

STEMI Community of Practice Conference

Conference Highlights Report 2023

THEME:

PREPARING LEARNERS
FROM DISADVANTAGED
COMMUNITIES FOR THE
FUTURE OF WORK THROUGH
STEMI OLYMPIADS AND
COMPETITIONS.



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA



SAASTA
South African Agency for Science
and Technology Advancement

CONTENTS



- 1. Executive Summaryxx
- 2. Objectives of the Conferencexx
 - 2.1. The objectives of the STEMI CoP based on its expected long-term outcomes are:xx
 - 2.2. The 2023 STEMI CoP Conference had four sub-themes:xx
 - 2.2.1. Transforming the landscape through partnerships and collaborationsxx
 - 2.2.2. Skills for the future of workxx
 - 2.2.3. Bridging the digital divide towards Education without Boundariesxx
 - 2.2.4. Volunteerism – a vehicle for sustainable growth.....xx
- 3. Conference Growthxx
- 4. Review and Editorial Processxx
 - 4.1. Call for papers and proposal submissionsxx
 - 4.2. Screening of submissions.....xx
 - 4.3. Pre-conference reviewxx
 - 4.4. Post-conference reviewxx
- 5. Key Learnings from the Conferencexx
 - 5.1. Opening and keynote addressesxx
 - 5.2. The conference proceedingsxx
 - 5.2.1. Skills for the future of workxx
 - 5.2.2. Bridging the digital divide towards education without boundaries.....xx
- 6. Conference Feedback.....xx
 - 6.1. Overall evaluationxx
 - 6.2. Linking conference subthemes to objectivesxx
 - 6.3. Mode of Conference.....xx
- 7. Conference Resolutions.....xx
- 8. Emerging Matters and Issuesxx
- 9. Appendicesxx
 - 9.1 Video recordings and presentationxx
 - 9.2 Monitoring and evaluation report.....xx
 - 9.3 List of organisations.....xx
 - 9.4 Reportsxx



1. EXECUTIVE SUMMARY

The STEMI Community of Practice (CoP) Conference is a biennial conference dedicated to the advancement of science, technology, engineering, mathematics, and innovation (STEMI) Olympiads and related competitions in South Africa by creating a community of practice where best practices are shared and benchmarked.

The sixth CoP conference was held from 4 to 6 July 2023 under the theme: “Preparing learners from disadvantaged communities for the future of work through STEMI Olympiads and Competitions. This was a hybrid conference that catered for both in-person (physical) and online participation.

The 3-day conference was attended by 189 delegates at the conference venue, and a further 85 delegates online. Among the attendees were delegates from schools, science centres, provincial departments of education, government departments, science councils, Department of Science Innovation (DSI) entities, higher education institutions (HEIs), and non-governmental organisations (NGOs).

*Theme:
“Preparing learners
from disadvantaged
communities for the
future of work through
STEMI Olympiads and
Competitions”*

A total of 19 academic and non-academic papers, six demonstrations, and one workshop were presented under the following sub-themes:

- Skills for the future of work
- Bridging the digital divide towards education without boundaries
- Transforming the landscape through partnerships and collaborations
- Volunteerism – a vehicle for sustainable growth

The conference consisted of presentations of academic and non-academic papers, panel discussions, workshops and other forms of engagement. The presentations and discussions covered a range of topics, including issues around the development of science communication amongst learners through cooperative learning; issues around cyber security; and STEMI Olympiads and related competitions, such as coding and robotics, mathematics and project-based Olympiads and competitions. The drive towards digitalising some of the Olympiads and competitions also featured, as it had in previous engagements within the STEMI CoP.

From the feedback, one can conclude that the conference was exceptionally well received. Most delegates were from Gauteng, followed by the Western Cape. There is still disparity in terms of gender representation, and the majority of participants were male. The majority of participants were from government departments, followed by the higher education institutions (HEIs). Most participants indicated that the conference was engaging and created a good platform for sharing best practices, and that their expectations were met.

2. OBJECTIVES OF THE CONFERENCE

2.1. THE OBJECTIVES OF THE STEMI COP CONFERENCE WERE BASED ON ITS EXPECTED LONG-TERM OUTCOMES AND INCLUDED THE NEED TO:

- Positively contribute towards a STEMI-driven culture
- Create a platform for collaborative problem-solving
- Act as a catalyst between people and organisations
- Facilitate the development of tools to improve the connection between science and society
- Assist in transforming innovative ideas and actions into benchmarked practices

2.2. THE 2023 STEMI COP CONFERENCE HAD FOUR SUB-THEMES:

2.2.1. TRANSFORMING THE LANDSCAPE THROUGH PARTNERSHIPS AND COLLABORATIONS

How can we use partnerships and collaborations to reach disadvantaged communities so that they benefit and are prepared for a STEMI related future of work?

2.2.2. SKILLS FOR THE FUTURE OF WORK

Technology advances at a very rapid rate. How can 21st century skills be used to develop or provide advance support to participants? How can Olympiads and competitions equip disadvantaged communities with 21st century skills for the future of work?

2.2.3. BRIDGING THE DIGITAL DIVIDE TOWARDS EDUCATION WITHOUT BOUNDARIES

How can we use STEMI Olympiads and related competitions to narrow the digital divide experienced by learners from disadvantaged communities so they are supported to perform optimally, in synergy with new technologies?

2.2.4. VOLUNTEERISM – A VEHICLE FOR SUSTAINABLE GROWTH

With the aim of working towards self-sustainable initiatives, how can volunteerism from community members, alumni of Olympiads and related competitions, and STEMI professionals, provide continuous support in the form of coaching, mentoring, and any other forms of human or material support?

3. CONFERENCE GROWTH

The STEMI CoP has been growing since its inception in 2016. Initially, the conference was hosted on an annual basis, but as from 2019, has been conducted on a biennial basis. The highest growth of participants was noticed in 2021 that may have been due to hosting the conference online. The 2023 conference was a hybrid conference, as such the number of participants included both physical and online participants. Since this was our first in-person attendance conference since COVID-19, the number of in-person delegates at 189 is lower than the 241 of the 2018/19 in person delegates in-person delegates. The conference also experienced challenges with streaming that resulted in 85 delegates being unable to join the conference online.

