a summary of all activities carried out by CASME in 2023

2023
Annual Report

~ Produced by Casme









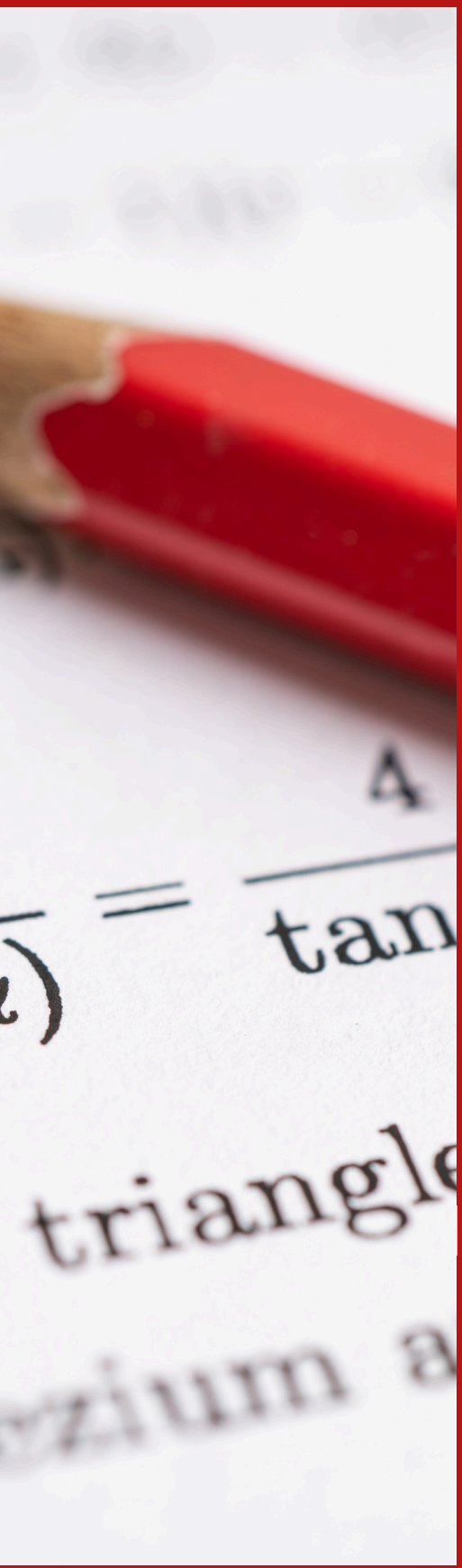



TABLE OF CONTENTS

A WORD FROM THE CHAIR

It gives me pleasure to sign off 2023 achievements. It was a fast paced year that started with an appointment of new Director in February, Mr Mbongiseni Gumede, followed by another filling of a critical position of Senior Projects Manager in April 2023, Mr Mduduzi Biyela. These two appointments have brought a much needed stability in the management and leadership of CASME. We have noted good strides by a collective leadership of CASME in 2023 signaling great value add by the two latest recruitments.

The organisation is still recovering from not only the setbacks of Covid19 in 2020 but also the April 2022 floods that attacked and ravaged the CASME building that the organisation owned in its name. That put a lot of strain in the financial position and well being of the organisation.

I wish to thank my colleagues, the Trustees of CASME, for ensuring that the organisation is well looked after and that support is continuously given to the Management of the organisation. We had very good and fruitful meetings in 2023 and I look forward to an even more successful 2024.

I would like to sincerely send, on behalf of Trustees and CASME management, our gratitude to all our generous funders who made a contribution to advance the aims and objectives of the organisation by funding STEM teacher development and some learner tuition projects. Thank you for funding the good course of helping our government in the plight of laboratory shortages in our country.

The Mobile STEM Lab integrated Program famously known as the ‘Science2go’ is far reaching in our needy schools as learners are able to perform experiments and deepen their conceptual understanding.

Lastly I would like to thank all principals, teachers, learners and parents who participated in our 2023 projects and wish them well in 2024. To all CASME staff who work tirelessly to deliver on our mandate: ‘We see you”! Have a fruitful 2024.
I thank you.

PROF SIBUSISO MOYO
TRUSTEE CHAIRPERSON

MESSAGE FROM THE DIRECTOR

Like all organisations, CASME has had to navigate various challenges over the past few years, including the Covid-19 pandemic and most recently floods. At the same time, funders expectations and priorities have shifted, with a greater emphasis on the return on their investments and impact at scale.

Employees also shifted their expectations on their well being, career development and company culture that aligns with their own values. These landscape changes compelled CASME to take a more people-centric approach to harness employee experience. A talented workforce is key to our success now and in the future and more so to meet demands of the current landscape.

38 years of working with SA schools, leading in STEM programmes for teachers and learners, reflect our long-standing, forward-thinking people-focused strategies in which we recognise that our success is dependent not only on the funding from our esteemed donors but also on skills and welfare of our employees across all levels.

MESSAGE FROM THE DIRECTOR

TO GAIN THOUGHT LEADER STATUS IN OUR SECTOR, WE ARE PUTTING ALL OUR ENERGIES INTO:

1. Providing learning opportunities for growth and development – Empowering employees with 21st century skills and tools for growth within the organisation increases engagement, innovation and retention, with benefits for organisational performance and productivity. As an organisation acutely focused on creating learning opportunities in the sector, we invest substantially in the skills development and have various initiatives focused on that. From an attraction and retention perspective, while we ensure pay benefits are competitive and fair, we also prioritize the development of talent and opportunities for growth through ongoing professional development sessions across all levels.

2. Aligning to a clear purpose and values – As a purpose-led organisation we take our commitment to improving the lives of the SA leaners, through quality and innovative STEM programmes that inspire them and give them solid foundations to pursue STEM careers in life, very seriously. Therefore, everything we do is connected to enabling our staff to make meaningful contributions to society because when employees feel that their everyday work has meaning and contributes to a larger organisational goal, they are more likely to feel engaged and fulfilled in their jobs.

