STEMI Community of Practice Conference
04 – 06 JULY 2023 | RH HOTEL, PRETORIA

PROGRAMME

"Preparing learners from disadvantaged communities for the future of work through STEMI Olympiads and competitions"

S.T.E.M.I
Community of Practice
Conference

#STEMICOP2023

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

ASTEMI
SCIENCE TECHNOLOGY ENGINEERING
MATHEMATICS INNOVATION
OLYMPIADS & COMPETITIONS

NRF | **SAASTA**
National Research Foundation | South African Agency for Science and Technology Advancement

DAY 1: TUESDAY, 04 JULY 2023	
Focus: "Skills for the future of work & Bridging the digital divide towards education without boundaries"	
09:00 – 10:00	**Arrival, Registration and Tea**
Programme Director: Mr James Tlhabane (NRF-SAASTA)	
10:00 – 10:05	Welcome
10:05 – 10:20	Overview of STEMI Community of Practice: **Mr Moloko Matlala (NRF-SAASTA)**
10:20 – 10:25	Introduction of the Deputy Minister: **Ms Joyce Khunou (NRF-SAASTA)**
10:25 – 10:45	Conference Opening: **Deputy Minister: Higher Education, Science & Innovation, Mr Buti Manamela**
10:45 – 11:05	Message from the Managing Director NRF-SAASTA: **Dr Mamoeletsi Mosia**
11:05 – 11:10	Introduction of Keynote Speaker: **Programme Director**
11:10 – 11:30	Keynote Address: **Professor Tebogo Mashifana:** *"Strategies the basic and higher education sectors should implement to equip primary and high school learners with skills for the future of work".*
11:30 – 11:50	Questions & Discussion
11:50 – 12:10	***Key Message and Objectives of the Conference*** **Dr Sibusiso Manzini: Chief Director Human Capital & Science Promotion: DSI**
12:10 – 12:30	*Questions & Discussions*
12:30 – 12:45	**Presentations by STEMI Olympiads and Fairs Alumni/Participants**
12:45 – 13:30	Lunch Break
Programme Director: Mr James Tlhabane (NRF-SAASTA)	
13:30 – 13:35	Welcome and Session Brief

Room 1 Session Chair: Dr Krishnie Naidoo (ASTEMI)			Room 2 Session chair: Mr Tebalo Tsatsi (NRF-SAASTA)	Room 3 Session chair: Mr Gaopalelwe Santswere (NECSA)
13:35 – 14:35	Academic: (15min) **Determinants of the intention to choose a career in the marine sciences: The role of emotional intelligence, career interest and attitude amongst high school students** Dr Willie Chinyamurindi (University of Fort Hare)	Non-Academic: (15min) **Using Robotics Competitions to Advance Physics Education** Dr Patricia Gouws & Professor Hugo Lotriet (University of South Africa – I-SET)	Non-Academic: (15min) **How can a Raspberry Pi be used as a Digital Suitcase to provide schools with an internet experience?** Dr Ronald Noel Beyers (Young Engineers and Scientists of Africa)	Demonstration: (50 min) **Demonstrating how Virtual reality, Augmented reality and Robotics and coding can be applied to transform South African Education** Mr Vincent Mbonye & Raeesa Ebrihim (Mancosa School of Education)	Demonstration: (50 min) **How to use your cellphone as a tool for science or technology projects** Dr Tanja Reinhardt (UKZN – Science and Technology Education Centre)
	Discussion (15 minutes)			Discussion (10 minutes)	Discussion (10 minutes)
14:35 – 14:40	**Delegates move to different break-away rooms (5 minutes)**				

14:40 – 15:40	Room 1 Session Chair: MST Mpumalanga Education Department			Room 2 Session Chair: MST Free State Education Department	Room 3 Session Chair: MST Western Cape Education Department
	Academic: (15 min) **Optimising online learning in an online Mathematics Problem Solving course for primary school teachers** Presenter: Dr Isabel Tarling (Limina Education Services)	Non-Academic: (15min) **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)	Non-Academic: (15min) **Exploring a mentorship model for skills transfer through targeted interventions: How Olympiads and Competitions can reach disadvantaged learners through science camps** Mr Fredy Mashate & Dr Sure Mupezeni (Eskom Expo for Young Scientists)	Demonstration: (50 min) **Virtual Chemistry Experiments for Schools and Olympiad Training** Dr Ajay Bissessur (University of KwaZulu-Natal)	Demonstration: (50 min) **Your First Science Fair Investigation: An online programme to develop inquiry competence through engagement in the Science Expo** Facilitator: Dr Angela Stott (University of Free State)
	Discussion (15 minutes)			Discussion (10 minutes)	Discussion (10 minutes)
	Delegates move to different break-away rooms (5 minutes)				
15:45 – 16:35	Room 1 Session Chair: Mr Armstrong Mashakeni (ASTEMI)		Room 2 Session Chair: Ms Gugu Mtshweni (NRF-SAASTA)		Room 3 Session Chair: Mr Danie Heymans (ASTEMI)
	Non-Academic: (15 min) **Challenges in administering continuousl assessment through digital technology in quintile one schools during the COVID-19 pandemic** Ms Mbali Pridy Mbonani and Dr Sammy Khoza	Non-Academic: (15min) **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?** Presenter: Mr Lyndon Manas (Eskom Expo for Young Scientists) & Ms Suanne Rampou (Western Cape Department of Education)	Academic: (15min) **Diminishing the overarching idea of quadratics by teaching the short cuts when factoring the prototype quadratic expressions** Dr Aubrey Sifiso Vilakazi (Ndondakusuka Secondary School)	Academic: (15min) **Cyber STEAM Club - A Collaborative model to prepare disadvantaged communities for the future of work through Olympiads and Competitions** Presenter: Dr Tanja Reinhardt (UKZN – Science and Technology Education Centre)	Workshop: (50 min) **MyTutor.chat, and growing the reach of Kangaroo sans Frontiere in Africa** Mr Gregory Becker (MyTutor.chat)
	Discussion on presentations (20 min)				
16:35 – 17:00	**Plenary discussions – Sharing session – Q&A:**				
17:00 – 17:05	Networking Briefing: **Programme Director**				
17:30 – 19:00	Networking Session and Dinner				