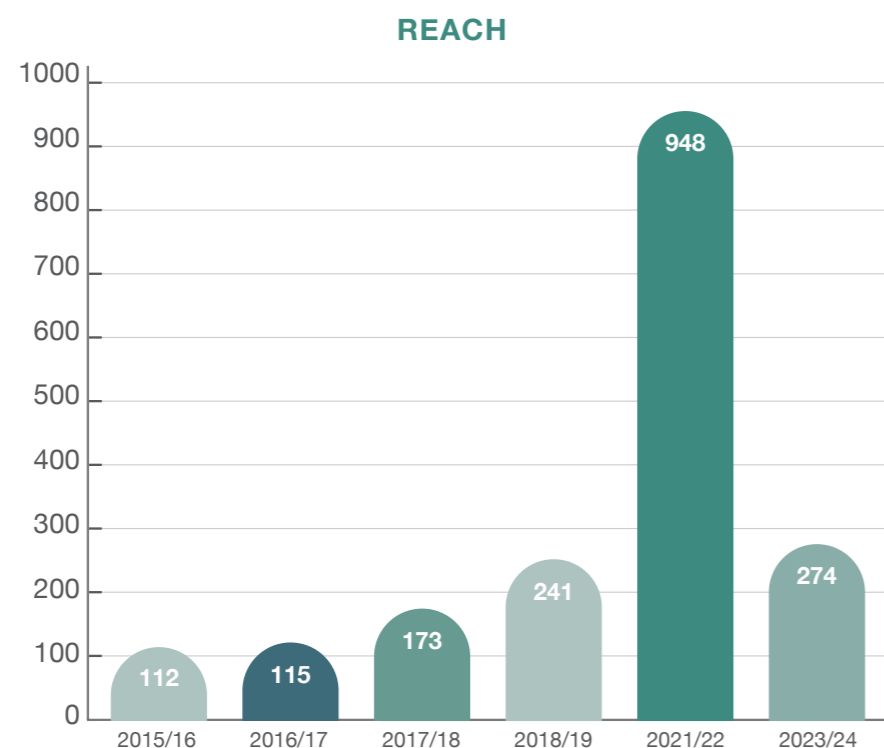


Figure 1: The growth of STEMI CoP Conference since 2016

4. REVIEW AND EDITORIAL PROCESS

4.1. CALL FOR PAPERS AND PROPOSAL SUBMISSIONS

Date published and distributed: 21 February 2022
Closing date for submissions: 30 September 2022 and later extended to 31 October 2022
Number of submissions: 63 proposals were received

CATEGORIES	NUMBER OF SUBMISSIONS
Academic	22
Non-Academic	29
Demonstration	11
Poster	1

4.2. SCREENING OF SUBMISSIONS

During the proposal screening process 37 were approved for the pre-conference review. One academic submission was re-categorised and assessed as a non-academic proposal. One non-academic submission did not meet the requirements, but it was recommended that the author should consider exhibiting at the conference. A further 25 submissions did not meet the requirements and were subsequently omitted from the pre-conference review process.

4.3. PRE-CONFERENCE REVIEW

A double-blind review process was used to review 37 submissions. A panel of reviewers, that consisted of independent experts from various institutions with different expertise in STEMI fields and with full involvement in science engagement activities (particularly in science education), conducted the process. The reviewers were provided with a detailed review guideline on how to conduct the review. All reviews were consolidated by the editorial team, that was led by the conference editor to provide authors with feedback based on their submission. Of the 37 submissions, 24 were recommended to be presented at the conference and 13 were declined.

The following proposals were accepted:

TITLE OF THE PAPER	NAME OF THE AUTHOR(S)	CATEGORY
Development of knower legitimization among South African township learners during a Science Expo project planning intervention	Dr A Stott (University of Free State)	Academic
Learner Skills Galore in Free State made possible by partners	Dr C Malinga (Sasol Foundation)	Non-Academic
Optimising online learning in an online Mathematics Problem Solving course for primary school teachers	Dr I Tarling (Limina Education Services)	Academic
Cyber STEAM Club – A Collaborative model to prepare disadvantaged communities for the future of work through Olympiads and Competitions	Dr T Reinhardt (UKZN – Science and Technology Education Centre)	Non-Academic
Determinants of the intention to choose a career in the marine sciences, career interest and attitude amongst high school students	Dr W Chinyamurindi (University of Fort Hare)	Academic
Diminishing the overarching idea of quadratics by teaching the short cuts when factoring the prototype quadric expressions	Dr AS Vilakazi (Ndondakusuka Secondary School)	Academic
Using Robotics Competitions to Advance Physics Education	Dr P Gouws & Professor H Lotriet (University of South Africa – I-SET)	Non-Academic
How can a Raspberry Pi be used as a Digital Suitcase to provide schools with an internet experience?	Dr RN Beyers (Young Engineers and Scientists of Africa)	Non-Academic
STEM Inclusivity: Challenges faced by STEM professionals when preparing learners with special education needs from South African disadvantaged communities for STEMI related careers	Mr Rofhiwa Raselavhe (NRF-SAASTA)	Academic

TITLE OF THE PAPER	NAME OF THE AUTHOR(S)	CATEGORY
Exploring a mentorship model for skills transfer through targeted interventions: How Olympiads and Competitions can reach disadvantaged learners through science camps?	Dr F Mashate & Dr S Mupezeni (Eskom Expo for Young Scientists)	Non-Academic
Challenges in administering continuous assessment through digital technology in quintile one schools during the COVID-19 pandemic	Ms M Mbonambi & Dr Sammy Khoza	Academic
Does participation in STEMI Olympiads and Competitions enhance inquiry learning in the curriculum and prepare learners from disadvantaged communities appropriately for the future of work?	Mr L Manas (Exkom Expo for Young Scientists) Ms S Rampou (Western Cape Department of Education)	Non-Academic
Volunteerism by mentors – Working towards self-sustainable initiatives in Olympiads and related competitions	Ms M Moloedi (Eskom Expo for Young Scientists)	Non-Academic
Value and limits of volunteerism: Lesson from the South African National Geography Olympiad	Prof T McKay & Mr M Milaras (University of South Africa)	Non-Academic
Self-sustainable volunteer model to support and Grow Olympiads and Competitions in disadvantaged communities	Dr K Naidoo (Eskom Expo for Young Scientists)	Non-Academic
Promoting collaboration and providing opportunities to enable learners from disadvantaged and rural schools to participate in expos and other science competitions	Mr C McCartney (Eskom Expo for Young Scientists) Ms K Govender (South African Environmental Observation Network)	Non-Academic
Learner driven, Teacher Led and Partner Optimised – Exploring the STEM Club Network and its transformative impact on disadvantaged communities	Ms O Peel (Cape Town Science Centre) Mr D Haripersad (Western Cape Department of Education)	Non-Academic
How can we use partnerships and collaborations to reach disadvantaged communities so that they benefit and are prepared for STEMI related future of work	Dr S Barnard AIMSSEC Mr H Bosman (South African Mathematics Foundation)	Non-Academic
Towards a framework for implementing partnerships to increase participation, performance, and retention of learners from previously disadvantaged communities in STEM competitions	Mr R Motsewabangwe (Eskom Expo for Young Scientists)	Non Academic
Demonstrating how Virtual reality, Augmented reality and Robotics and coding can be applied to transform South African Education	Mr Vincent Mboyne & Raeesa Ebrahim (Mancosa School of Education)	Demonstration
How to use your cellphone as a tool for science or technology projects	Dr Tanya Reinhardt (UKZN – Science and Technology Education Centre)	Demonstration
Virtual Chemistry Experiments for Schools and Olympiad Training	Dr Ajay Bissessur (University of KwaZulu-Natal)	Demonstration
Your First Science Fair Investigation: An online programme to develop inquiry competence through engagement in the Science Expo	Dr Angela Stott (University of Free State)	Demonstration
MyTutor.chat, and growing the reach of Kangaroo sans Frontiere in Africa	Mr Gregory Becker (MyTutor.chat)	Demonstration