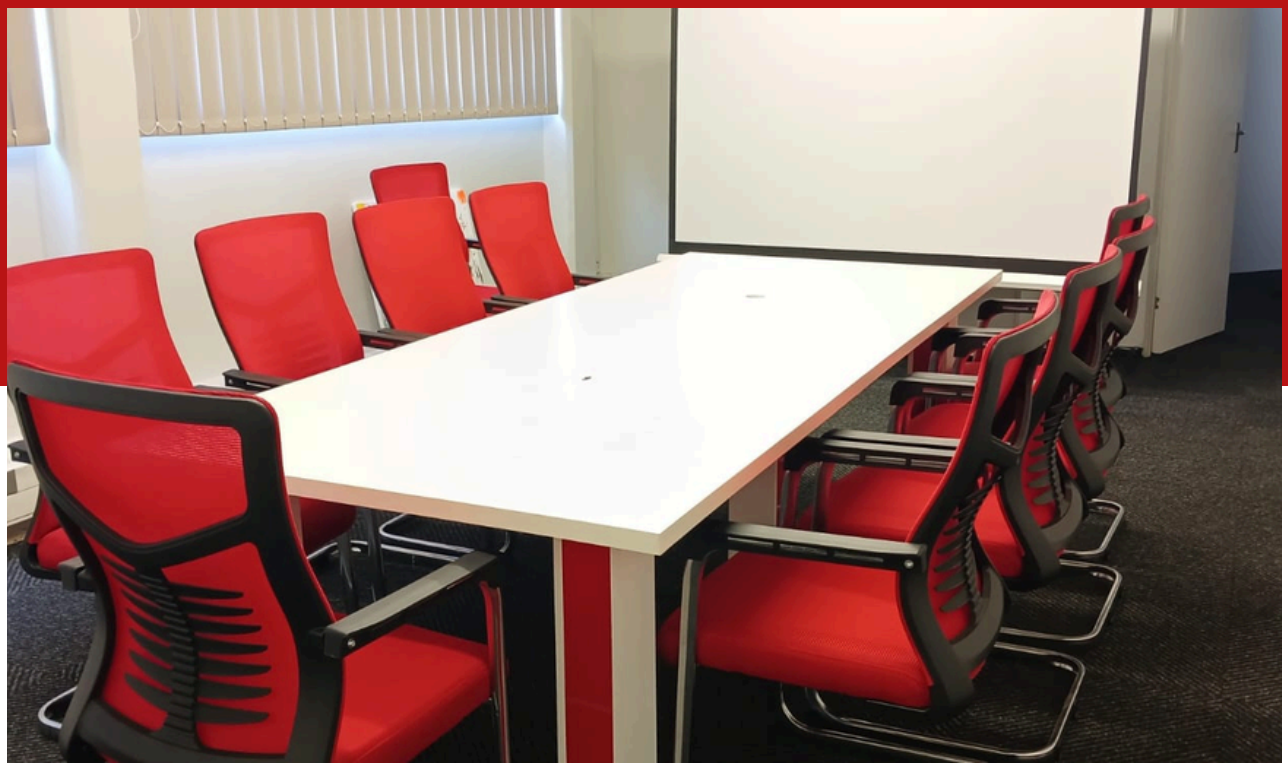
3. Becoming an organization that cares, is in tune with its purpose and makes a difference in society with a talented workforce in the driving seat.

4. Creating a culture that embraces equality and diversity – CASME is a warm home for everyone. Family members are all equal and accept embrace diversity in gender, race, religion etc. It is this culture of equality that act as the glue that holds the CASME team together for a common purpose

Thank you.

"Hope deferred makes the heart sick, but a longing fulfilled is a tree of life".

MBONGISENI GUMEDE
DIRECTOR: CASME



TRUSTEES AND MANCO

TRUSTEES

Prof S Moyo – Chairperson

Mr H Benson – Deputy chairperson

Dr SD Bhikha – Trustee

Mr SG Mncube – Trustee

Prof GM Ntombela – Trustee

Dr BH Khuzwayo – Trustee

MANCO

Mr HM Gumede – Director

Mr PT Mahlabela – Senior Academic Manager

Mr Mduduzi Biyela – Senior Projects Manager

Ms FV Van Rooy – Office Manager

Mr SP Khumalo – Resource Centre Manager

Mr SH Hlongwane – Staff Rep

PROF GM NTOMBELA
TRUSTEE

DR BH KHUZWAYO
TRUSTEE

DR SD BHIKHA
TRUSTEE

TRUSTEES

MR SG MNCUBE
TRUSTEE

PROF S MOYO
CHAIRPERSON

MR H BENSON
DEPUTY CHAIRPERSON

CASME VISION AND MISSION

VISION

Changing The Lives of Learners Through Quality and Innovative Mathematics and Science Education

MISSION

To provide quality teacher professional development opportunities for Mathematics and Science education in under-resourced and rural schools in South Africa.

CASME VALUES

CASME SUBSCRIBES AND ASPIRES TO LIVE OUT THE FOLLOWING VALUES:

Integrity – we are passionate about our work and we do it with honesty, transparency and scrupulous professionalism

Humanity – we add compassion and kindness to our work within the spirit of Ubuntu

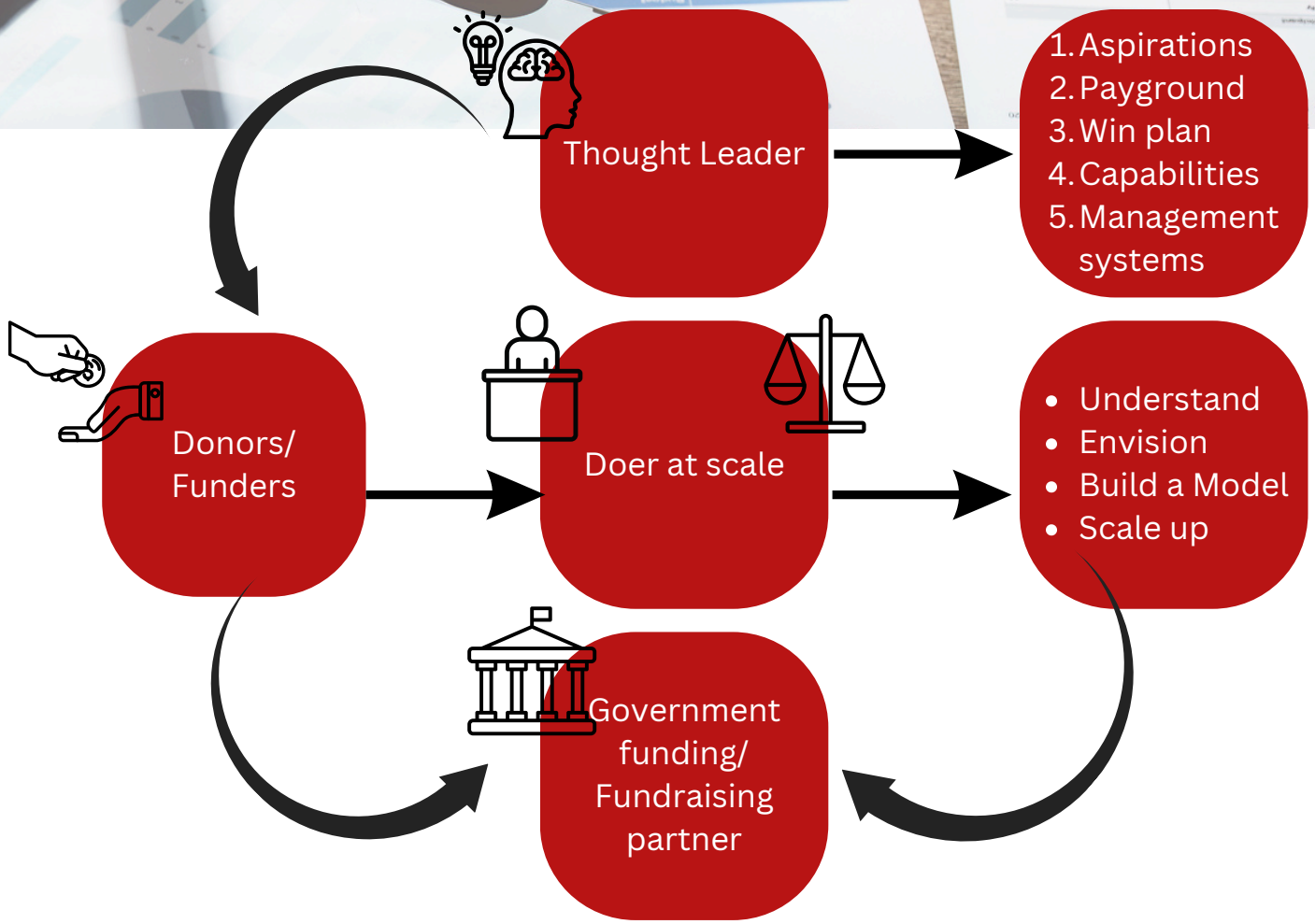
Resourcefulness – we aspire to lead in the open sharing of knowledge and expertise

Service Excellence – we provide a service which delivers on our promise.

STRATEGIC DIRECTION

The unique feature of CASME new strategic direction is its desire for scaling. Becoming a doer at scale challenges CASME to imagine a new future of projects delivery with scaling at its core. CASME however believes firmly that once a thought leader status is achieved in its operational environment:

Education, Training and Development, funders will enable CASME to become a doer at scale by generously funding projects that take in bigger numbers of teachers and learners into its projects in order to enlarge impact.



World class centre for changing lives of learners through quality and innovative mathemtics and science education

STAFFING MATTERS / NEW STAFF APPOINTMENTS

After operating without the Director for almost 4 months, the new director (Mr M Gumede) assumed duties beginning of February 2023. This was followed by the appointment of the a Senior Projects Manager (Mr M Biyela) who assumed his duties in April 2023.

To enhance our performance, new mathematics facilitator (Zenzele Ntshalintshali) and the new physical science facilitator (Nonkululeko Sibisi) were appointed in August 2023.
The ex-Director of the organisation (Mr H Benson) was appointed to the Board of Trustees in March 2023.

STAFF DEVELOPMENT

In July, staff members were developed for 3 days on team work and accountability. Academic staff members were taken through the integration of ChemSketch and GeoGebra into the teaching of mathematics and chemistry for 2 days. In September, the academic staff was also developed on the integration if ICT in the teaching of statistics as well as finance, growth and decay.

In October, 6 academic staff members were enrolled for the ETDP SETA Assessor and Moderators course. An additional two were registered for the assessor course only.

The Administration staff was enrolled in Alison online courses to enhance their work performance

In November, the entire staff was developed for 2 days by Dr Tanja Reinhaardt from UKZN Science and Technology centre on Coding and Robotics; and by Patisizwe (CASME Senior Academic Manager) on Boolean algebra, logic gates and Truth Tables.

NEW TEAMS

There are three (3) important teams that were set up in 2023. The Communications and Marketing unit, the MERL unit and the Fundraising team. These teams are all new in the organisation and are geared at improving organisational performance.

MERL UNIT

The MERL unit was established and is led by our Resource Centres Manager, Sizwe Khumalo, with a team of 4 other members. This teams has warmed up to the new challenge and it has drafted and concluded the MERL framework. The unit has also embarked on an important step to contract Data Innovators for use of their impact board / dashboard. This is done to improve projects impact tracking and reporting.

MARKETING AND COMMS

The Comms and Marketing team of 2 CASME members supported by a seasoned and renowned Marketing Manager of Mahle SA, Ms Jolene Van Heerden has drafted an impeccable strategy with clear milestones and KPIs. The team is being resourced to enable high impact and improve image of CASME. CASME will celebrate the 40th anniversary in October 2025 since it was established as an education Trust on the 17th of October 1985.

FUNDRAISING TEAM

Led by the Director, the team was assembled with a view to solicit broader consultative fundraising skills. It is a team of 7 volunteer members and has received training on Fundraising skills from Inyathelo. As means to fine tune its skills, the team has contracted Words That Count, a seasoned fundraising agent, to work with the team for a year in 2024 so that the team can warm up to its responsibility and be ready to take on the fundraising challenge in 2025 onwards. Fundraising efforts were good in 2023 as can be seen in the list of 2023 projects on page ... below.

MATERIALS DEVELOPMENT

- The quality materials that we possess were updated and customised into short online courses. SACE endorsement for those materials was obtained so that teachers will obtain professional development points for participating in our short courses. This process will continue in 2024.

- Through Team-4-Tech (Our US based partner), together with the ZenDesk experts based in California, we have developed a Coding and Robotics Clubs materials and a programme for the disadvantaged rural schools.

- In partnership with Ecolie, a teacher guide with learner activities on Coding and Robotics was developed.

- The medium of instruction in most schools that we work with is English, yet Home Language is used as a medium of instruction in the Foundation Phase. To ensure smooth transitioning across the media for instruction, CASME has developed English Teacher Guides for the Intermediate Phase, for both English Home and English First Additional Languages.

RESOURCE CENTRES

SUCCESSFUL REVIVAL OF THE RESOURCE CENTRE AFTER THE FLOODS

The year 2022 April Floods presented CASME with difficult operation challenges. The Pinetown resource centre which was adversely affected by this natural disaster was Pinetown and Umlazi Resource Centres. The only centre, which was not affected by Floods was the Richardsbay Resource Centre. We lost all the apparatus in the resource centre, and nothing was recovered, this left the devastating state and the resource centre-user, destitute. We had to start from scratch as most of our resources were flooded and some of our affiliated schools were also badly affected by this disaster. This resulted in a drop in the number of affiliated schools as we were struggling to make available all they required from us because it was not easy to procure the apparatus. Some of the apparatus purchased were of poor quality because the new suppliers were not providing good quality apparatus like the ones, we normally purchase from Lasec. Lasec had some challenges providing all the resources we needed and because of the pressure to deliver on various CASME project activities, we were compelled to buy from other suppliers.

Some of our resource centre users were not sure where to locate us due to the delipidating state of our building (23 Caversham Road).

This contributed to the low number of users accessing our resource centre and using the apparatus. The practical sessions which involved different schools coming to use our hall to conduct prescribed experiments was suspended because we could no longer accommodate them. Subsequently, we informed the schools who are interested in using our service for the practical sessions that we can only conduct the experiments at their premises. This, however, presented us with the expenses of travelling to the school and the challenges that some of the schools do not have enough space to accommodate us because the classrooms are very small and sometimes the teachers are not ready for us despite advising them to prepare before the visits.

Furthermore, the CASME website was also not operating for so long and teachers could not get updated information about our whereabouts because there was no clear communication about the state of CASME. The establishment of the Marketing committee and settling in our new home at Underwood assisted CASME in regaining its strength.

RESOURCE CENTRE RECOVERY PLAN FOR 2024

- Working closely with the marketing team and helping to robustly market the resource centres using the CASME website, printing posters, email marketing and social media (Facebook, WhatsApp) marketing.
- The marketing team will also assist in digitization of the loan form, subscription forms and kit evaluation forms which will assist us to receive the gift of feedback from the teachers to help us improve service delivery.
- Review the resource centre policy on loaning in which the project schools are allowed to use the resource centre free for the duration of the project cycle. However, the project schools will still be required to register every year to attain new information about school enrolment and contact details of the teachers who will be using the centre and the principal's commitment, and liability should any kit content be stolen or broken.
- Strengthening the relationship between the departmental officials and CASME by also requesting a slot during the principals' meeting or physical science educators meeting to market CASME.
- Monthly Audit of the usage, resources used and provided solutions.
- Resource Centre visit plan, once a term with the aim to monitor the state of the storeroom and to ensure that the resource functioning well.
- The Affiliation fee has been increased from R200 to R300 because of the increasing cost of the consumables visa vi usage. The letter will be forwarded to the school principals.

Other resource centres and their roles

CASME provides resource centres to assist mobile science2go programs, and project schools are authorized to use the equipment for free. These centres are related to the following projects: Steam Impande S2GO (KwaXolo Traditional Authority), Astron S2GO (Canaan College), and the Richards Bay Resource Centre, which is financed by South32. These centers also help CASME's work by storing the materials needed to conduct certain experiments for project-related tasks. Non-project schools are required to affiliate before borrowing materials from these resource centres.

Fully staffed mobile labs

The fully staffed mobile labs are largely for the following projects: Ford S2Go (Algoa College), SAMCT S2Go (MTN Centre), Mahle S2Go (KZN - Pinetown District), Astron S2Go (KZN - Umlazi District), and Steam Impande S2Go (KwaXolo Traditional Authority). Our mobile vans visit several project schools and conduct the prescribed experiments for each term for various grades. The equipment is sold in groups of ten, and mobile lab assistants follow the facilitator on all planned visits. The Mobile lab assistants oversee organizing school visits and other logistics such as equipment setup and cleanup.

ADDITION, THROUGH EDTECH, OF CODING AND ROBOTICS MATERIALS TO TABLETS THAT WE WERE USING BEFORE.

Addition, through EdTech, of coding and robotics materials to tablets that we were using before.

The Board of Trustees authorized CASME to hire Mr Alpheus Malemela, a Coding and Robotics specialist. He oversees all coding and robotics-related activities at CASME. This necessitates him staying up to date on numerous project activities such as educator training and school visits relating to coding and robotics. He has so far helped CASME assemble the robots and put the coding done through tanks or rangers and scratch into context so that people can see its significance in real-world situations and while coding the robots. He is also in charge of training the CASME on assembling and programming the robots he has designed.

Prior to the hiring of our coding and robot specialist, CASME was only having students write code; now that we are using robots, students are always excited to see their coding put into action.

RESOURCE CENTRE AFFILIATION

CASME is operating three brick and mortar resource centres in Pinetown, uMlazi and Richards Bay. Resource centres serve as local access points for loaning equipment for experiments. Local schools are required to affiliate at an annual fee of R300 and are allowed to loan equipment for week and return to the centre. Project schools are not required to pay annual affiliation fee as they automatically qualify to loan equipment by virtue of being project schools.

The following statistics as of 15 December 2023 was applicable:

Centre	No of Schools	No of teachers	No of learners
uMlazi	14	16	1283
Pinetown	25	46	4022
Richards Bay	26	44	3242
TOTAL	**65**	**106**	**8547**

The above table shows the number of affiliated schools that are not our project schools that benefit from our resource centres through loaning of equipment.

COMMUNITY OUTREACH PROGRAMMES

Date	Event	Place/school	No. of schools	No. of teachers	No. of learners
21 June 2023	Durban Natural Science Museum Kwanunu Exhibition	Sizwakele Primary School (Umlazi District) – KZN	1	8	100
22 June 2023	Umzimkhulu Digital Youth Festival	Ethembeni J.S.S. School (Harry Gwala District) - KZN	1	20	319
01 – 03 August 2023	National Science Week	Sarah Batman District - EC	6	13	418
05 August 2023	National Science Week	UWC: Districts:Metro Central; Metro North & Metro South.	5	15	32
07 September 2023	Harry Gwala District Maths and NS Grade 4 - 6 Activities	Little Flower Primary School (Ixopo) (Harry Gwala District) - KZN	15	35	117
22 September 2023	Career Expo	Amagcino Primary School (Umgababa) – Umlazi District) - KZN	1	8	197
13 October 2023	MAHLE Science2go Golf Day	Hillcrest High School (Pinetown District) - KZN	1	40	N/A
		TOTAL REACHED	**30**	**139**	**1 183**

SUMMARY OF THE INCOME GENERATED BASED ON RESOURCE CENTRE ACTIVITIES

Resource Centre	Affiliated Schools	Affiliation Fee	Total
Umlazi	14	R200	R2800
Pinetown	25	R200	R5000
Richardsbay	26	R200	R5200
Pinetown Practical Sessions			R33 950
		Total	**R46 950**

SUMMARY OF THE RESOURCE CENTRE RELATED ACTIVITIES BENEFICIARIES IN 2023:

Resource Centre	No. of Schools	No. of Teachers	No. of Learners
Resource Centres	65	106	8547
Community Outreach Programme	30	139	1183
Practical Sessions	4	10	503
Total	**99**	**255**	**10233**

PARTNERSHIPS AND COLLABORATION

We have worked collaboratively with many organisations. We have established links with Raspberry Pi, Ecolie, Data Innovators and other African Non Profit organisations that are partners with Team-4-Tech. We have extended our activities to schools that are not our project schools. With Africa Beyond 4IR we celebrated youth day in June, where teachers and learners were engaged in coding activities. In collaboration with Ethekwini Museum, a branch of Ethekwini Municipality we have done STEM exhibitions for schools in Umlazi Township.

NYAGAKI GICHIA AFRICA HUB DIRECTOR, TEAM4TECH

Nyagaki works at the intersection of engineering and education, leveraging technology solutions and a human-centred design approach to bring quality learning experiences to learners regardless of their economic background. She has spent the past ten years advocating for STEM programs in schools in Kenya to hone creativity and problem-solving skills in students.

Nyagaki is responsible for driving Team4Tech's strategy as their Africa Hub Director, supporting Team4Tech's 21 nonprofit partners in 9 African countries, and sourcing new nonprofit partners on the continent.

VISIT BY NYAGAKI - TEAM4TECH

Nyagaki's visit began with a journey to the Casme Offices. Upon arrival, a warm welcome and briefing awaited her, featuring introductions by Ms. Essop, words of welcome from Mr. Gumede, and insightful feedback on grant expenditure provided by Ms. Essop. Mr. Mahlabela then led a comprehensive presentation on Team4Tech support. The itinerary transitioned to a visit to Mgijimi Primary School in Umlazi, focusing on coding initiatives. Nyagaki then embarked on a visit to the Canaan Resource Centre, providing a firsthand look at community resources.

We met with Jolene Van Heerden, the Science2Go funder, at Mahle, followed by a natural science visit to Makhapha Combined School, featuring a Grade 9 electric circuits session. This was followed by a tour of the Pinetown resource centre, accompanied by a presentation on resource utilisation and a nostalgic tour of the old building.

PARTNERSHIPS AND COLLABORATION

GQEBERHA PROJECT SCHOOL LEARNERS SCOOPING AWARDS IN THE NATIONAL SCIENCE FAIRS

Three of Paterson High school (2 from Science2Go) learners were selected to represent the N.M.B. Region and the Eastern Cape Province at ESKOM I.S.F. 2023 which took place in Boksburg from 3rd October till 6th October 2023 Science2Go Leaner Micha Booysen in Grade 10 developed her project titled CAN WE REDUCE THE DEADY GAS in Plant Sciences. She used seven succulents to conduct her investigation which led her to conclude that desert rose and not spekboom is the best inhaler of carbon dioxide.

Drazene Chansen in Grade 10 developed a project in Mathematics titled HUMAN LIMBS VERSUS PROSTHETIC LIMBS, YOU DECIDE which was used to test if the golden ratio exists in the human body, in cosmetic dolls and in manikin dolls. She took her research further to test if the golden ratio was applied in the design of prosthetic limbs. This resulted in her investigating how to apply differential calculus and integral calculus in the design of prosthetic limbs. Drazene was awarded the prize for Mathematics Category Winner , a mentorship programme worth R20000 from Durban University of Technology and a GOLD MEDAL .

HeraldLIVE - Nelson Mandela Bay

13 Oct ·

A print-ready design for a prosthetic arm, an investigation into reducing carbon dioxide, and combining three resources of renewable energy to maximise the energy yield.

heraldlive.co.za

Paterson High science boffins excel at Eskom Expo

2023 STEM PROJECTS SUMMARY

Project / Funder	No of schools	No of teachers	No of learners
Ford	11	30	1067
Impande	9	12	459
Mahle	17	47	1296
VVOB	256	1020	0
Astron Energy	17	46	1168
South32	10	35	1889
SAMCT	14	37	1154
NPC	38	47	0
Epoch & Optima	5	207	3610
ELET	12	34	0
Team4Tech	0	0	0
Oppenheimer Trust	0	0	0
TOTALS	**389**	**1 505**	**10 643**

ASTRON

PROJECT OBJECTIVES

To improve the quality of teaching and learning of Science, Mathematics and English as the Language of Learning and Teaching in selected schools, by:

- Developing educators' conceptual knowledge, teaching skills and instructional practices in Mathematics and Science;
- Increasing the utilization of Science apparatus and practical experiments;
- Coaching educators on specific topics in Science and Mathematics including integration of information and communication technology
- Developing English language, mathematics, science and information and communication technology skills among learners;
- Motivating learners through career guidance, life skills and after school clubs in mathematics and coding in the selected schools.

GRADES AND SUBJECTS SUPPORTED

Grade	Subject Supported
7	Natural Sciences Mathematics Coding and Robotics
8	Natural Sciences Mathematics Coding and Robotics
9	Natural Sciences Mathematics Coding and Robotics
10	Mathematics Coding and Robotics
12	Physical Science Mathematics

STATS FOR TEARCHERS AND TEACHERS REACHED, PER SUBJECT

Subject	Number of teachers reached
Natural Sciences	31
Mathematics	21
Coding and Robotics	28
TOTAL	**80**

STATS AND ACHIEVEMENTS IN TERMS OF LEARNER PERFORMANCE, IN ALL GRADES WE SUPPORTING

School name	2022		
	#Learners in Grade 9	Grade 9 Learner Performance in Mathematics	Garde 9 Learner Performance in Natural Science
Swelihle Secondary School	158	60	149
Embizweni High school	302	92	105
Ekwazini High School	229	207	179
Qhilika High Schoool	373	373	373
Makhunbuza High School	247	169	182
Mafumbuka High School	92	69	79

2023	
#Learners taking Maths Gr 10	#Learners taking Science Gr 10
81	42
241	64
92	51
178	120
93	93
41	41

2023		
#Learners in Grade 9	Grade 9 Learner Performance in Mathematics	Grade 9 Learner Performance in Natural Science
169	98	111
246	86	132
300	294	291
292	292	292
324	218	234
98	88	95

2023		2024	
Grade 10 Learner Performance in Mathematics	Grade 10 Learner Performance in Physical Science	#Learners taking Maths Gr 10	#Learners taking Science Gr 10
90	38	87	87
78	39	321	126
20	43	104	61
178	115	178	110
100	108	150	150
10	25	30	30

GRADE 12 LEARNERS STAT

Learner Performance Range	Mathematics			Physical Science		
	5%-39%	40%-49%	50%-87%	5%-39%	40%-49%	50%-87%
#Bachelor	7	5	9	5	5	11
#Diploma	11	3	0	7	6	1
#Higher Certificate	6	0	1	6	0	1
#Fail	6	1	0	6	1	0

PROJECT SUCCESSES

Teachers Workshops

• Teacher workshop attendance was good, as the was a correlation established with the DoE
• Exposing Teachers to different pedagogy as many Teachers rely on one Textbook either Platinum
• or Spot On.
• The teachers took their time out of school to attend the workshop to learn and Geometry execute
• Energy and Change DoE prescribed scientific practicals and how to teach the learners back at school.
• Teachers were actively sharing information and asking questions throughout the training. They also enjoyed doing activities.
• Teachers were working in pairs/ in groups in investigating the tasks at hand
• They all fulfilled the requirements of the workshop by also writing pre-test and post-tests.
• Teachers evaluated the workshop as the most aspect to incorporate in their teaching and learning of their learners.
• A corroboration with the DOE was achieved and the subject advisors were present during the workshop

Natural Sciences Science2Go

• 100% school visit achieved for the term
• Having learners hands on in the practical sessions
• Improved confidence in laboratory space
• Integration of theory and practicality enhancing visual learning

Coding Science2Go

• The ability in assisting the school pilot coding
• The after session pleasant of learner having implacable interest
• Lifting of the fear of unknown

Mathematics Support Visits

• Learners were probed to determine their prior knowledge they were asked questions and to solve a few questions.
• Learners showed better understanding by responding very well to all questions of the session when they were asked questions at the end of the lesson

Grade 12 Learner Tuition

• Scientific practical engagement in executing their used standing of the theory
• Most of the leaners did well on all the activities.
• 100% tuition sessions achieved

Coding and Mathematics Club

• Learners were able to follow instructions on tasks given using GeoGebra, it was clear that learners enjoy learning using technology, post test results showed significant improvement.
• It was interesting to integrate ICT in the teaching of Mathematics. It was evident that the integration of technology can improve the teaching and learning of Mathematics
• 100% club session achieved

FORD SCIENCE2GO

FORD MOTOR COMPANY FUND

PROJECT OBJECTIVES

1. Enhance Teacher Skills: Address the shortage of science laboratories and lack of necessary skills by providing hands-on science activities, teacher workshops, and ongoing support to improve teacher competency.

2. Curriculum Alignment: Align provided science activities with the Curriculum Assessment Policy Statement (CAPS) and Annual Teaching Plan (ATP) to ensure relevance and compliance with the prescribed science curriculum.

3. Increase Exposure to 4IR-Defined Education: Provide tools and knowledge that enable teachers and learners to engage in real-world, experiential science education, fostering exposure to Fourth Industrial Revolution (4IR)-defined concepts.

4. Promote Learner Passion for Science: Achieve a significant impact on learners by increasing their passion for science, as evidenced by improved enrolment in grade 10 science classes and enhanced learner pass rates.

5. Expand Project Reach: Extend support beyond the initial 11 schools to additional districts, including Alfred Nzo, Amathole district, Sundays River, and Sara Batman, to reach more teachers and learners within project funding constraints.

6. Financial Investment: Allocate a total investment of 4,066 million Rands over three consecutive years (2022-2024) to sustain and expand the project, reflecting financial commitment to achieving its objectives.

7. Sustainability: Facilitate the sustainability of project schools that have shown significant improvement, allowing them to continue independently while replacing them with new schools to benefit from the project support.

8. Introduce Mathematics Teacher Support: Improve the project's impact by including mathematics teacher support through workshops and school-based support visits starting from 2024.

9. Foster Corporate-Community Collaboration: Leverage support from the Ford Global Grant and local Ford personnel to enhance the project's reach, including arranging site visits for learners to the Ford plant in Eastern Cape Province, promoting collaboration between corporate entities and the community.

GRADES AND SUBJECTS SUPPORTED

Science2Go EC support GET teachers and learners from grade 6 -9 with STEM subject where project schools are equipped with coding and robotics skills.

STATS FOR TEACHERS AND LEARNERS REACHED, PER SUBJECT

Subject	2022	2022	2023	2023
	No. of teachers reached	No. of learners reached	No. of teachers reached	No. of learners reached
NS	≈40	3606	55	3332
Coding	38	3242	28	717
Science Clubs	40	720	47	356

STATS AND ACHIEVEMENTS IN TERMS OF LEARNER PERFORMANCE.

In 2023 learners had significantly improved in both coding and natural science. This was observed in competitions conducted by science2Go.

In several science2Go schools, the number of learners that chose pure science at grade 10 increased in 2023. Stats summary for 2023 competitions

GRADE	NS	Coding	Maths
7	70%	83%	72%
9	100%	81%	86%
Grade Practical's	NS	Coding	N/A
7	100%	100%	N/A
9	80%	100%	N/A

SUMMARY OF THE PROJECT'S SUCCESSES/ACHIEVEMENTS

The project has been a success for the past three years. In 2022 eleven project schools were visited six times for curriculum based natural science practical's and at least 2 for coding. Furthermore threedistricts were visitedas well including AlfredNzo, Sunday's River and Amatholedistricts. These visits werefurther implemented in2023 where 10 extra schools which were not part of the project were also visited for NS Practical's and STEM clubs in Amathole districts. A number of teachers and learners received innovative education that do not only empower them in the classroom environment but even outside.