Keynote Speaker Profile: Prof Tebogo Mashifana

Tebogo Mashifana PhD, is the Head of the Department of Chemical Engineering Technology, an Associate Professor, and a researcher at the University of Johannesburg (UJ). She holds a Doctoral degree in Engineering, a Master of Business Administration degree, a Postgraduate Diploma in Higher Education, and a certificate in Artificial Intelligence for Industry. Prof Mashifana's research focuses on circular economy approach seeking for solutions to beneficiate solid wastes, wastewater treatment, and resource recovery from waste.
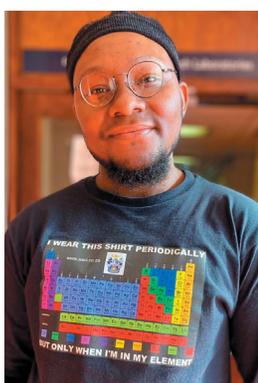
Prof Mashifana has received several awards, including the UJ Vice-Chancellor's distinguished award for "Promising Young Teacher of the Year", the National Research Foundation (NRF) award for "Research Excellence Award for Early Career / Emerging Researchers" and many other top position awards.

She is a founding member of Dr Tebogo Mashifana & Partners Foundation, a Non-Profit organization focusing on community upliftment projects and youth empowerment. She devotes her time to mentoring and encouraging young girls and women to pursue careers in STEM and empowering them through skill transfer and human capacity development.

DAY 2: WEDNESDAY, 05 JULY 2023				
Focus: "Transforming the landscape through partnerships and collaborations & Volunteerism – a vehicle for sustainable growth"				
Programme Director:	**Mr Daniel Matsapola (South African National Space Agency)**			
09:00 – 10:00	Arrival, Registration and Tea			
10:00 – 10:10	Welcome and Session Brief			
10:10 – 10:15	Introduction to the Guest Speaker			
10:15 – 10:40	Guest Speaker: **Dr Nehemiah Latolla:** *"Community Engagement as a Central Practice in STEMI Learning and Teaching"*			
	Room 1 Session Chair: Dr Maria Kekana MST Academy (Mpumalanga)			**Room 2** Session Chair: MST Gauteng Department Education	**Room 3** Session Chair: MST Limpopo Department of Education
10:40 – 11:40	Academic: (15min) **Development of knower legitimation among South African township learners during a Science Expo project planning intervention** Dr Angela Stott (University of Free State)	Non-academic: (15min) **Value and limits of volunteerism: Lessons from the South African National Geography Olympiad** Prof Tracy McKay & Mr Milton Milaras (University of South Africa)	Non-academic: (15 min) **Volunteerism by mentors – Working towards self-sustainable initiatives in Olympiads and related competitions** Ms Mmabatho Moloedi (Eskom Expo for Young Scientist)	Demonstration: (50 min) **Coding & Robotics** Mr Simba Mhandu: University of Johannesburg	Demonstration: (50 min) **Science Centres capacity building workshop** How can science centres be supported to innovatively include the youth who are not in education, employment nor training, the "NEET". Mr Felix Spies (Split Second Science Education Foundation)
	Discussion (15 minutes)			Discussions (10 minutes)	Discussions (10 minutes)
11:40 – 11:45	**Delegates move to different break-away rooms (5 minutes)**			