Table 1: 2023 STEMI CoP Presentations

4.4. POST-CONFERENCE REVIEW

Similar to the pre-conference review, the post-conference review was also a double-blind peer review, but the process differed slightly as it comprised the review of full-length academic articles. Six articles were approved to undergo this process. These articles were presented during the conference and will be published online on the NRF-SAASTA website. Three articles were withdrawn and only the three listed articles below were approved.

TITLE OF THE PAPER	NAME OF THE AUTHOR(S)	CATEGORY
STEM Inclusivity: Challenges faced by STEM professionals when preparing learners with special education needs from South African disadvantaged communities for STEMI related careers	Mr Rofhiwa Raselavhe (NRF-SAASTA)	Academic
Diminishing the overarching idea of quadratics by teaching short cuts when factoring the prototype quadric expressions	Dr AS Vilakazi (Ndongakusuka Secondary School)	Academic
Challenges in administering continuous assessment through digital technology in quintile one schools during the COVID-19 pandemic	Ms M Mbonambi & Dr Sammy Khoza	Academic

Table 2: 2023 STEMI CoP Academic Presentations (Conference Proceedings)

5. KEY LEARNINGS FROM THE CONFERENCE

The following outlines the key learnings from the conference plenary sessions, presentations, and breakaway sessions.

5.1. OPENING AND KEYNOTE ADDRESSES

In his overview of the STEMI Community of Practice Conference, **Mr. Moloko Matlala from SAASTA** outlined how the event has grown by more than 100 since the inaugural conference in 2016, reflecting the growing interest and commitment to the promotion of STEM education in South Africa. He further highlighted some of the key issues that have been a common thread in each conference. These included, among others, partnerships and collaborations, volunteerism, mentoring and coaching. He concluded his address encouraging participants to engage in deliberations throughout the conference. He said “by working together we can act as catalysts in bridging the gap between people and organisations; and we can empower learners, educators, and professionals to navigate the challenges of the future with confidence and resilience”.

Dr Mamoeletsi Mosia, NRF-SAASTA's Managing Director, indicated that the STEMI Community of Practice Conference is one of the science engagement platforms that allows engagement between different stakeholders with a keen interest in STEMI related matters. STEMI Olympiads and Fairs is one of the extra-curricular activities that creates a platform for enjoyment and fun as learners engage with scientific phenomena and principles. Learners start appreciating the value of science and develop some confidence in pursuing mathematics and science subjects at school.

Explaining the reason behind the focus on learners from disadvantaged communities for the future of work through the STEMI Olympiad & Competitions, she said: “these olympiads and & competitions fit into the mandate of the DSI to feed the STEMI professional pipeline through the production of enough PhDs, especially in STEM related

fields; and also with regards to the mandate of NRF in terms of Science Engagement and the coordination role of NRF-SAASTA”.

The goal is to encourage learners to dream beyond their current realities and circumstances. Olympiads and competitions will give them exposure and confidence to seek a better future. It is the responsibility of the community of practice to provide technological assistance to rural learners through Olympiads and Competitions.

In his conference opening address, the **Deputy Minister of Higher Education, Science and Innovation (DSI), Buti Manamela, MP** highlighted the need for learners and students to be adaptable, flexible and open to learning, unlearning and relearning, so that they are well equipped to deal with the rapid changes of a developing world.

Focusing on the theme of the conference, namely ‘Preparing learners from disadvantaged communities for the future of work through STEMI Olympiads and competitions’ the Deputy Minister emphasised that the theme responds to the objectives of the DSI’s decadal plan that seeks to future proof education.

He said: “One of our expectations is that the papers and discussions at this conference offer practical ideas on how best to respond to the challenge of education and skilling for the future of work, against the background of rapid changes in the world of technology, social, economic, and other challenges facing society.”

The Deputy Minister outlined three areas of focus that require urgent attention and policy formulation by policymakers, as well as decision makers.

The first is the lack of transformation in STEMI Olympiads and competitions. He stated that there is an urgent need for more decisive action to address matters of inclusivity in a broader sense, such as the involvement of learners from quintile one, two and three schools in rural and township areas. He reminded delegates that at the 2021 conference, delegates were encouraged to be more inclusive in their events and activities and that deep reflection was needed on the resolutions and discussions from previous conferences to see if progress is being made.

The second area of focus identified by the Deputy Minister was the need for presenters and researchers at the conference to be bold enough to critically engage with the status quo by being open to positive critique, discussion, and advice from conference delegates.

“Equally important, is the need to encourage conference delegates to share their experiences of what works and what does not and to come forward with practical proposals to address the known challenges,” added the Deputy Minister.

The third requirement identified was for the entire community of practice to debate and deliberate purposefully towards a set of outcomes or conference resolutions that can get stakeholders to start working on solutions that can be implemented towards preparing learners, especially from marginalised rural and peri-urban areas, to be ready for the future of work.

“Currently, only about 500 000 learners participate in Olympiads and competition on an annual basis, which is very disturbing if we consider the fact that there are close to thirteen million learners in the basic education sector,” stated the Deputy Minister.

The DSI’s expectation in this regard is for organisers of Olympiads and competitions to embrace digital technologies and make sure that their activities reach those young people in the most remote parts of our country. This can be done by ensuring entry fees are affordable and opening platforms for participants. Much more work must be done to include learners and educators from all provinces and regions as the DSI envisages a landscape where many more schools and school going young people participate in Olympiads and competitions.

Before officially declaring the event open and wishing participants well in their deliberations over the three-day conference, the Deputy Minister concluded by saying: “It is our expectation that through this conference and other platforms, the community of practice will help us break through the barriers and increase participation in such events to at least one million participants by the time the next conference sits.”

In her keynote address, **Professor Tebogo Mashifana** pleaded with the conference organisers to ensure that deliberations and discussions of the conference do not end with the conference, but used to create a just world and future, in preparing learners from primary and high schools for the future of work.

She indicated that training, capacity development and transferring of skills should begin at primary school level.

Exposing learners to STEM from primary school level will increase the number of students who will pursue related careers

She further highlighted a grey area in the education system in which learners not only don’t have knowledge of career fields, but don’t know what STEM is. This causes a vicious cycle of poverty in rural and township areas and continues to strike the poorest of the poor, as those who are systematically denied equal access to education. It is a massive and unjust divide in the education system.

The second keynote speaker, **Dr Nehemiah Latolla** delivered an address on the second day of the conference and shared the following points: Before teaching and learning, a humanising pedagogy exercise needs to take place

- Communities should be included in science education
- Invitation of community knowledge to the classroom to teach indigenous knowledge
- Excitement fuels the engine of inquiry-based learning, and enhances the teaching to avoid redundancy

He concluded his address by saying “taking advantage of community-based knowledge and skills, help build on the learning and teaching experience in a fun and interesting way. This ensures indigenous knowledge systems are sustained, as it reflects the involvement and engagement of the community in STEM learning”

The third keynote speaker, **Professor Shawren Singh** addressed the conference on the third day on the topic “Empowering Communities of Practice: The Knowledge Café as a Catalyst”.

Prof Singh explained what a Community of Practice (COP) in STEM is under the following headings:

The WHO -
Groups of people sharing a common concern, a set of challenges, or a passion about a topic, and who wants to deepen their understanding and expertise in the area by interacting.

The WHAT -
Groups of people who share an interest or a passion which increase their understanding of the area through focused discussion and shared experiences. The goal is to create a body of shared expertise and promote best practices.

The WHY -
Creation of an inclusive community with a commitment to improve STEMI will create a safe space to explore and create ideas, relationships and materials.

The HOW -
the speaker proposed the use of a Knowledge Café; a way of fostering knowledge sharing, face-to-face knowledge exchange, and a conversation and networking opportunity.

Dr Sibusiso Manzini, Chief Director: Human Capital & Science Promotion at the Department of Science and Innovation recognised the participation of various organisations in the conference and applauded delegates for sacrificing their time and effort to invest in children’s better and brighter futures. He emphasised the need for more research to be done on the impact of STEMI education on learners. He further said “unemployment is complex, and also the lack of skills to drive an effective economy. We must elevate the ambitions of learners to broaden studies in STEM careers”

5.2. THE CONFERENCE PROCEEDINGS

The proceedings of the conference were based on the four sub-themes. A summarised version of the proceedings is outlined below:

5.2.1. SKILLS FOR THE FUTURE OF WORK

- Ensure you target the correct audience to equip them with skills suitable for the future of work. Prioritise learners from quintiles 1-3.
- Compile a list of rural schools, undertake advocacy in these schools followed by training.
- The community of practice needs to look at skills for the next five years and not three years as an investment in capacity building so that there are continuous science engagement activities in communities.
- Enforce teacher capacitation through implementation of continuous professional teacher development
- Encourage collaboration within schools by having well equipped schools adopting disadvantaged schools to foster peer to peer skills transfer, sharing of available resources, and benchmarking of best practice.
- Organise educators’ visits to industries for them to be exposed to the field of work so that they can share such information with their learners.
- Learners must be encouraged to consider technical colleges to gain vocational skills.

5.2.2. BRIDGING THE DIGITAL DIVIDE TOWARDS EDUCATION WITHOUT BOUNDARIES

- The community of practice must consider frugal science, which is using the technology around you to do better and great things.
- Offline based digital tools such as memory cards and devices with internal memory should be utilised as access points to e-learning materials. Digitisation should not be introduced as a new concept that comes with extra work. It must be incorporated in the curriculum; for example, learners submitting typed assignments instead of handwritten ones.
- Encourage schools to embrace the e-library project by the Department of Education that is providing educators with access to e-learning materials.

- Conduct analyses of learner needs to address the challenges that learners are facing. Find mechanisms to resolve connectivity challenges for schools in areas where there is poor network coverage. Collaboration with network coverage service providers encouraged to address the issue

5.2.3. TRANSFORMING THE LANDSCAPE THROUGH PARTNERSHIPS AND COLLABORATIONS

- Collaborate with relevant stakeholders to form After School Science Clubs to foster a culture of learning as well as to promote and provide support for STEM education.
- Foster collaboration using virtual platforms for training of stakeholders, and also utilise virtual platforms to facilitate mentoring and coaching for learners.
- Establish a forum for use by schools to share their STEMI awareness related needs, for example social media platforms, etc.
- Contact private sector/ businesses to contribute to education initiatives.
- Teach learners the skill of “selling”, not just as entrepreneurs but also to sell themselves/ their skills in an interview.
- The community of practice should seek to invite and involve social scientists as well as the department of communications at the next conference(s). Strengthen partnerships and collaboration by working hand-in-hand with communities and stakeholders to avoid imposing ideas but rather to collaborate.

5.2.4 VOLUNTEERISM – A VEHICLE FOR SUSTAINABLE GROWTH

- The status of volunteerism in South Africa was highlighted and revealed that there are few volunteers in the country at about 4% of the population according to Stats SA. It is further indicated that more women are likely to volunteer compared to men. Most of the volunteers are from affluent areas.
- There must be a collaborative effort between the youth and older people doing volunteer work and the young should be encouraged to volunteer. Volunteerism is not only about money, those with less financial means can volunteer their time.
- Established organisations need to collaborate with community based organisations.
- The Department of Basic Education (DBE) should consider having a module on volunteerism as part of Life Orientation.
- A volunteerism course can be established at HEIs or accredited institutions.
- Volunteers should have passion and be able to share knowledge on the ground and promote resourcefulness.

- Department of Science and Innovation (DSI) and NRF-SAASTA should liaise with the DBE to get volunteer graduates, who will mainly focus on promoting science in schools. The graduates should be trained to become coaches and mentors at schools to increase mass participation in Olympiads and fairs.
- A culture of volunteerism should be sustained by using volunteers to create clubs such as STEAMI/STEMI clubs, reading and writing clubs, and career clubs amongst others.

