Ministry of Education, Malawi

PROGRAMME

FOR

The 22nd Conference on Mathematics, Science and Technology Education in Africa
(COMSTEDA 22)

Theme

Reimagining STEM for a Pan-African Future: Bridging Education, Innovation, and Sustainable Development Towards Agenda 2063

12th - 14th November, 2025

Venue: Bingu International Conference Centre, Lilongwe, Malawi

Professor Arthur Peter Mutharika
President of the Republic of Malawi

Distinguished international participants, esteemed scholars, educators, and innovators. It is with profound optimism and a renewed sense of purpose that I extend a warm welcome to you at the 22nd Conference on Mathematics, Science, and Technology Education in Africa (COMSTEDA 22), here in the heart of Lilongwe, Malawi, from 12th to 14th November, 2025. As your host nation, Malawi stands at the threshold of transformation, and your presence embodies the collaborative spirit essential to reimagining STEM as the bedrock of our continental renaissance. In my recent address to the Nation, I articulated a vision for Malawi's ascent: one where education liberates minds, ignites innovation, and propels sustainable development. Drawing from our legacy, we championed the Malawi University of Science and Technology as a beacon of scientific excellence. We reaffirm STEM not merely as subjects, but as pillars of national destiny. Our clarion call for a "mindset revolution" in African education prioritizing science, technology, engineering, and mathematics to industrialize our economies, resonates deeply. It aligns seamlessly with Malawi 2063, our blueprint for an inclusively wealthy and self-reliant nation, mirroring the African Union's Agenda 2063. Under this vision, Malawi will harness STEM to empower our youth, bridging knowledge gaps through competence-based curricula, free primary and secondary education, and targeted investments in research hubs. Imagine Malawian innovators tackling climate resilience with AI-driven agriculture, or engineering clean energy solutions for rural electrification. These are not distant dreams but actionable imperatives. By fostering cross-border partnerships, as exemplified by COMSTEDA's hybrid platform, we cultivate a Pan-African ecosystem where ideas flow freely, skills are co-created, and innovations scale continent-wide. Your deliberations here on equitable access, digital integration, and indigenous knowledge infusion will illuminate pathways forward. Let us depart inspired, united in the conviction that STEM education is Africa's greatest asset for equity, prosperity, and resilience.

Together, we build tomorrow.

Message from the Minister of Education, Science and Technology

Honourable Bright Msaka, S C

Esteemed delegates, distinguished educators, researchers, and partners,

It is with immense pride and joy that I welcome you to Malawi, the Warm Heart of Africa, for the 22nd Conference for Mathematics, Science and Technology Education in Africa (COMSTEDA 22). Hosting this landmark event at the Bingu International Conference Centre under the Strengthening Mathematics and Science Education (SMASE-Africa) Association is a privilege for our nation. The theme, ***'Reimagining STEM for a Pan-African Future: Bridging Education, Innovation, and Sustainable Development Towards Agenda 2063,'*** resonates deeply with Malawi's vision for education. By aligning STEM with African challenges, integrating indigenous knowledge, and fostering innovation, we empower our youth to address climate change, food security, and economic growth key pillars of Agenda 2063. This conference promises to ignite transformative ideas across five critical strands: decolonizing curricula, fostering innovation hubs, promoting gender equity, building climate resilience, and harmonizing STEM policies.

My gratitude goes to SMASE-Africa, our partners, and organizing committees for their unwavering support. To all delegates, your contributions will shape Africa's future. Let us collaborate to make COMSTEDA 22 a beacon of progress for STEM education.

Welcome to Malawi, and may this conference inspire greatness!

Message from the President SMASE – Africa

Prof. Benson Banda, PhD

Distinguished guests, honourable delegates, esteemed educators, researchers, innovators, and partners,

A warm welcome to the 22nd Conference for Mathematics, Science and Technology Education in Africa (COMSTEDA 22) here at the magnificent Bingu International Conference Centre in Lilongwe, Malawi. It is an honour to stand before you today under the auspices of the Strengthening Mathematics and Science Education (SMASE-Africa) Association, as we gather from across the continent and beyond to chart a bold path for STEM education in Africa. Our theme, 'Reimagining STEM for a Pan-African Future: Bridging Education, Innovation, and Sustainable Development Towards Agenda 2063,' is a clarion call to transform STEM education into a powerful engine for Africa's growth. This theme challenges us to align our curricula with African realities, integrate indigenous knowledge with modern technology, and empower our youth to innovate solutions for pressing issues like climate change, food security, and economic inclusion. It is a vision that resonates deeply with Agenda 2063's dream of a prosperous, integrated, and sustainable Africa—driven by skilled, innovative leaders who bridge education with practical, homegrown solutions.

COMSTEDA 22 is a vibrant platform, hosting 146 research papers that promise to spark transformative discussions on STEM education from early learning to tertiary levels. These papers, presented by you our brilliant delegates will drive homegrown research and catalyse policy and practice reforms across Africa. Our five topical strands guide this mission:

1. Decolonizing STEM Curricula, where we center African knowledge systems and sustainable practices to make education relevant and empowering.
2. Pan-African Innovation Hubs, fostering technology and entrepreneurship to tackle continental challenges like healthcare and food security while nurturing youth-led startups.
3. Gender Equity in STEM, breaking barriers to empower women and girls as leaders in Africa's sustainable future.
4. STEM for Climate Resilience, harnessing education and innovation for climate-smart solutions, from renewable energy to disaster-resilient infrastructure.
5. Policy Harmonization and Cross-Border Collaboration, uniting nations to align STEM policies and research for a cohesive, prosperous Africa.

These strands are not just themes they are a blueprint for action, aligning STEM with the aspirations of Agenda 2063.

On behalf of SMASE-Africa, I extend heartfelt gratitude to the Government of Malawi, through the Ministry of Education, for hosting this historic event. Your commitment to education and innovation sets an inspiring example. My appreciation goes to our organizing committees, country focal points, and partners for their tireless teamwork, financial support, and resources that have made COMSTEDA 22 a reality. To our delegates, paper presenters, and participants—both here in person and joining virtually thank you for choosing to be part of this milestone. Your contributions will shape the future of STEM in Africa. As we embark on this three-day journey, let us engage, innovate, and collaborate to reimagine STEM as a force for inclusion, resilience, and progress. May COMSTEDA 22 be a transformative experience, sparking ideas, forging partnerships, and inspiring more research for future conferences. Together, let us build a Pan-African STEM ecosystem that empowers our youth, honors our heritage, and drives us toward the Africa We Want.

Thank you, and welcome to COMSTEDA 22!

Prof. Sarifa Fagilde
Vice-president, SMASE-Africa

Ms. Jacinta L. Akatsa
Executive Secretary, SMASE-Africa

Dr. Mary Sichangi
Treasurer SMASE-Africa

Message from the COMSTEDA 22 Organizing Committee

Welcome to the Program for the 22nd Conference for Mathematics, Science and Technology Education in Africa [COMSTEDA 22] being held at Bingu International Conference Centre, Lilongwe, in Malawi from 12th to 14th November, 2025 under the auspices of Strengthening Mathematics and Science Education (SMASE-Africa) Association. The theme for COMSTEDA 22 is *'Reimagining STEM for a Pan-African Future: Bridging Education, Innovation, and Sustainable Development Towards Agenda 2063'.* The theme emphasizes transforming STEM education to drive Africa's development. It calls for aligning curricula with African challenges, fostering innovation, and promoting sustainable solutions. By integrating indigenous knowledge and modern technology, STEM can empower youth, enhance economic growth, and address pressing issues like climate change and food security. This vision supports Agenda 2063's goal of a prosperous, integrated Africa by cultivating skilled, innovative leaders who can bridge education and practical solutions for a sustainable, inclusive future.

The international forum focused on five topical strands:

1. Decolonizing STEM Curricula: Centering African Knowledge Systems and Sustainable Practices"
    - *Focus: Redesigning STEM education to integrate Indigenous knowledge, local contexts, and sustainability principles aligned with Agenda 2063's cultural and environmental goals.*
2. "Pan-African Innovation Hubs: Leveraging Technology and Entrepreneurship for Inclusive Growth"
    - *Focus: Strengthening regional collaboration to build innovation ecosystems that solve continental challenges (e.g., food security, healthcare) while fostering youth-led startups and digital transformation.*
3. "Gender Equity in STEM: Empowering Women and Girls as Leaders of Africa's Sustainable Future"
    - *Focus: Addressing systemic barriers to women's participation in STEM fields through policy reforms, mentorship programs, and inclusive pedagogies to achieve Agenda 2063's equity aspirations.*
4. "STEM for Climate Resilience: Building Adaptive Solutions for Africa's Environmental Challenges"
    - *Focus: Harnessing STEM education and innovation to develop climate-smart agriculture, renewable energy systems, and disaster-resilient infrastructure in line with Agenda 2063's sustainability targets.*
5. "Policy Harmonization and Cross-Border Collaboration: Advancing a Unified STEM Agenda for Africa"
    - *Focus: Creating continental frameworks for aligning national STEM policies, funding mechanisms, and research priorities to accelerate Agenda 2063's vision of an integrated, prosperous Africa.*

A total of one hundred and forty-six papers have been registered for presentation during the conference. These papers are aimed at triggering home grown researches in STEM education from early learning to tertiary levels as well as policy and Practice reflux in Africa.

We thank the leadership of the Malawi Government through the Ministry of Education for hosting the conference in partnership with SMASE-Africa. Gratitude to the conference organizing committees with membership drawn from various stakeholders including country focal point persons for teamwork during planning and implementation of the conference.

Gratitude to all the SMASE-Africa partners for support in terms of financial, material and human resources that immensely contributed to this rich event. To SMASE Africa delegates, participants, and paper presenters, we are grateful that you chose to be part of this great milestone and for valuable inputs during this blended conference.

We hope that COMSTEDA 22 will be wonderful learning experience and look forward to seeing more research papers in subsequent COMSTEDA Conferences.

About SMASE-Africa and COMSTEDA Forums

SMASE-Africa Association: was established in the year 2001 during a regional conference with an aim of strengthening mathematics and science education in African countries. The Association grew in membership to include representatives from ministries of education, STEM-based organizations or stakeholders with interest in STEM education in African countries. The members share innovative ideas and practices that are relevant to respective countries through conferences, technical workshops and exchange visits. The regional secretariat located in Kenya is hosted in one of the premises of CEMASTEA. SMASE-Africa is also an affiliate member of two clusters of the African Union's Continental Strategy for Africa namely; teacher development and STEM education.

Vision: "A leading organization in promoting quality STEM education in Africa"

Mission: "To promote quality STEM education through research, capacity development, advancing policies, good governance, collaboration and linkages in Africa."

COMSTEDA International Forums: SMASE-Africa designed an international forum known as the Conference on Mathematics, Science and Technology Education in Africa (COMSTEDA). It is a continental platform for sharing innovative ideas, best practice and interrogating issues relating to Science, Technology, Engineering & Mathematics (STEM) education. The annual conference hosted by member countries or STEM-based organizations aim at building synergy in strengthening capability of youth in STEM subjects for 21st century living. COMSTEDA forums bring together; policy makers, researchers, teachers, educators, NGOs working in education, public and private sector. In 2001 to 2013, the regional conference was known as SMASE-WECSA which was later changed to COMSTEDA in 2014. COMSTEDA 14 was held in Nairobi, Kenya (2016); COMSTEDA 15 Livingstone-Zambia (2017); COMSTEDA 16 Maun-Botswana (2018) and COMSTEDA 17 Nairobi, Kenya (2019), virtual COMSTEDA 18 hosted by Mozambique (2021), blended COMSTEDA 19 hosted by Kampala-Uganda (2022), blended COMSTEDA 20 hosted by Accra-Ghana (2023), blended COMSTEDA 21 hosted by Kaduna-Nigeria (2024) and now blended COMSTEDA 22 hosted by Lilongwe-Malawi (2025).