All expected visits were conducted for all schools in term three. Additionally, STEM clubs visits were also included where learners were entertained with science shows and coding games.

In addition, there were competition lasted for the whole term in 2022and 2023. Several teachers and leaners who are not in the projected insisted to be included, an indication of high demand for the project. Furthermore current schools in the project extremely support and appreciate al programs in the project.

IMPANDE STEM

PROJECT OBJECTIVES

The Impande STEM Project, funded by Norway Students, focuses on enhancing Mathematics and Physical Sciences education in nine high schools within the UGU District of KwaZulu-Natal.

Initiated by the KwaXolo Inkosi and Education Committee, CASME provides teacher workshops and school visits to improve STEM subject uptake and learner outcomes in Mathematics and Science.

MILESTONE

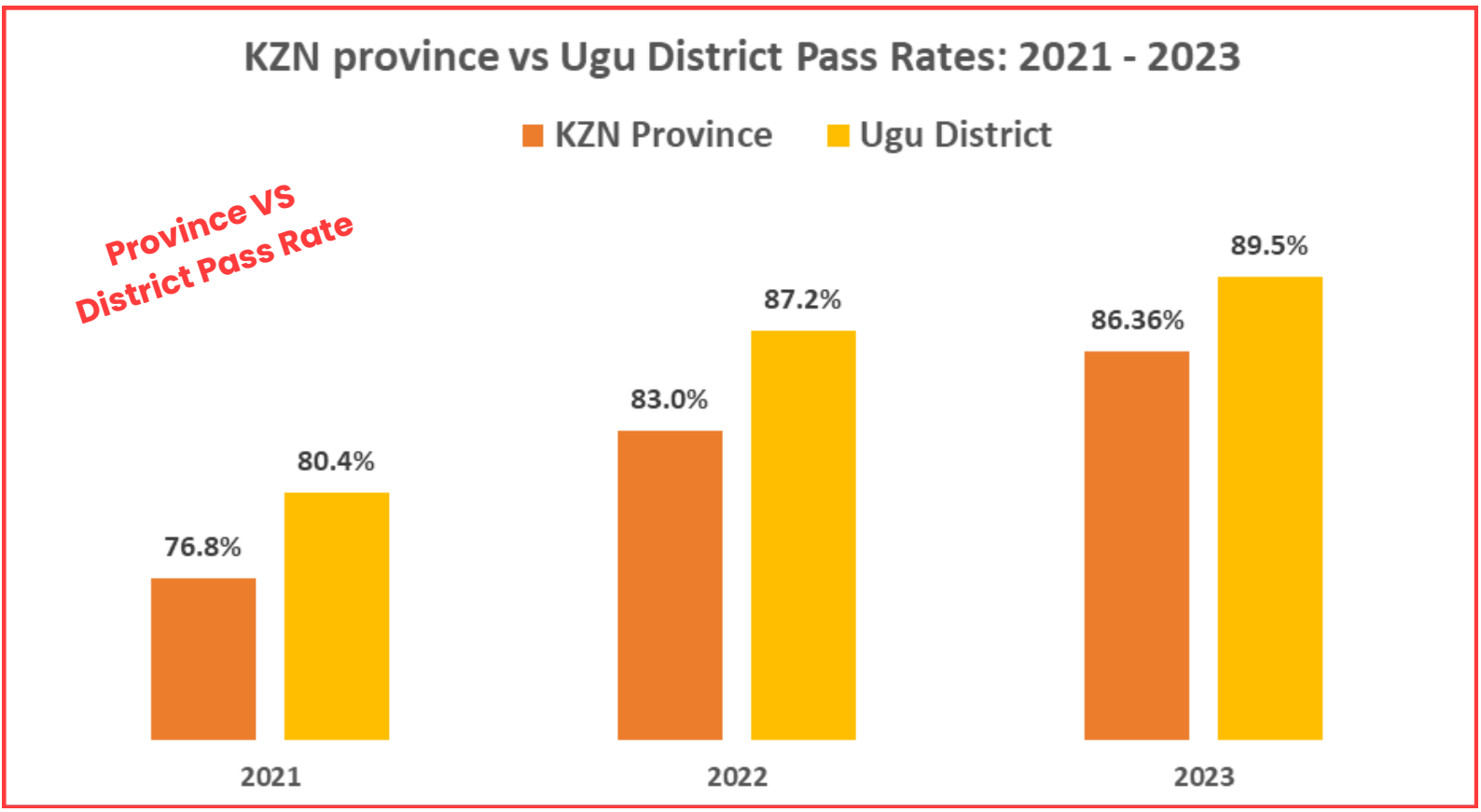
2023

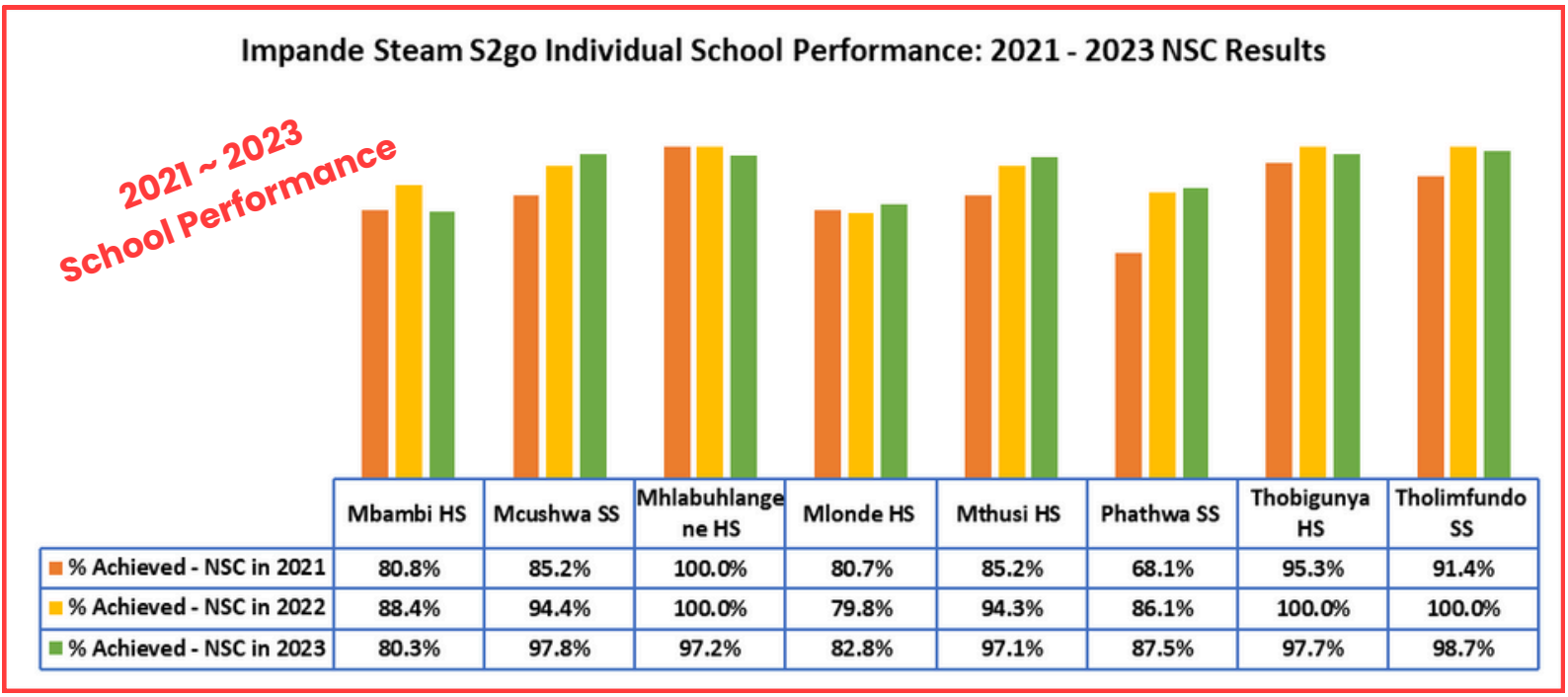
School-based mobile resource science practical and math teacher support through school supportive visits (SSVs) with individual and classroom-based assistance, ending with reflective sessions.

2024

CASME will take charge of the full running of the free standing Impande STEAM Centre, situated in KwaXolo. The centre will get fully utilised by all schools and the community of KwaXolo to meaningfully promote STEAM aligned subjects.

PROJECT IMPACT ~ GR 12





	Mbambi HS	Mcushwa SS	Mhlabuhlangene HS	Mlonde HS	Mthusi HS	Phathwa SS	Thobigunya HS	Tholimfundo SS
% Achieved - NSC in 2021	80.8%	85.2%	100.0%	80.7%	85.2%	68.1%	95.3%	91.4%
% Achieved - NSC in 2022	88.4%	94.4%	100.0%	79.8%	94.3%	86.1%	100.0%	100.0%
% Achieved - NSC in 2023	80.3%	97.8%	97.2%	82.8%	97.1%	87.5%	97.7%	98.7%

Scan here
for details on Matric Results

PROJECT IMPACT CONTINUED...

MATHS

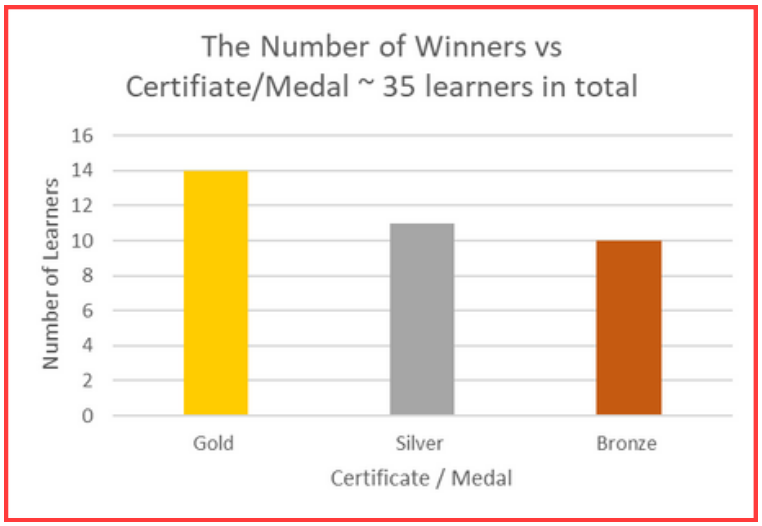
MATHS ~ Impande STEM Project Activities to Date			
Workshops	**Total No. of Teachers**	**School Support Visits**	**Number of learners**
4	40	27	667

PHYSICAL SCIENCE & NATURAL SCIENCE

Physical Science & Natural Science ~ Impande STEM Project Activities to Date			
Workshops	**Total No. of Teachers**	***Science2Go* Visits**	**Number of learners**
6	42	70	2018

COMPETITIONS & AWARDS

The Competition in Action!



Held at the esteemed KwaXolo STEAM Centre, the event was a testament to the dedication and talent of our project learners. Certificates and medals were bestowed upon deserving individuals for their outstanding performance in science tests, problem-solving challenges, and practical investigations.

The Awards Ceremony

FUNDER VISIT

The 2023 visits proved to be both successful and mutually beneficial, in the fast-paced world of education, the value of international collaboration cannot be overstated. It is through these connections that we broaden our horizons, exchange ideas, and enrich the learning experiences of our students and teachers.

During these visits, we had the honour of hosting students and teachers from Norway in our classrooms. Their active participation and enthusiasm not only enriched our learning environment but also left a lasting impression on our community at KwaXolo. What was particularly remarkable was their commitment to continue fundraising for the Impande STEM Project back home in Norway. It demonstrated not only their generosity but also their dedication to making a positive impact beyond their own borders.

This experience has inspired a desire to reciprocate the hospitality and knowledge-sharing by visiting Norway in the future, eager to deepen our understanding and further strengthen our partnership.

NPC

PROJECT OBJECTIVES

To enable District Subject Specialists and Lead Teachers in selected secondary schools to increase student performance in Mathematics and Natural Sciences.

- The project is built on past accomplishments, the recognised potential for more involvement with teachers, and current research on teacher professional development.
- It is commonly known that teachers experience difficulties while attempting to teach Science and Mathematics.
- This expands on the work done in the Intermediate Phase of Mathematics and English over four years, from 2016 to 2019, in collaboration with teachers and the Ugu District.
- The current project expands the topic range to include Natural Sciences and transfers the emphasis to the Senior Phase.
- English is no longer a component of the project.
- The technique, which was implemented during the Intermediate Phase, builds on the results attained with the Lead Teacher methodology.

GRADES AND SUBJECTS SUPPORTED

Grade 8 and 9 Mathematics and NS Teachers

Stats for teachers and teachers reached, per subject

Workshop	Maths	NS
1	23	n/a
2	22	16
3	17	n/a
Total Teacher:	**62**	**16**

SUMMARY OF THE PROJECT'S SUCCESSES/ACHIEVEMENTS

Natural Sciences

Wins/Successes

- Teacher participation was good. Teachers worked together, indicated different ways to solve the problems and assisted each other with challenges. Teachers appreciated that there were different strategies to teach this topic.
- Most of the teachers showed some improvements on the Post- test as compared to Pre-Test results, namely 71% (10/14) of the teachers improved from Pre-Test to post test results.
- The average for the Pre-Test was 71% and the average for the Post-Test was 78%. We had an average of 7% shift in the Pre-Test and Post-Test.
- The total shift in the performance was 7%.
- The number of unanswered questions in the Pre-Test was 12 whereas the Post-Test only had 3, 6 was answered correctly, this could mean that educators understood some concepts that they struggled with.

Educator feedback indicated the following:

- Teaching content that is not easy for teachers who have not done physical science
- The facilitators gave teachers the opportunity to discuss and share their strategies with other teachers in the workshop
- Engaging with fellow teacher's, sharing knowledge, and engaging in practical session (Electricity)
- The approach on how to take learning from basic to challenge aspects
- Bringing good techniques and easy example that can make this subject to become easier for our learners easier.