- Non-Government Organisations (NGOs), volunteer individuals and other organisations should work with NRF-SAASTA intern journalists to cover their volunteer workstories.
- Volunteers placed around the country at schools and science centres must be supported in terms of resources and recognition so as not to be lost from the system.

6. CONFERENCE FEEDBACK

Figure 2. Below shows the number of participants per province based on information provided during the registration at the actual conference. One hundred and seventy-nine (179) delegates indicated the province from which they were coming from, and 95 delegates did not specify which province they are from. Of these 95 delegates, 85 were online participants. The online daily attendance registration form did not make provision for the province field for participants to indicate.

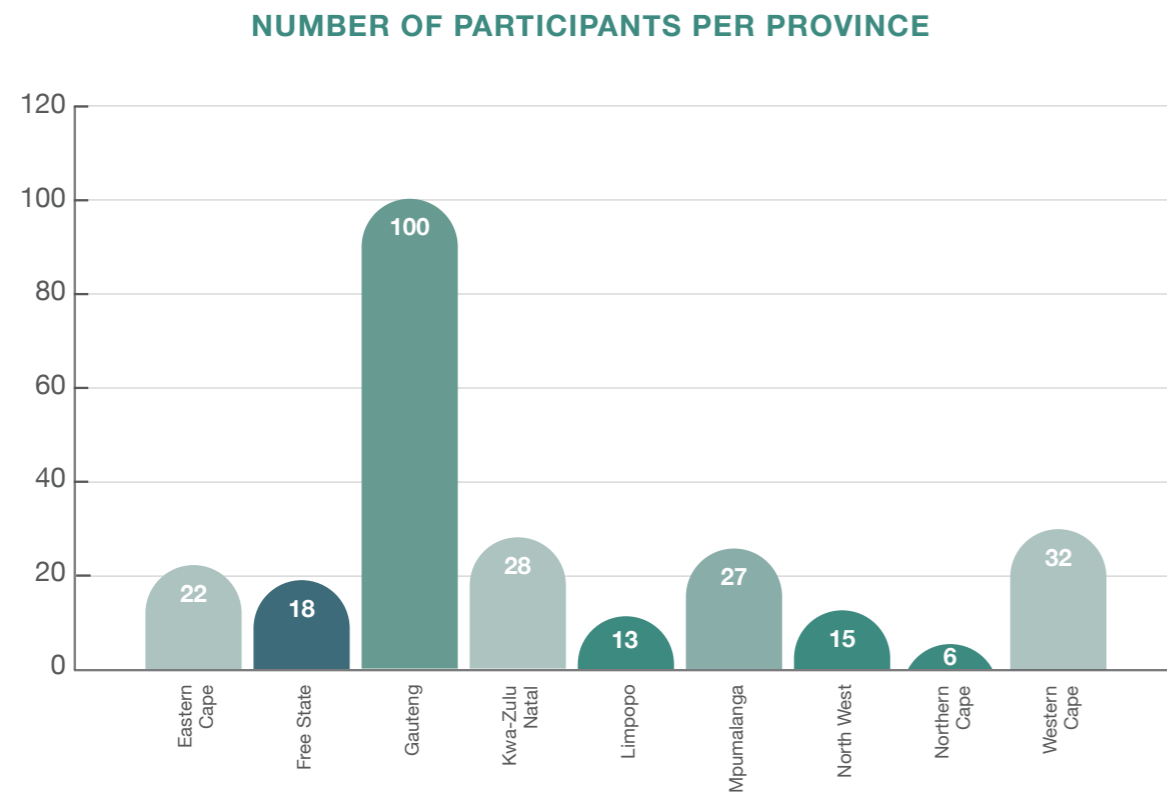


Figure 2: The number of participants per province in South Africa: 2023 STEMI CoP

TOTAL NUMBER OF PARTICIPANTS PER MUNICIPAL DISTRICT

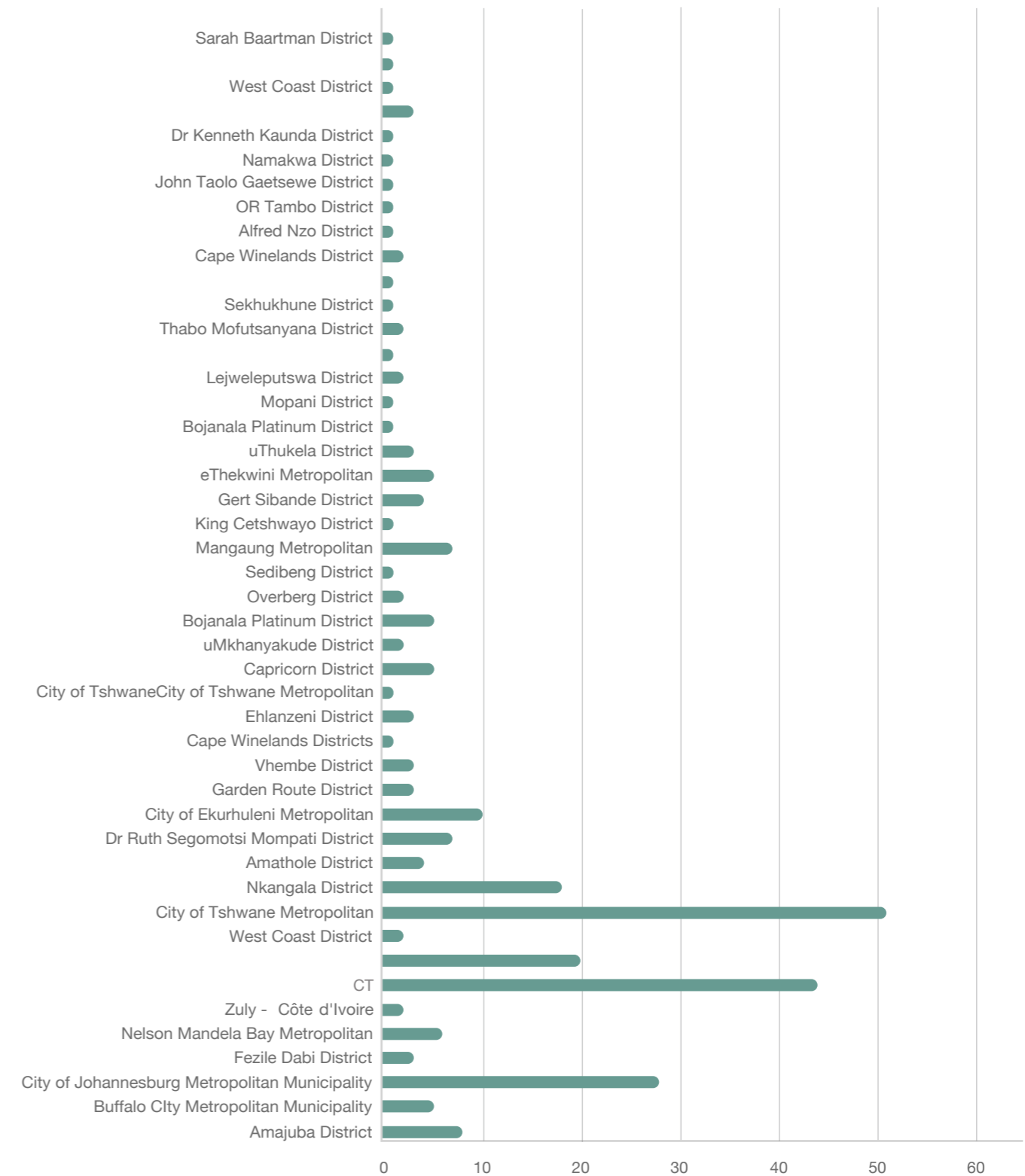


Figure 3: The number of participants per municipality district: 2023 STEMI CoP

The figure above shows that a large number of participants were from City of Tshwane Metropolitan Municipality, followed by City of Johannesburg Metropolitan Municipality and City of Cape Town Metropolitan Municipality.

A total of 45 municipal districts were represented at the conference.

Other sectors that participated in the conference included non-governmental organisations, associations, private companies, professional bodies, teacher unions, IT and communications sectors, etc.

Refer to appendix 10.3 for a list of participating organisations.

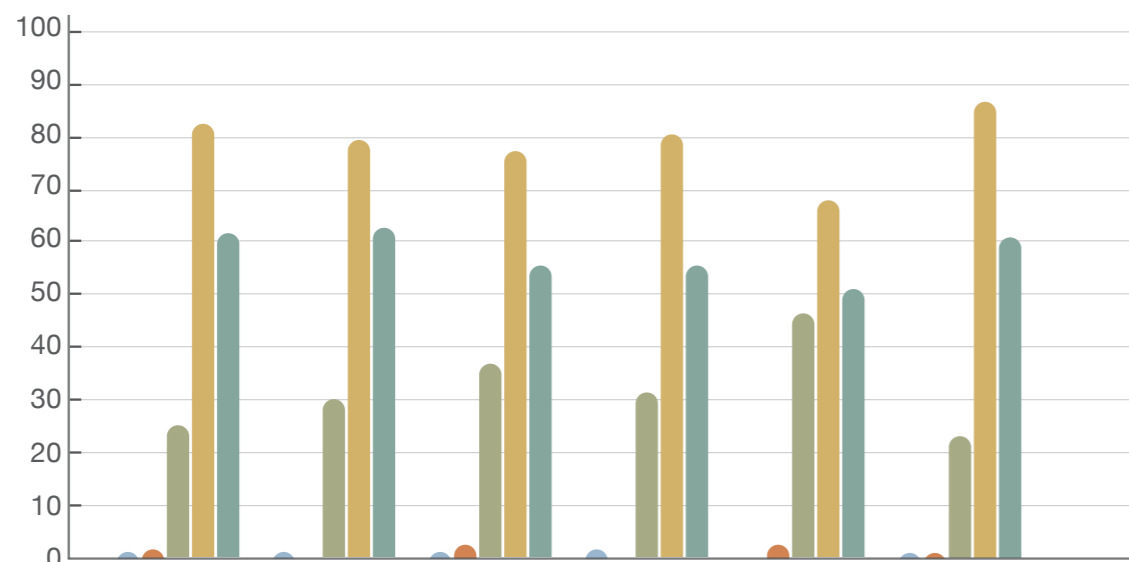
SECTOR	Higher Education Institutions	Government Departments	Olympiads Competitions Organisers (ASTEMI)	Science Centres	Science Councils and National facilities
NUMBER ORGANISATIONS	12	2	12	18	8

Table 3: Different sectors that participated in 2023 STEMI CoP conference

6.1. OVERALL EVALUATION

Overall, the content of the conference was rated exceptionally well as per figure 4 below. Information, presentations and discussions were in line with the four sub-themes and a broader theme of the conference. Participants confirmed that the engagements between presenters and audience members were engaging while there was also successful utilisation of digital technologies. Participants also confirmed that the conference still serves as a platform to share best practices. The conference has proved that although individual conference participants drive networking, the conference continues to provide a platform to establish new relationships and nurture existing relationships through engagements.

OVERALL CONFERENCE SATISFACTION ANALYSIS



	Relevance of information, presentations and discussions to the theme	Engagement between presenters and audience members during Conference Sessions	Successful use of digital technologies during the Conference	Contribution towards a community of practice by providing a platform to share best practices	Provision of the platform to network with other delegates	Overall Experience of the Conference Sessions
Very Poor	1	1	1	2	0	1
Below Average	2	0	4	0	4	1
Average	25	30	36	32	46	23
Above Average	83	78	76	80	68	86
Excellent	62	63	55	55	51	61

Very Poor Below Average Average Above Average Excellent

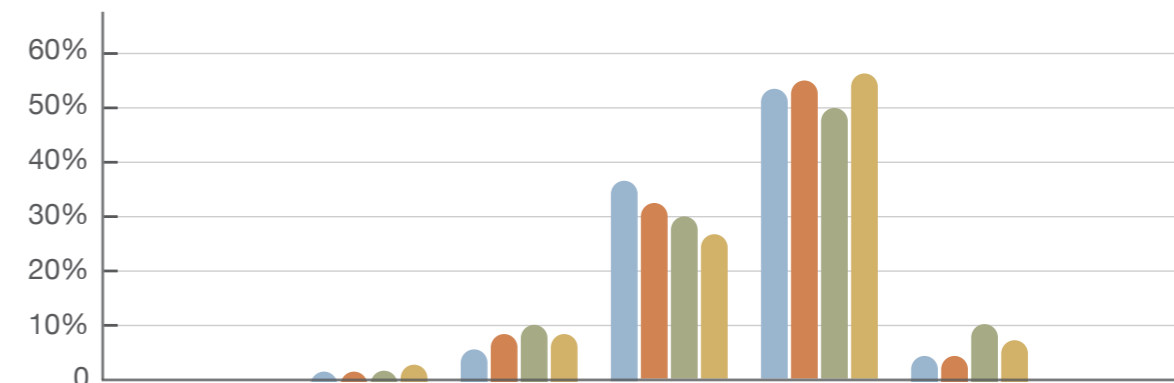
Figure 4: Overall conference satisfaction

6.2. LINKING CONFERENCE SUB-THEMES TO OBJECTIVES

Each year, the conference programme includes a review on how presentations respond to the theme and sub-themes of the conference. In 2023, the report back session took place on day three of the event. Participants were asked to respond to the theme statements as per their attendance over the two days on a scale from 'very poor' to 'excellent' or 'I did not attend this session'.