The objectives of COMSTEDA are:

1. To bring together educators, governments, academic and private sector institutions to interrogate issues, share ideas on best and promising practices and challenges relating to the teaching and learning Mathematics, Science and Technology Education in Africa
2. To improve quality of education in Africa through sharing impact and research findings on classroom practices to inform policy and practice
3. To present case studies and research findings in Mathematics, Science and Technology Education in Africa
4. To promote and highlight the role of STEM education in the development of Education in Africa

Keynote Speaker

Assoc. Prof. Lisnet Mwadzaangati
University of Malawi

Lisnet Mwadzaangati is an associate professor in Mathematics Education and the current head for the Department of Science, Mathematics and Technology Education at the University of Malawi. She has worked with the University of Malawi for 17 years. She holds a Doctorate degree in Mathematics Education from the University of Malawi (2018). Her research focused on exploring mathematical knowledge for teaching geometric proofs. She did her post-doctoral fellowship at the University of Witwatersrand in South Africa under the Wits Maths connect secondary project and with the University of Cambridge under the journal of the British Association of International and Comparative Education Compare fellowship (from 2020 to 2022). Her research focused on exploring Malawian teachers' learning on promoting geometric reasoning through lesson study. Most of her research has focused on knowledge for teaching mathematics, mathematics textbook analysis, mathematics teacher professional development through lesson study, and gender and mathematics education. She has published in a wide range of high ranking journals including the Compare journal, Discover Education journal, Journal of mathematical Behaviour, African Journal of Research in Mathematics, Science and Technology Education, Pythagoras, ZDM–Mathematics Education journal, and International Journal for Lesson and Learning Studies. She has also shared her research at both national and international conferences including the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE) conferences, the Psychology of mathematics education (PME) conferences, the Congress of the European Society for Research in Mathematics Education (CERME). In 2023, she received an early career researcher award in South Africa at the 31st conference of the Southern African Association for Research in Mathematics, Science and Technology Education on the research publication titled *"Mathematics mediational means and learner centredness: Insights from 'traditional' Malawian Secondary School Geometry Lessons".* In July 2024, she delivered an invited lecture at the Congress of the International Commission on Mathematical Instruction in Australia tiled *"What do we learn with teachers about language responsive teaching as they start to do lesson study?"* Before joining the University of Malawi, she worked as a trainer of trainers and subject administrator at Domasi College of Education under the Strengthening of Mathematics and Science in Secondary Education (SMSSSE), a ministry of education project funded by the Japanese government (JICA) aimed at improving the teaching of Science and mathematics in secondary schools. She continues to offer support to teachers through different projects including Equity with Quality and Learning at Secondary (EQUALS) Project, a government initiative supported by the World Bank aimed as improving science and mathematics education in Community Day Secondary Schools (CDSSs).

PROGRAMME

DAY 1: 12TH NOVEMBER 2025

WEDNESDAY

*Participants will convene at Bingu International Conference Centre at 0800hrs

*Participants will depart at 1030 hrs for Nalikule College of Education to view exhibitions. Transport will be provided

*Participants will depart Nalikule College of Education at 1400hrs to Mlodza Secondary School for exhibitions. Transport will be provided

PLENARY SESSION

Malawian Time (CAT)	Activity	In-Charge
0730hrs -0830hrs	Arrival & Registration	Mike Mkoko Mercy Salamba
0830hrs -1000hrs	Opening Ceremony	• Jacinta Akatsa, Executive Secretary, SMASE-Africa • Prof. Sarifa Fagilde, Vice-president, SMASE-Africa • Prof. Benson Banda, President, SMASE-Africa • Hon. Bright Msaka, SC, Minister of Education, Malawi • Thokozire Banda, Principal Secretary – Administration • Dr. Ken Ndala, Secretary for Education • Dr. Zizwa Msukuma, Director Teacher education and Development • Alfred Kamoto, Chief Education Officer, Directorate of Teacher Education and Development
1000hrs -1030hrs	Keynote Speech	Dr. Lisnet Eliabe Mwadzaangati
1030hrs -1100hrs	**Refreshments then depart for Nalikule College of Education**	Alfred Kamoto
1100hrs -1300hrs	Exhibitions at Nalikule College of Education	
1300hrs -1400hrs	**Lunch then to depart for Mlodza Secondary School for exhibitions**	
1400hrs -1700hrs	Exhibitions at Mlodza Secondary School	
Departure		

DAY 2: 13TH NOVEMBER 2025 THURSDAY BREAKOUT SESSIONS VENUE: BINGU INTERNATIONAL CONFERENCE CENTRE (BICC) Registration: 0730hrs - 0800hrs					
Malawian Time (CAT)	**Sub–theme 1 (Room 1)**	**Sub–theme 2 (Room 2)**	**Sub–theme 3 (Room 3)**	**Sub–theme 4 (Room 4)**	**Sub–theme 5 (Room 5)**
	Moderator: Dr. C.N. Mpaso **Rapporteur:** Ndevuzinayi G & Maloachepa M. **ICT Support:** Demakude Sibande	**Moderator:** Dr Bob Maseko **Rapporteur:** Nsambe R. & Zinchetera Chifundo **ICT Support:** Exton Tamanga	**Moderator:** Leah Msukwa **Rapporteur:** Chekecheke J. & Mkandawire V. **ICT Support:** Mike Mkoko	**Moderator:** Dr R. Mgawi **Rapporteur:** Mafuleka T. & Tembwe E. **ICT Support:** Donald Mhango	**Moderator:** Makayiko Kayimba/ Alfred Kamoto **Rapporteur:** Chifumbi M. & Mughogho L **ICT Support:** Andrew Chakwera
0800hrs - 0820hrs	**Participants will convene at the plenary hall for a recap of Day 1 before proceeding to breakout sessions**				
0820hrs - 0840hrs	1. Bridging Concepts and Reality: Enhancing Mathematics Instructions through Project-Based Learning for Upper Primary Schools Students **Fidele Ukobizaba, Jean Francois Maniraho and Alphonse Uworwabayeho**	1. Pan-African Innovation Hubs: Leveraging Technology and Entrepreneurship for Inclusive Growth **Mah Wasi Asombang, Michelo Kalaso Moonga,David Kaniki**	1. The Apparent Gender Difference in The Mathematics Performance of Students in Basic Schools: Not A Genetic Coincidence. **Dr. Gabriel S. Akakpo**	1. Assessing Climate-Driven Seasonal Variations in Snakebite Envenoming: A Mathematical Modeling Approach for Northeast Nigeria **Shuaibu A. A. and Abdullahi A.**	1. Repositioning Mathematics Education for Access, Inclusion and Diversity in Africa: Innovative STEM Curriculum and AI as Drivers **A.K. Tsafe (Ph.D.)**
0840hrs - 0900hrs	2. Culturally-Responsive Mathematics Classroom: Pedagogical Implications **A. Tella Ph.D**	2. Unlocking African Youth Potential through International Higher Education Partnerships: Pathways to Empowerment and Sustainable Development. **Buhlebethu Magwaza, Chika Ehirim-Nmor,**	2. Empowering Women And Girls' Participation In Science, Technology, Engineering, And Mathematics (STEM) As Leaders Of Africa's Sustainable Future	2. Building Knowledge And Capacities For Disaster-Resilient Housing Solutions In The Light Of Climate Change: A Case Of Flooded Residential And Business Units On	2. Transformational Entrepreneurship and Technological Inclusivity: Bridging the Innovation Divide through Pan-African Collaboration **Dewin Arona Sikalumbi**

		Morategi Kale, Sthandiwe Msomi, Fidelis Hove, Erica Gillard	**Nelson K. Koech**	The Shores Of Lake Malawi **Dickens P. Mahwayo**	
0900hrs - 0920hrs	3. Nexus between Application of Biology into Everyday Life Context and Achievement of Learning Outcomes: Lessons from Nairobi City County, Kenya **Ms. Roseline M. Osugo, Dr. Charles M. Magoma & Dr. Ephantus M. Kaugi**	3. Integrating Technology and Pedagogy: Usability and Learning Outcomes of ChemiNet in Introductory Chemistry Classrooms **Justus Nyamweya Nyagwencha**	3. Gender Equity in STEM: Empowering Women and Girls as Leaders of Africa's Sustainable Future **Caroline Noel Amunga**	3. Management Science and Sustainable Development **Prof. Aderemi Adedibu**	3. Training Together for Nurturing Care: Reimagining Interdisciplinary Training for Holistic Child Development **Adelphina Pantaleo, Anil Khamis**
0920hrs - 0940hrs	4. Implementation Of Triquad Algorithms In Trigonometric And Quadratic Functions; An Integrated Approach For Teaching/Learning For STEM In Competence Based Education **Kisala Kenneth Aluse**	4. Bridging Borders through Innovation: Malawi's Contribution to Pan-African STEM Ecosystems for Inclusive Growth **Ass Prof Chomora Mikeka, Jane Chikapa Chekecheke, Oscar Kameta**	4. Influence of Gender Stereotype on Institutional Leadership in Public Secondary Schools in Kajiado County, Kenya **Dr. John Ng'eda Purdul**	4. Immersing STEM Learning Environments into Community Service-Learning in Building Africa's Climate Resilience **Dr. Karanja Mutitu**	4. Nurturing Green Minds: Integrating Indigenous Tree Nurseries in Pre- and Primary Schools for Climate Action in Urban Tanzania **Adelphina Pantaleo, Anil Khamis**
0940hrs - 1000hrs	5. The Revitalization of Abagusii Indigenous Knowledge System in the Kenyan Primary Science Curriculum **Ezekiel N. Omwenga**	5. Exploring Virtual and Augmented Reality Tools in Strengthening Mathematics and Science Education (SMASE) in Nigeria **Professor Sadiya Sani Daura, Dr. Bature Salisu, Dr. Zainab Muhammad Shuaibu**	5. Forming The Future Pan-African Learner Through Transformative STEM: Bridging Identity, Innovation, And Sustainability For Agenda 2063 **Kalungwishi Elijah Kabemba**	5. Investigating The Missing Links, Unmet Needs And Challenges Affecting The Usage, Adoption And Uptake Of Alternative Energy Sources In Malawi **Dickens P. Mahwayo**	5. Comprehensive Critique of the Knowledge Quartet (KQ) and the Penta-Knowledge Collaborative Reflective Teaching and Learning Model (PKCPTL) **Dr. End Salani**

1000hrs - 1020hrs	6. Challenging Epistemic Rigidity: Tentativeness in African Indigenous Knowledge and Its Implications for STEM Curriculum and Pedagogy **Nathaniel Ayodeji Omilani**	6. Examine The Use Of Instructional Resources For Effective Teaching And Learning Of Basic Technology In Junior Secondary Schools In Edo State, Nigeria. **Aireruor Napoleon Eromosele**	6. Instructional Leadership: Exploring Instructional Programme Management of Secondary Schools Principals in Ouémé Region, Benin **Sonagnon Romuald Dossou**	6. Biowaste Valorization through Vermicomposting Technology for Sustainable Agriculture in Developing Countries **M. M. Manyuchi**	6. GPS–Dale Macrophage As A Pan-African STEM Policy Alignment Framework: Harmonizing Curriculum And Assessment Standards Across COMSTEDA Member States **Kalungwishi Elijah Kabemba**
REFRESHMENTS					
1100hrs - 1120hrs	7. Integrating indigenous knowledge into Science, Technology, Engineering and Mathematics (STEM) Education: Concepts, methods, benefits, and challenges **Abass Aderemi Adedibu & Ikeoluwa Folasade Adeoye**	7. Effects Of Teaching Entreprenurial Education Using Teacher- Directed Biology Instructional Strategies Among Selected Girls Secondary Schools In Kaduna North, Nigeria **Isah Hadiza Mohammed**	7. Addressing Systemic Barriers to Women's Participation in STEM Fields through Policy Reforms, Mentorship Programs, and Inclusive Pedagogies to Achieve Agenda 2063's Equity **Marapira Patience and Gwapedza Locadia**	7. Human-Centric Smart Cities for Climate Resilience: Integrating Indigenous Knowledge with IoT and AI for Sustainable Urban Environmental Management **Dr. Zainab Muhammad Shuaibu & Sadiq Shehu Abubakar**	7. Harmonizing STEM Policy for Sustainable Development in Zambia: Towards a Unified National and Regional Agenda **Rosemary Muma Mulenga and Colious Gondwe**
1120hrs - 1140hrs	8. The Role of Technology Studies in Strengthening Science, Technology, Engineering, and Mathematics (STEM) Education. Evaluating the Impact of Technology	8. Leveraging Technological Innovations to Overcome Shortage of Laboratory Facilities for teaching and Learning Mathematics and Science in Rwandan Secondary Schools	8. Upscalling Women and Girls Participation in STEM Education through the Competency Based Curriculum in Kenya. **Ann W. Gachoya, Elizabeth J. Katam**	8. Impact Of Access To Energy On Teaching And Learning Environment In Education Of Zimbabwe As A Case Study	8. Bridging the Chasm: Leveraging the KCCP 2025 Experience to Foster Reflective Practice and Authentic Competence-Based

	Studies in Primary Schools in Malawi **Anthony Foloko Msukwa**	**Faustin Nduwayezu, Ezechiel Nsabayezu, Jeannette Muterampundu, Pheneas Nkundabakura, Theophile Nsengimana, Eugenie Uwamariya**		**Furidze Luckmore &Chakamanga Munashe K.F.**	STEM Education in Zambia **Bernedicto Tito and Benson Banda**
1140hrs - 1200hrs	9. Impact of Industry Academia Collaboration on Student Competency Acquisition in STEM-CBET Programs for Industrial Workforce Readiness **Wambeye Kimweli Marakia (PhD)**	9. The Impact of Technology in Tertiary Education. A case study of Midlands State University (MSU) Bioinformatics students **Chakamanga, Munashe K.F; Muzenda, Tom; Furidze, Luckmore**	9. Reimagining STEM for a Pan-African Future: Empowering Girls through Inclusive Education, Digital Innovation, and Climate-Smart Solutions **Ruth Kiwummulo**	9. Challenges With Building Knowledge And Capacities For Resilience Agriculture Through Climate Smart Agriculture: The Case Of Smallholder Farmers In Malawi **Dickens P. Mahwayo**	9. Enhancing Professional Competence among Heads of Departments: An Evaluation of CBE Training Impact in Three Selected Districts of Lusaka Province **Chipo N Sakala**
1200hrs - 1220hrs	10. Rethinking Word Problems: Leveraging Local Culture to Improve Mathematics Learning In Ghana. **Sumaila Akwaboah, Christiana Nyarko Adjei**	10. JUZA AI – Revolutionizing personalized learning in remote settings- Offline, Accurate and Affordable **Muthoni Lyken**	10. Bootcamp for Scientific Girls: Overcoming systemic barriers to the participation of young African women in STEM **VG Douniama-Lonn & DG Ngantso**	10. Impact of Seed Pre-Treatment on the Germination of African Locust Bean (Parkia biglobosa) in Jema'a Local Government of Kaduna State **Linda Larai Garba, Nathaniel Joseph and Shutt, Vou Moses**	10. Reflexive Dependence between Competence Development and Multidisciplinary Learning: Evidence from Zambia's Competence-Based Education Training for Lusaka HODS **Chipo N Sakala**
1220hrs - 1240hrs	11. What constitutes Science, Technology and Mathematics in Botswana Pre-Schools, and how	11. The Economics and Future of EdTech in Africa: Evidence, Economics, and the Role of DPI-Ed/RESPECT **John Gitabi Kimotho**	11. Inclusion of Women with Disabilities in Science: An Antidote for Under-representation of	11. Design And Fabrication Of A Solar-Powered Weeding Machine	11. From Conversations To Continental Collaboration: How The mEducation Alliance Is

	does it look like in the classroom? **Chako G. Chako**		Women in Scientific Fields **Serifat O. Salami Ph.D**	**R.C. Chidya , S.A. Kumwenda , M. Ulunji & L. Kazembe**	Advancing Cross-Border STEM Partnerships Across Africa & Beyond through STEMtastic Adventures! Africa **Kenneth .M. Muthengi**
1240hrs - 1300hrs	12. Balanced and Inclusive Education: Decolonizing STEM Curricula through Endogenous Knowledge Systems in Africa **Loyce A. Chisale**	12. GPS–DALE MACROPHAGE: An AI-Based Immune Philosophy with Progressive, Infinitesimal Auditing Capacity for Pan-African Education **Kalungwishi Elijah Kabemba**	12. Empowering Women And Girls In STEM: Strategies For Achieving Gender Equity In Africa **Nafisa Danbala Ahmed**	12. Optimization of Solar Energy Exploitation in Equatorial Regions for the Protection of the Ozone Layer Against Emissions from Households and Agricultural Activities: Case Studies in the Béfale Territory, TSHUAPA Province **Antoinette Besongo Lomofala**	**PRESENTATIONS ARE OVER FOR THIS SUB-THEME** **JOIN SUB-THEME 1, 2, 3 OR 4**
LUNCH					
1400hrs - 1420hrs	13. Chemistry Teachers' Adoption of New Practices Through Improvised Materials: An Action Research Study **Celestin Ngendabanga, Jean Baptiste Nkurunziza, Leon Rugema Mugabo**	13. ZM-BT: A Zambia-Modified Bloom's Taxonomy for Justice-Centered and Agile STEM Assessment in Africa **Kalungwishi Elijah Kabemba**	13. Gender equity in STEM to empower women and girls as leaders of Africa's sustainable future **Kukundakwe Frank**	13. Exploring Teachers' and Learners' Perceptions of PhET Simulations in Grade 12 Biology Practical Lessons: A Case Study from the Ohangwena Region, Namibia **Ndinelao Mungungu, Linus Kambeyo**	