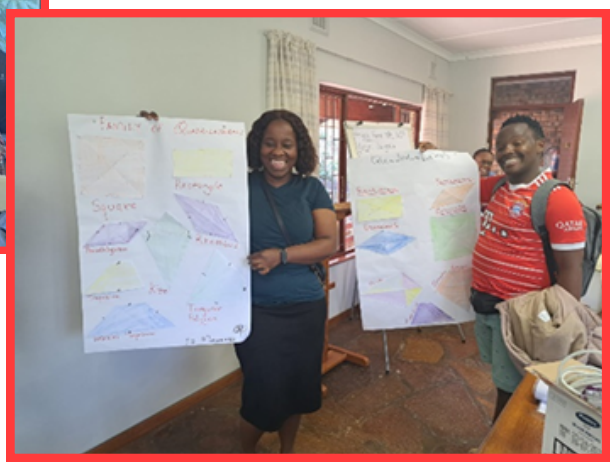
Mathematics

Wins/Successes

- Teacher participation was good, especially in paper folding activities and the integration of ICT.
- Teachers worked together, indicated different ways to solve the problems and assisted each other with challenges.
- Teachers appreciated that there were different strategies to teach this topic.
- Some teachers were not familiar with the discussed content, and that was confirmed by the assessment results.
- The workshop was generally a success if post-test results and the shift was considered.
- 100% of the teachers improved from pre-test to post-test results.
- 13% of the teachers got 80% and above on the Post-test results.

Teacher feedback on most valuable aspects of the training sessions

- Demonstrating practically the various types of shapes and their properties using A4 sheets papers rulers' scissors and colours pens.
- Using GeoGebra to demonstrate practically the various properties of the different kinds of shapes (drawing, snipping tool, constructing shapes, setting question papers) to assist in understanding geometry.
- Teachers should allow learners to do things by hands (measure) and find solutions themselves.
- The aspect of integrating technology (laptop) into teaching and learning to ensure the participation of all learner's in the classroom.
- Motivation to work as a team leader at school and learning to adjust, be flexible and do things right using correct technology consistently during my teaching.
- GeoGebra was presented in a manner that absorbed teachers' concentration on the second day.
- It was evident that the facilitator was well-prepared.




QUADRILATERALS


UGU DISTRICT

SOUTH 32

This is a STEM: Education Development Project (Teacher support). The project is rolled out in King Cetshwayo District, supporting 10 rural secondary schools. Project schools vary in size (enrolment), with the inclusion of one school (Encutshini) that has an extremely low enrolment, comprising of only 7 learners in grade 9. Supported schools are: Amabuye ; Amangwe; Encutshini; Isiphephelo; Manqamu; Mgitshwa; Mpephose; Ntongande; Qhamuka and Ugome.

PROJECT OBJECTIVES

- Quality and quantity of curriculum coverage of key skills and foundational knowledge;
- Access to science education equipment and practical learning experiences;
- Learner enrolments in mathematics and science at the Grade 10 level;
- Foundational knowledge in mathematics, science and coding/computational thinking;
- Performance by learners in mathematics and science at the Grade 8 and 9 level.

Project / Funder	No. of schools	No. of teachers	No. of learners	Total budget
South32	10	35	1889	R789 837.25

2023 PROJECT ACTIVITIES

Project focus was on Grade 8 & 9 Teacher Developments and Learner Support (Coding Clubs) on:
- Mathematics
- Natural Science
- Coding

Principals 'meeting formed part of the activities to ensure that school management are upraised on projects activities undertaken

	Teacher Workshops			Schools Support Visits			Principals' Meeting
	Mathematics	Natural science	Coding	Mathematics	Natural science	Coding Clubs	
Term 1	0	1	1	10	10	10	0
Term 2	1	1	0	10	10	0	0
Term 3	1	1	1	7	6	10	0
Term 4	1	0	1	3	4	10	1
TOTAL	**3**	**3**	**3**	**30**	**30**	**30**	**1**

ACHIEVEMENTS

All planned activities for the year successfully undertaken
All five project intended outcomes were satisfactory achieved, despite the few implementation glitches encountered
Regular engagements with the funder led to improved project implementation


asme


asme


asme

MAHLE SCIENCE2GO

PROJECT OBJECTIVES

- To enhance science education by providing essential science equipment and laboratory kits to schools, addressing existing gaps in practical resources.
- To empower science educators through targeted training aligned with the CAPS curriculum, enabling them to effectively demonstrate and facilitate practical, experiential learning;
- To achieve a measurable improvement in learner performance in Physical and Natural Science through the implementation of these resources and methodologies.
- To promote learner interest in Science subjects at Grade 10 level which will result in learners pursuing Careers in Science at Tertiary level.

SUBJECT AND GRADE FOCUS

The project focused on Grade 7, 8 and 9 Natural Sciences specifically Science experiments.

Learners Reached

The number of learners reached are as per table below.

NS school visits	Learners Visited	Learners not visited
Term 1	1286	2477
Term 2	1103	2660
Term 3	1337	2433
TOTAL	3726	7577

Number of teachers reached through workshops

Grade	Term1	Term 2	Term 3	TOTAL
7	7	10	6	23
8	7	7	8	22
9	5	7	8	20
	19	**24**	**22**	**65**

Number of teachers reached through school visits

Grade	Term 1	Term 2	Term 3	Term 4
7	10	10	10	30
8	7	6	7	20
9	7	7	7	21
	24	**23**	**24**	**71**

Coding was done in term 3 only . During school visits, schools had the option to choose whether to teach coding to either grade 8 or grade 9 learners.

Grade	Term 1	Term 2	Term 3	Total
8 and 9	0	0	9	**9**

Coding school visits stats

Total number of learners visited	Total number of learners not visited
664	1247

Scan here
for details on Matric Results - 2023

Mahle Project Teachers conducting electric circuits investigations

Mahle Project teachers attending a Coding workshop

2023 OVERALL ACHIEVEMENTS

1.Appointment of the new director
This appointment stabilized the organization and enabled management to implement CASME strategy supported by the Trustees.

2.Setting up of new units
Three units / teams were successfully set up namely Monitoring, Evaluation, Research and Learning (MERL); Communication and Marketing; and Fundraising Team. These teams have started their work and there in noticeable overall improvements in the organizational delivery of projects and reporting.

3.Successful Trustees meetings
Trustees support improved with the addition of former CASME director, Mr Henre Benson, as a new Trustee joining the hard working and ever supportive team of Trustees some of whom have been the Trustees for over a decade. That experience discerns as they discharged their fiduciary duties as CASME Trustees.

4.Crafting of the new strategic direction
As a matter of aligning with the landscape changes, a new strategic direction was crafted in 2023 and scaling of CASME programmes is at the core of the new direction. Staff have embraced and are seen making efforts to ensure that CASME moves swiftly to understand what scaling brings on the daily operations and fundraising efforts.

5.Projects roll out
A total of 8 projects funded by funders committed to improving Mathematics and science outcomes in the country were rolled out successfully in 2023 as shared in the summaries above. In particular, our science2go model programs increased from 5 to 6. The sixth being funded by Impande SA through fundraising efforts by Norway students that channel funding through Impande Norway. This addition saw 9 schools around KwaXolo area benefit from our mobile STEM lab services.

CHALLENGES ENCOUNTERED

- Staff understanding of a new strategic path. However staff meetings and other opportunities of staff gatherings such as PDs were used as a platform to inculcate and embed assimilation and understanding of a new strategic path by all staff members.

- Retiring of two senior seasoned projects manager, Mrs Thami Mahlobo and Mr Themba Ndaba, created void and some instability. However management worked hard to find suitable replacements in August 2023.

- Discontinued funding from two of our funders thus signaling reduction of projects in 2024. Efforts will be made in 2024 to engage withdrawn funders for possible funding of innovative projects like Coding and robotics. CASME has plans to hire a fulltime Coding and Robotics specialist in 2024.

FAREWELL TO OUR SEASONED FACILITATORS:

THEMBA (THIRD FROM THE LEFT) AND THAMI (FOURTH FROM THE LEFT)