Figure 5 below provides context to the participants' understanding of both the overall conference objectives, as well as the sub-themes and how they responded to the objectives. It can be deduced from the response rate that sub-theme 1 responded to objective 1 of the conference, sub-theme 2 responded to objective 2, sub-theme 3 responded to objective 3, and sub-theme 4 responded to objectives 4 and 5 of the conference.

REPORT BACK SESSION ANALYSIS



	Very Poor	Below Average	Average	Above Average	Excellent	I did not attend this session
Theme 1: "Skills for the future of work"	0.00%	1.39%	5.56%	36.11%	52.78%	4.17%
Theme 2: "Bridging the digital divide towards education without boundaries"	0.00%	1.39%	8.33%	31.94%	54.17%	4.17%
Theme 3: "Transforming the landscape through partnerships and collaborations"	0.00%	1.41%	9.86%	29.58%	49.30%	9.86%
Theme 4: "Volunteerism - a vehicle for sustainable growth"	0.00%	2.78%	8.33%	26.39%	55.56%	6.94%

- Theme 1: "Skills for the future of work"
- Theme 2: "Bridging the digital divide towards education without boundaries"
- Theme 3: "Transforming the landscape through partnerships and collaborations"
- Theme 4: "Volunteerism - a vehicle for sustainable growth"

Figure 5: Report back session (linking the 4 subthemes to the objectives of the conference)

CONFERENCE EXPECTATIONS MET

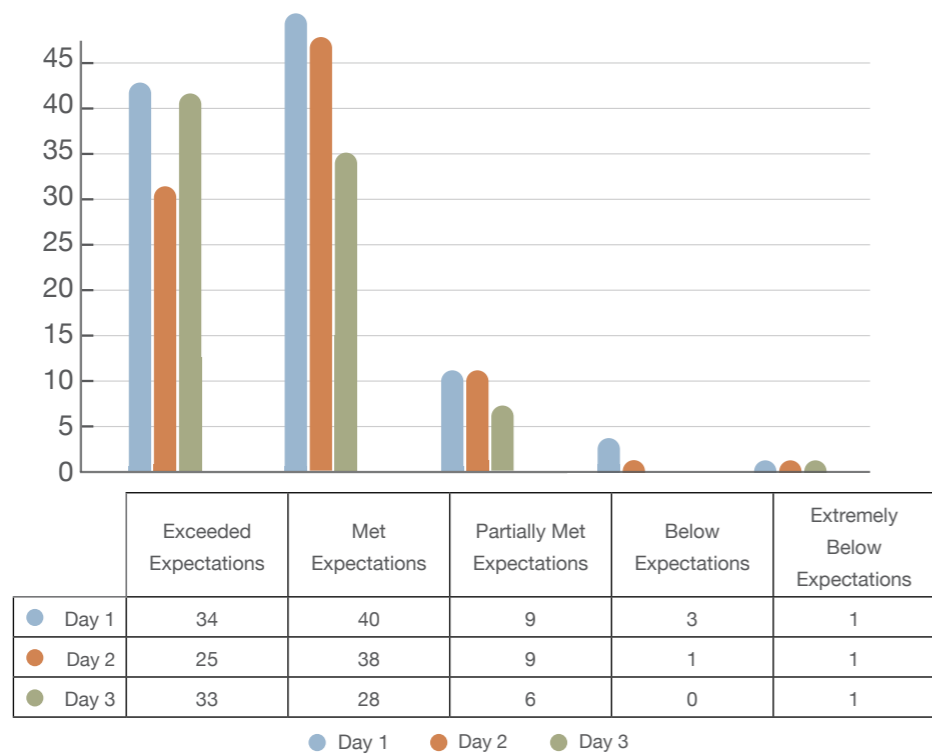


Figure 6: Conference Expectation met

The majority of the participants' expectations were met. Considering that the 2023 conference was a hybrid one, participants, especially those that attended virtually, were asked to rate the effectiveness of the virtual platforms used and the figure below confirms that the digital technologies were fit for purpose that confirms a smooth process. It must be noted though that a large portion of the participants face-to-face participants.

6.3. MODE OF CONFERENCE

The 2023 STEMI CoP conference was the first hybrid conference. However, daily evaluation reports indicated that participants would prefer to participate in face to face events in the future.

FUTURE CONFERENCE ATTENDANCE

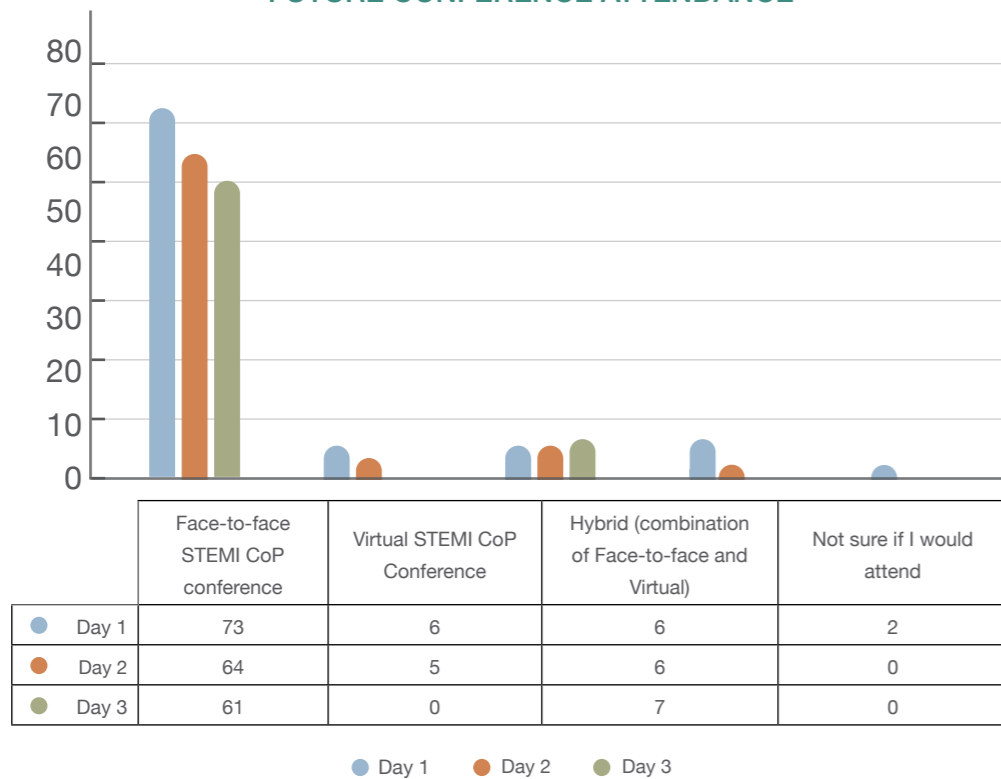


Figure 7: Future conference attendance

7. CONFERENCE RESOLUTIONS

The STEMI Development and Support Framework for STEMI Olympiads and related competitions was adopted.

Key issues that emerged:

WHAT	HOW	WHO	WHEN
Support clubs <ul style="list-style-type: none"> STEMI / STEAMI clubs Reading and writing clubs Career clubs 	<ul style="list-style-type: none"> Attract teachers from any subject Provide tool-kits Building on volunteerism by partnering with community-based organisations 	Focused / MST Schools Through Provincial Department of Education (PDoE) Supported by NRF-SAASTA and partners	From Jan 2024
Encouraging teacher creativity and problem-solving demonstration/ expos using knowledge café <ul style="list-style-type: none"> Lessons Tools Platforms Solutions Activity (Curricular & Extra-curricular) 	Sharing of information amongst the top 30-50 teachers per province National Top 100 teachers with their best work to share	PDoE, STEMI CoP, and Professional Learning Communities / teacher organisations	March- April Holidays (2024) (provincial) June - July (2024) – national gathering Alternate with the STEMI Community of Practice Conference
Develop a Community of Practice Repository/ Platform Re-establish an online platform for engagement and storage for Community of Practice members	Platform for Community of Practice for engagement outside conferences Repository for Community of Practice Members Repository for Teachers	NRF-SAASTA NRF-SAASTA NRF-SAASTA	Start by October 2023
Take Advantage of Digital platforms Use the free or nearly free platforms e.g. <ol style="list-style-type: none"> MyTutor.chat (competitions) Arduino Science Journal (experiments) 	Develop self-help manuals Training must be done in a cascading model (from national – provincial – district – circuit)	Hosts of platforms and websites to develop user manuals and provide training.	By January 2024
Engage Cell Phone providers	Improve network access where possible	Community of Practice Representatives	By January 2024

8. EMERGING MATTERS AND ISSUES

- The execution of the conference resolutions – the community of practice requested that measures should be put in place to ensure that all conference resolutions are implemented. At the next conference, a progress report should be presented on the implementation of the conference resolution.
- The issue of visibility of the Community of Practice as well as Olympiads and fairs on social media was highlighted.
- The community of practice needs to contextualise what is meant by “disadvantaged”.

9. APPENDICES

9.1. LIST OF ORGANISATIONS

247ERICPOINTCOM	Infinity	Saldanha Science Centre
Adapted Inclusive Robotics	Inkcubeko Youth and Science Centre	SAMF
African Network of Young Researchers	Institute of Information Technology Professionals South Africa (IITPSA)	SANBI-NZG
AIMSSEC	Iziko Primary School	SANSA
Al-Asr Educational Institute	Jeppe Boys	SANSA Hermanus
Apex High School	JNF Walter Sisulu Environmental Centre	Sasol Foundation
ArcelorMittal Foundation NPC	Kosi Bay Science Mathematics and Technology Centre	Science for Ubuntu
ArcelorMittal Science Centre - Newcastle	KZN DoE - King Cetshwayo District Office	Sci-Enza University of Pretoria
ArcelorMittal Science Centre Sebokeng	Laerskool Culembeeck	Sinethemba Secondary School
ASSAf	Limpopo Department of Education	Sipheni Primary School
Boitjhorisong Resource Centre	Live.Love.Believe NPO	Sizakancane Primary School
Bokamoso Science & Technology Education Centre	Lower Brooksnek Primary School	South African Mathematics Foundation
Bokgoni Technical Secondary School	Madibal	Tebogwana Senior Secondary School
BOSTEC	Madibeng Sub District	The Artist Ville Media
Brain Waves Development	Mancosa	Thibogang Primary
Bright Beginnings Primary	Mandela Bay Development Agency	Thinking Schools South Africa
Cape Town Science Centre (CTSC)	Maths Olympiad	Tiphembeleni Primary School
Care for Education	Michell's Plain High School	Transnet SOC Ltd
Chief Luthuli Primary	Moipone Academy	Tshepana Primary
Christoph Meyer Maths & Science centre	Mondi Science, Career Guidance and FET Skills Centre	Tshwane University of Technology
Colenso Primary	Mpumalanga Department of Education	Umgungundlovu TVET
Conquesta Olympiads	Mpumalanga Department of Education - MSTA	UNISA
CSIR	MSM Solutions Pty Ltd	Unisa Science Engagement Centre
Curro Holdings	MyTutor.chat	University of Cape Town
Dannhauser Secondary	Ndondakusuka Secondary School	University of Fort Hare - South Africa
Department of Basic Education	NECSA	University of Johannesburg
Department of Water and Sanitation	Nelson Mandela Metropolitan University	University of KwaZulu-Natal
Department of Science and Innovation	New Dawn Skills Hub	UKZN Science and Technology Education Centre
Eastern Cape Department of Education	Nka'Thuto EduPropeller	University of Stellenbosch
Ekujabuleni	Nobuhle Primary School	University of the Free State
Emthunzini Primary School	NRF-SAAO	Unizulu Science Centre
Eskom Expo for Young Scientists	NRF-SAASTA	V4 Group Pty Ltd
FEMSSISA NPC	NRF-SAEON	Victory Park School
FOSST Discovery Centre	Parkfields Primary School	Vista High School
Free State Department of Education	Penreach Shalamuka STEAM Centre	Western Cape Education Department
Free State Empowerment & Investments	Pinagare High School	Woodview Primary
Gauteng Department of Education	Pinagare Secondary School	WSEC
Glenwood House	PPO	YESA
GMMDC at Nelson Mandela University	QTN (PTDI) ANSS Centre	Zenzeleni Primary School
Grenville High School	Rhodes University	Zhongguancun Science Park
Hands on Tech	Rural Urban Foundations	Zweliwelile Senior Secondary School
Hangalakani Primary	SAICE	

9.2. VIDEO RECORDINGS AND PRESENTATION



9.3. MONITORING AND EVALUATION REPORT



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