1420hrs - 1440hrs	14. Exploring the Understanding, Insights, and Practices in Project-Based Learning Teaching Method of Mathematics Teachers Selected in One District of Rwanda **Fidele Ukobizaba, Jean Francois Maniraho, and Alphonse Maniraho**	14. Bridging STEM Education And Entrepreneurship: A Case Study Of SESEMAT Science Fair In Uganda **Baluku Louis**	14. Gender-Responsive STEM Pedagogies in Rural Uganda: Lessons from SESEMAT Teacher Training Programs **John Watyekele, Moses Nagulam**	14. Integrating Preventive Maintenance (PM) into STEM Education: Centering African Sustainable Practices for Infrastructure Resilience in Zambian Learning Institutions **Darius Katuka**	
1440hrs - 1500hrs	15. Decolonizing STEM Curricula: Centering African Knowledge Systems and Sustainable Practices **Samuel S Byekwaso**	15. Design And Construction Of A Low-Cost Powered Incubator (Smart Agri) In Malawi **R.C. Chidya, S.A. Kumwenda, M. Ulunji & L. Kazembe**	15. A Gendered Perspective on the Influence of Coaching Teaching Style on Biology Examinations in Public Secondary Schools in Molo Sub-County, Kenya **Julius Kiprono Koskei, Ezekiel Nyambega Omwenga**	15. Nature's Defence: Organic Mosquito Repellents for a Climate-Smart Africa **Moyo Justin**	
1500hrs - 1520hrs	16. Valuing Natural Resources Through STEM Education **VG Douniama-Lonn, RC Louembet, MD Nkoua Ngavouka & DJ. Lacks**	16. Youth-Led STEM For Health: The Sickbay Management System As A Model For School-Based Innovation Hubs In Africa **Isaac O. Ogwal**	16. STEM Pathway In Senior Schools; Developing Communication and Collaboration skills by learners in their STEM projects. **Peter .M. Ndiritu**	16. The Knowledge Co-Creation Program in Zambia: Effects on STEM Learning Attainment and Addressing Misconceptions in African STEM Education **Benson Banda**	
1520hrs - 1540hrs	17. Decolonizing Medical Anthropology:	17. From Knowledge Repositories to Skills Hubs:	17. Empowering Women in STEM Education:	17. Assessment for the Afri ca We Want: Aligning S	

	Integrating African Traditional Knowledge Systems for Sustainable Public Health Solutions in the Digital Age **Dr. Emmanuel Busera**	The Role of the National Science Centre in Information Provision for Competence-Based Education (CBE) **Debrah Mulenga Mwango**	Addressing Systemic Barriers in Disadvantaged Communities of Uganda **Jennifer Nyangoma**	TEM Competence with Agenda 2063 **Benson Banda, Chipo Sakala, Buyi Dick, Maletsie Makheta**	
1540hrs - 1600hrs	18. Reimagining STEM For A Pan-African Future: Bridging Education,Innovation And Sustainable Development, Towards Agenda 2063 **Igama Richard**	18. Developing Nutritious Snacks from Indigenous Zambian Food Materials: A Competence-Based Approach to Food Technology Innovation Among Young Scientists **Yvonne M. Malama**	18. Systemic barriers that deter female participation in STEM fields and possible remedial strategies **Caroline Lomalungelo Dlamini**	**PRESENTATIONS ARE OVER FOR THIS SUB-THEME** **JOIN SUB-THEME 1, 2 OR 3**	
1600hrs - 1620hrs	19. Embedding Geoscience and Environmental Sustainability into Classroom Practice: The SMASE ASEI-PDSI Pedagogical Model **Zainab Muhammad Shuaibu (PhD)**	19. Leveraging Technology and Entrepreneurship in Home Economics and Hospitality Education: Strengthening Regional Collaboration for Inclusive Growth and Innovation Ecosystems **Patricia Malukutila**	19. The Mathematics Clinic: A Socio-Affective-Cognitive Intervention for Transforming Achievement & Identity in Rural Zambia **Chituka Albert**		
1620hrs - 1640hrs	20. Integrating Indigenous Resources into STEM Skills Assessment: Cross-Disciplinary Design Patterns for African CBC **Benson Banda, Yahaya Sani Rickagichikuni, Minata Redas, Jinga Andrew**	20. Enhancing Digital Competence Through Technology Integration: A Competence-Based ICT Learning Initiative at Pemba Day Secondary School **Jinga Andrew and Christina Kafulo**	20. Breaking Barriers, Building Futures: Advancing Gender Equity in STEM through Policy Reform, Mentorship, and Inclusive Pedagogies for Africa's Agenda 2063		

			Muhammad Lubabatu Maradun, Misbahu Adamu Sani		
1640hrs - 1700hrs	21. Developing Culturally Responsive and Accessible Digital Learning Materials for Lifelong Open Education in Nigeria **Dr. Zainab Muhammad Shuaibu & Sadiq Shehu Abubakar**	21. STEM Education and Its Importance: Fostering Innovation, Problem-Solving, and Preparing Students for Future Challenges – Lessons from Post-KCCP 2025 Training in Zambia **Benson Banda, Muhydeen Ahmed, Shift Mwebo**	**PRESENTATIONS ARE OVER FOR THIS SUB-THEME** **JOIN SUB-THEME 1 OR 2**		
1700hrs - 1720hrs	22. Purpose and Goals of KCCP Training: Enhancing STEM Education in Africa Through Innovation, Practical Application, and Cultural Relevance **Benson Banda , Moses Kayola Phiri**	22. Enhancing Mathematics Teachers' Pedagogical Practices Through Technology Integration **Garvin Mugala and Asiana Banda**			
1720hrs - 1740hrs	23. Modernizing Mathematics and Science Education in Rwandan Secondary Schools Through Project-Based Learning **Jeannette Muterampundu, Ezechiel Nsabayezu, Aloys Iyamuremye, Venuste Nsengimana Pheneas Nkundabakura,**	23. Sustaining the Ripple Effect: Educators' Cascading of Foundational Learning Environments in selected African Countries after the 2025 Knowledge Co Creation Programme in Zambia **Chipo N Sakala and Natasha R Nyangwete**			

	Theophile Nsengimana, Eugenie Uwamariya				
1740hrs - 1800hrs	24. Reimagining Technical Drawing Education in Malawi: Insights from Students Lived Experiences and Implications for STEM Curriculum Reform **Anthony Foloko Msukwa**	24. The Strategic Role of Cross-Sector Partnerships in Scaling Entrepreneurship Education in Eastern Africa **Dr. Roselyn Marandu-Kareithi, Mary Sichangi, Allan Kimaina, Isaac Maweu, Kizito Makoba, Njoki Riguga**			
DEPARTURE					

DAY 3: 14TH NOVEMBER 2025 FRIDAY
VENUE: BINGU INTERNATIONAL CONFERENCE CENTRE (BICC)
BREAKOUT SESSIONS

Note:
***There will be no presentations for Sub-Themes 3, 4 & 5 on Day 3**
***Presentations for Sub-Theme 1 will be spread across Room 1, Room 3, Room 4 and Room 5;**
***Sub-Theme 2 presentations will remain in Room 2**

Malawian Time (CAT)	**Sub–theme 1 (Room 1)**	**Sub–theme 2 (Room 2)**	**Sub–theme 1 (Room 3)**	**Sub – theme 1 (Room 4)**	**Sub – theme 1 (Room 5)**
	Moderator: Makayiko Kayimba **Rapporteur:** Chekecheke J. & Mkandawire V. **ICT Support:** Mike Mkoko	**Moderator:** Private Mchenga/ Alfred Kamoto **Rapporteur:** Chifumbi M. & Mughogho L **ICT Support:** Andrew Chakwera	**Moderator: Dr. C. Mpaso** **Rapporteur:** Ndevuzinayi G. & Maloachepa M. **ICT Support:** Demakude Sibande	**Moderator: Dr Rabson Mgawi** **Rapporteur:** Mafuleka T. & Tembwe E. **ICT Support:** Donald Mhango	**Moderator: Dr. Bob Maseko** **Rapporteur:** Nsambe R. & Zinchetera Chifundo **ICT Support:** Exton Tamanga
0730hrs - 0800hrs	**Registration: Participants will convene at the plenary hall for a recap of Day 2 before proceeding to breakout sessions**				
0800hrs - 0820hrs	25. Rational Emotive Behavioral Therapy (REBT) As An Antidote To Mathematical Anxiety **Monique Abongkeyung Newen (Dr)**	25. Communication and Collaboration in KCP Training: Resource Sharing, Open Dialogue, and Collective Problem-Solving for Competence-Based Education Implementation **Benson Banda, Hussein Mwale**	26. Aligning the teaching of scientific investigations with the Malawian physics curriculum standards **Dyna Jere**	27. The Impact Of A STEAM-Based Intervention On Mathematics Achievement And Gender Differences Among Arts-Oriented Secondary School Students In Tubah, Mezam Division, Northwest Region, Cameroon **Dr Nfor Julius Cheny**	28. Challenges in the Implementation of the Competence-Based Curriculum in Zambia's Lower Primary Schools **Purity Sibote and Hussein Mwale**
0820hrs - 0840hrs	29. Competence-based STEM Learning Environment in Early Childhood Education and Lower Primary: Insights from the 2025 Knowledge Co-Creation Program in Zambia **Mary I Mpumulo**	26. Innovation and Creativity in Competence-Based STEM Education: Lessons from Zambias 2025 Knowledge Co-Creation Programme (KCCP)	30. Unlocking Africa's Potential: Leveraging the Role of Diverse Learning Environments beyond Classroom Practice in STEM **Ruth Kamkwalala**	31. Science, Technology, Engineering, and Mathematics (STEM) Student Engagement in Africa: Scoping Review **Wondimagegn Girma Abebe, Yirgalem Alemu Keery, Dawit Negassa**	32. Bridging Theory and Practice: A Comprehensive Analysis of Opportunities, Challenges, and Evidence-Based Recommendations for Enhancing Early

		Benson Banda, Director, Anecetus Moonga, Christine Kafulo		**Golga, Bahar Adem Abdulahi**	Childhood Education in Zambia **Anecetus Moonga and Benson Banda**
0840hrs - 0900hrs	33. Top-down and Bottom-up Interventions on the sound localisation ability of pupils with listening disorders **Abiodun T. Adewunmi & Barakat Adebayo**	27. Evolving Human Capital Development in Zambia: The Role of the Knowledge Co-Creation Program (KCCP) and Education Reforms **Benson Banda, Edward Tindi, Foster Mwanza**	34. Deconstructing Science Teaching in Africa: A Critical Analysis of Weather Phenomena Education Through Indigenous Knowledge Integration and Contemporary Challenges **Dr. Mochama Elijah Omosa**	35. Rethinking STEM Amid Inequitable Climate Vulnerability: Opportunities and Challenges for Climate Justice Agency in Malawian Teacher Training Colleges **Tony L.G. Magwira**	36. Enhancing the Teaching of Sets in Zambian Secondary Schools: An Ethnomathematical Intervention **Mulenga Patrick**
0900hrs - 0920hrs	37. Preliminary findings from piloting low-cost engineering and robotics in 7 STEM high schools in Ghana **Isaac Sogbadzi, Daniel Ewusi-Essel, Mawuena Asem-Hanson & Heather Beem**	28. Seeing Is Believing: Model Schools and Demonstration Centres to Scale Competence-Based Assessment in Africa **Benson Banda, Chipo Sakala, David Bawa, Lydia Mwila**	38. Need to establish a geography laboratory with an educational purpose at the Higher Pedagogical Institute of Gombe to ensure better mastery of geography education **Antoinette Besongo Lomofala**	39. Integrating Scientific Reasoning into High School Science Classrooms: A Model for Ethiopia's Education System **Tsedeke Abate**	40. The Effect of Bilingualism on Mathematics Achievement: A Sequential Mixed-Methods Study from a Rural Zambian School **Chituka Albert**
0920hrs - 0940hrs	41. Awareness and Perceptions of Students about the Synergy between Mathematics and Basic Science in Public Secondary Schools in Osun State, Nigeria **Sunmola Kadiri Adegoke (PhD), Adekemi Olufunke AkanbI (PhD), Olufunmiso Olatunbosun**	29. Entrepreneurial Competences in CBC: Assessing Value Creation in School-Based Projects **Benson Banda, Abiti Kamukwalakoche, Betty Rose Nabifo, Justin Moyo**	42. The valorization of ICT in the National Geography Education Program at the secondary school level in Democratic Republic of Congo **Antoinette Besongo Lomofala**	43. From Indigenous Dwellings to Geodesic Domes: Decolonizing STEM by infusing African Systems of 'Doing More with Less' **Dr. Herman Tshesane**	44. Assessing 2025 Knowledge Co-Creation Program 's Impact on STEM Professional Development in Africa **Chikombe Vallen and Benson Banda**

	Ajala (PhD), Yemisi Adeola Ayoola (PhD)				
0940hrs - 1000hrs	45. Strengthening Scientific Literacy in Primary Schools: Insights from SMASE Nigeria within a Three-Tier Curriculum Analysis **Zainab Muhammad Shuaibu (Ph.D), Umar Bello**	30. Leveraging Technology to Enhance STEM Education: A Case Study of On-Online Quiz and Olympiad Platforms in the JETS of Zambia **Alvin Masendeke, Christina Kafulo, Benson Banda**	46. Decolonizing STEM Learning Beyond Laboratories: A Case Study of Everyday Environments at Sserwanga Lwanga Memorial Secondary School, Uganda **Caroline Taliba**	47. Play Begins at Home: Influence of the Home Environment on Play-Based Learning in Early Childhood Education Centres in Mazabuka, Zambia **Natasha R Nyangwete and Chipo N Sakala**	48. Building a Teachers' Learning Platform for Fostering Reflective Practitioners: A Case Study of a Knowledge Co-Creation Programme in Zambia **Yumi Sekiguchi**
1000hrs - 1020hrs	49. Pre-service Teachers' Prior Understanding of Aspects in the Zambian Competence-Based Lesson Plan Format: The Lens of Science Student Teachers' Lesson Plans for Peer Teaching **Mwanza Foster**	**PRESENTATIONS ARE OVER FOR SUB-THEME 2** **JOIN SUB-THEME 1**	50. Decolonizing STEM Curricula: Centering African Knowledge Systems and Sustainable Practices **Sichilenga Maradona and Sibeso Mubukwanu**	51. CAF-Africa: Building an African-Owned Competence-Based Assessment Framework ("You Cannot Live a Borrowed Life") **Benson Banda, Asiana Banda**	52. Nurturing Competence and Creativity in Large Early Learning Classes: Insights from Learning the Concept of Patterns in a Grade 1 Zambian Classroom **Lessly Malambo and Chipo N Sakala**
REFRESHMENTS					
1100hrs - 1120hrs	53. A Systematic Review of Project Based Learning in Teaching Ecology and Biodiversity Conservation: Current practices and challenges **Jeannette Muterampundu, Venuste Nsengimana, Wenceslas Nzabarirwa, Pheneas Nkundabakura, Theophile Nsengimana, Eugenie Uwamariya**		54. AfriSTEMpedia in Practice: Designing Contextualised Competence-Based Assessment Tasks for African Classrooms **Benson Banda, Misbahu Sami Adamu, Sebastian Kampanza, Shamasamu Diaphord**	55. Teacher Attitudes, Curriculum Design, and the Fidelity of Competence-Based Assessment Implementation in Africa **Benson Banda, Anokye Abankwa, Darius Katuka**	56. Understanding STEM Endeavors: Conceptual Clarity and Pedagogical Implications in Africa **Benson Banda, David Bawa, Muyabi Dickens**

1120hrs - 1140hrs	57. Localising Assessment for Sustainable Development: Integrating Indigenous Knowledge into Competence-Based STEM Tasks **Benson Banda, Enock Nthiwa, Simon Kyaguba**		58. Beyond Bloom: Redefining Question Quality in Competence-Based STEM Assessment in Africa **Benson Banda, Ssemuwemba Emmy, Cynthia Mulwanda, Chioni Zulu**	59. Scenario, Case Study, or Project? Selecting Authentic Contexts for Competence-Based STEM Assessment in Africa **Benson Banda, Caroline Taliba, Mulla Mudenda, Shift Mwebo**	60. Balancing Formative and Summative Assessment for Competence Development in African STEM Education **Benson Banda, George Kwabena, Marrio Chongo, Cleopatra Songolo**
1140hrs - 1200hrs	61. Computational Thinking And Legitimate Code Theory: Towards Decolonising Instructional Strategies Among Physical Sciences Pre-Service Teachers **Cosmas J Kathumba and Prof. Clement Simuja**		62. Uncovering Children's Abilities: A Case Study of Competence Development through Home-Linked Chores in an Early Learning Classroom **Masuzyo Sibanda, Chipo Namakau Sakala**	63. STEM Learning Environment: Teachers' Perceptions and Practices in Rigachikun Ward, Rigachikun Education Zone, Kaduna State, Nigeria **Zainab Muhammad Shuaibu, PhD, Yahaya Sani Rigachikun**	64. Formative First: Rebalancing African Education Assessment Systems Toward Continuous Competence Measurement **Benson Banda, Muhydeen Ahmed, Anecetus Moonga, Eric Bbabbi**
1200hrs - 1220hrs	65. Unpacking Validity in Competence-Based Curriculum Assessment through the 3H Model **Peter Mulenga**		66. Assessment as Liberation: AfriSTEMpedia's Framework for Transformative Learning **Benson Banda, Dina Namutenya Shikeho, Sichilenga Maradonah, Siphiwe Bulanda**	67. From Recall to Real: Transforming STEM Education Assessment in Africa through Competence-Based Learning **Benson Banda, Emanuel Omang Ocquaye, Ndege Samuel, Debra Mwango**	68. A Review of Indigenous Knowledge Systems in Mathematics Education in Namibia **Shemunyenge T. Hamukwaya; Malakia Jatileni; Shindume L. Hamukwaya; and Cloneria N. Jatileni**

PLENARY SESSION		
Malawian Time (CAT)		**In Charge**
1220hrs -1300 hrs	**Panel Discussion**	Dr Cedric Mpaso, Researcher, Dr Limbani Nsapato, Grace Milner, Teacher from Zambia, Student from Malawi.
1300hrs -1330 hrs	**Closing Ceremony** 1) Conference resolutions and communique 2) Awarding of sample certificates 3) Official closing	1) Prof. Benson Banda, President, SMASE-Africa 2) Jacinta Akatsa, Executive Secretary, SMASE-Africa 3) Dr Ken Ndala, Secretary for Education 4) Thokozire Banda, PS Administration 5) Zizwa Msukuma, Director Teacher Education and Development 6) Alfred Kamoto
LUNCH		
1500-1700	**Annual Delegates Meeting** SMASE-Africa focal point & alternate focal point person only	Prof. Benson Banda, President, SMASE-Africa