11:45 – 12:30	**Room 1** **Session Chair: MST KZN Department of Education**		**Room 2** **Session Chair: Mr Rofhiwa Raselavhe (NRF-SAASTA)**		**Room 3** **Session Chair: MST Eastern Cape Department of Education**	
	Non-Academic: (15min) **Self-sustainable volunteer models to support and grow Olympiads and competitions in disadvantaged communities** Dr Krishnie Naidoo (Eskom Expo for Young Scientists)	Academic: (15min) **Learner Skills Galore in Free State made possible by partners** Presenter: Dr Cynthia "Xoli" Malinga (Sasol Foundation)	Non-Academic: (15 min) **Promoting collaboration and providing opportunities to enable learners from disadvantaged and rural schools to participate in expos and other science competitions** Presenter: Mr Chris McCartney (Eskom Expo for Young Scientists) & Ms Kogie Govender (South African Environmental Observation Network)	Non-Academic: (15min) **Learner driven, Teacher Led and Partner Optimised – Exploring the STEM Club Network and its transformative impact on disadvantaged communities.** Presenter: Ms Olga Peel (Cape Town Science Centre) & Mr Don Haripersad (Western Cape Department of Education)	Non-Academic: (15 min) **How can we use partnerships and collaborations to reach disadvantaged communities so that they benefit and are prepared for STEMI related future of work?** Presenter(s): Dr Stefanus Barnard (AIMSSEC) & Mr Herman Bosman (South African Mathematics Foundation)	Non-Academic: (15 min) **Towards a framework for implementing partnerships to increase participation, performance, and retention of learners from previously disadvantaged communities in STEM competitions** Presenter(s): Mr Raven Motsewabangwe (Eskom Expo for Young Scientists)
	Discussions (15 minutes)		Discussions (15 minutes)		Discussions (15 minutes)	
12:30 – 13:15	**Lunch**					
13:15 – 13:45	**Presentations by STEMI Olympiads and Fairs Alumni/Participants**					
	Panel Discussion: What type of skills do we envisage for the future of work?					
	Names of panel members and their credentials: Dr N Latolla (NMU); Prof. Tebogo Mashifana; Prof S Singh					
13:45 – 14:15	**Panel Presentations**					
14:15 – 14:45	**Plenary discussions – Sharing session – Q&A**					
14:45 – 14:50	Commissions Brief: **Programme Director**					
14:50 – 15:05	Afternoon Tea					

Commissions: Break-away session

15:05 – 17:00	**Room 1:** **"Skills for the future of work"** **Facilitator: Mr Tebalo Tsatsi (NRF-SAASTA)**	**Room 2:** **"Bridging the digital divide towards education without boundaries"** **Facilitator: Mr Sivuyile Manxoyi (NRF- SAAO)**	**Room 3:** **"Transforming the landscape through partnerships and collaborations"** **Facilitator: Mr Sizwe Khoza (NRF-SAASTA)**	**Room 4:** **"Volunteerism – a vehicle for sustainable growth"** **Facilitator: Mr Patrick Rasehwete (SAMF)**

Guest Speaker Profile: Dr Nehemiah Latolla

Dr. Nehemiah Latolla is a current Postdoctoral Fellow in Chemistry at Nelson Mandela University (NMU) where he received his Ph.D. (Chemistry) for his research on the phytochemistry of indigenous medicinal plants toward drug discovery for the management of diabetes. His research has been awarded the best poster prize on the theme of Biodiversity and Natural Products at the 3rd Commonwealth Chemistry Poster Conference 2022.

He is passionate about teaching, guided by the Humanising Pedagogy, and has lectured General Chemistry and Organic Chemistry modules at NMU since 2017. His passion for science and its effective communication with the public has resulted in his participation and winning of FameLab International 2022. This has led to his engagement in the Cheltenham Science Festival 2023 in Cheltenham, UK, where he was able to engage with the foremost thinkers in the STEM fields while also engaging teachers and young minds in attendance. Dr. Nehemiah Latolla was born in Johannesburg and now resides in the windy city of Gqeberha.

Day 3: Thursday, 06 July 2023	
Programme Director: Mr Parthy Chetty	
09:00 – 09:10	Welcome and Session Brief
09:10 – 09:15	Keynote Speaker Introduction
09:15 – 09:40	Keynote speaker: **Professor Shawren Singh: "*Empowering Communities of Practice: The Knowledge Café as a Catalyst*"**
09:40 – 09:55 09:55 – 10:10	Report back on Theme 1: **"Skills for the future of work"** *Discussion, Questions & Recommendations*
10:10 – 10:25 10:25 – 10:40	Report back on Theme 2: **"Bridging the digital divide towards education without boundaries"** *Discussion, Questions & Recommendations*
10:40 – 11:00	***Tea Break***
11:00 – 11:15 11:15 – 11:30	Report back on Theme 3: **"Transforming the landscape through partnerships and collaborations"** *Discussion, Questions & Recommendations*
11:30 – 11:45 11:45 – 12:00	Report back on Theme 4: **"Volunteerism – a vehicle for sustainable growth"** *Discussion, Questions & Recommendations*
12:00 – 13:00	**Summary of the Discussions, Recommendations & Conference Resolutions**
13:00 – 13:15	Vote of Thanks and Closure: **Mr Bersan Lesch (DSI)**
Lunch and departure	

Keynote Speaker Profile: Prof Shawren Singh

Shawren Singh PhD, is an associate professor in the School of Computing at the University of South Africa. He has spent more than 20 years teaching and researching in the Information Systems space. In 2014 he obtained his PhD, based on research into e-Government in South Africa, from the University of the Witwatersrand.

His current research has a focus on digital scholarship and e-Government. His research has been published internationally and he has presented papers at several conferences. He is currently supervising several post-graduate candidates and he is the Chair of Information Systems in the School of Computing at the University of South Africa.

Notes: