



# CEMASTEA INFO

## Newsletter

### Education & Climate Change



# Editorial

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Feedback: Comments and contributions can be sent to the editor using the email: [director@cemastea.ac.ke](mailto:director@cemastea.ac.ke)

Contributions may be edited for clarity, space or for legal considerations.

It has been very eventful at CEMASTEAC as we continue offering our flagship training and research programmes. We are delighted to release this 12<sup>th</sup> Issue of the



CEMASTEA Info Newsletter. In this Issue, we report on the successful implementation of numerous activities in and out of the Centre.

On 12<sup>th</sup> October, CEMASTEAC was privileged to host the launching of the Presidential Working Party of Education Reform. Hon. Deputy President H. E. Rigathi Gachagua, EGH, presided over the launch. We successfully implemented training for Quality Assurance and Standards Officers (QASOs). QASOs are the custodians of quality practices in the education subsector and collaborate with CEMASTEAC to support and monitor its STEM programmes at the County level.

CEMASTEAC continues to gain the status of an Education STEM Hub within the education technology ecosystem. The Centre successfully organised the second edition of the CEMASTEAC STEM Boot Camp that focused on coding and robotics. The camp attracted a host of sponsors, and about 500 learners attended. The Centre also hosted the second edition of the Kenya Educational Technology Forum (EdTech, 2022). The clarion was the need for collaborative engagement, learning and sharing ideas regarding education technology. We were also visited by numerous schools interested in learning about innovative STEM teaching and learning activities from our innovation and science and mathematics laboratories, makerspace and education for sustainable development and climate change projects.

We report on the success of the inaugural STEM outreach programme hosted at Karen C Secondary school. Away from the Centre, there was participation in the Kenya Private Schools Heads Association (KEPSHA) 18<sup>th</sup> Annual AGM and Conference in Mombasa. In this forum, CEMASTEAC demonstrated how innovative teaching and resources could improve the learning—inclusive education (Ubuntu) Conference at Kenya Institute for Special Needs. We also have topical articles relevant to education, such as inclusive education, the role of feedback and Ualimu bora. We happily report that in this Issue, we have an article by teachers from Nguviu Boys High School, something we want to encourage going forward. The Issue also features articles on sustainable development and climate change.

Kindly give us your feedback using the link <https://forms.gle/S2DPjwEBRNrdL4bt7>

**Thuo Karanja, Editor**

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## Message from the CEO



There is a growing global acknowledgement of the impact of climate change, with developing countries and vulnerable communities bearing the brunt of it. Closer home, we are all witnesses to the devastating effects of climate change seen through the drought crisis that has engulfed the country for the better part of the year. This has accelerated the need to look closer at the Sustainable Development Goals on climate action. Despite climate change being a holistic science, there is a consensus on the relevance of STEM subjects as critical elements in unlocking the potential to help solve climate change-related issues. We face the challenge of appealing to younger generations to view STEM as a gateway to being active participants in curbing the impending climate catastrophe.

Climate change must become part and parcel of the modern basic education fabric. We, therefore, need to rethink the role of education in creating interest for young learners in STEM through activities that connect their learning experiences with the outside world.

Interest in and love for nature need to take root in our schools. CEMASTEAC is leading and championing various causes to raise awareness of climate change and its underlying issues among learners. The Centre has established an Education for Sustainable Development, Climate Change and Innovations committee. We have made a great effort to organise activities in and out of class that make learning STEM and relating such experiences to the real world enjoyable. We are delighted to have successfully planned and implemented the second robotics and coding boot camp. It was a humbling experience to see young learners bubbling with ideas and collaborating to develop 'cool' and futuristic projects. School visits are also essential to our learner experiences calendar, and we hosted several schools. School visits are an all-year-round activity, and we encourage schools to book a visit using the email [director@cemastea.ac.ke](mailto:director@cemastea.ac.ke). Another flagship activity that CEMASTEAC successfully piloted is the STEM outreach. The outreach involves staff going to a school and interacting with teachers and learners through demonstrations and try-outs of innovative science and mathematics activities. The outreach programmes do not interrupt learning and aim to bring out the joy of learning. Indeed, learners who attended these activities expressed satisfaction and desire for more such experiences.

Finally, I am delighted that our newsletter's readership has grown immensely through your valuable support. We do not take this lightly and use this opportunity to laud you and encourage you to spread the fun of learning in STEM education.

CEMASTEAC wishes you a blessed 2023.

**Jacinta L. Akatsa, HSC,**  
**Chief Executive Officer, CEMASTEAC**



# Training for Quality Assurance and Standards Officers

By John Makanda & Dan Orero

The Directorate of Quality Assurance and Standards (DQAS) is mandated to provide advisory services and ensure an integrated and collaborative approach to improving basic education's quality and relevance. The Directorate collaborates with all institutions, practitioners, and critical stakeholders in the education sub-sector. CEMASTEIA, in collaboration with the Directorate, organised a three-day workshop for Quality Assurance and Standards Officers. The workshops held from 24<sup>th</sup> to 26<sup>th</sup> October in four venues, Kakamega, Naivasha, Embu and Machakos, had the theme of *strengthening the capacity of QASO to monitor and support the implementation of CBC and STEM activities at the school level*.



Director of Quality Assurance, Ministry of Education, Mrs Evelyn Owoko

The workshops brought together 375 officers and offered an opportunity to share experiences on implementing Competency-Based Curriculum STEM activities and supporting and monitoring SMASE activities at the County level. The workshops also aimed at equipping them with further skills for interpreting curriculum designs for effective monitoring and support at the school level.

STEM activities that promote learner-centred lessons for effective implementation of curriculum; and skills for effective monitoring and support of lesson study. While making her opening remarks to the team that converged in Kakamega, Madam Margaret Muandale, Director of Teacher Education, Ministry of Education, lauded CEMASTEIA for her excellent work in enhancing the capacity of QASOs. She noted that the QASOs are essential in ensuring that education programmes are effectively implemented; they also support, mentor and coach teachers. She further advised QASOs to also pay attention to teachers' colleges for enhanced quality of teaching.



CEMASTEIA has trained teachers on using learners-centred strategies such as Inquiry-Based Learning, the 5E instructional model, Lesson study and ICT integration in teaching & learning, among others. Regarding that, the QASOs need to support teachers as they implement CBC and STEM activities in schools, which will, in turn, help transform teaching and learning to achieve the 21st Century outcomes, which include digital literacy, collaboration and formation of communities of practice, among others.

The opening ceremony at Naivasha was presided over by the Director of Quality Assurance, Ministry of Education, Mrs Evelyn Owoko. The closing ceremony was presided over by the County Director for Education, Nakuru County Mr Fredrick M. Osewe.

# Kenya Ed Tech Summit 2022

By Martin Mungai and Winfred Magu

The 2022 Kenya EdTech Summit was hosted at CEMASTEIA on the 23<sup>rd</sup> and 24<sup>th</sup> of November. The Summit attracted participants from public, private and non-governmental, media and innovators in the technology education sector. The Summit focused on technology integration strategies and digital tools to transform education and enrich the lives of learners based on three goal areas: coordination, transparency and action on matters of Technology in Education. The participants spent the two days discussing some of the best practices and ways technology can be used to advance education.



The Chief Guest during the Summit was Principal Secretary Ministry of Education, Dr Belio Kipsang, represented by Mr Francis Karanja, Head of ICT at the National ICT Integration and Innovation Centre (NI3C). In his message, the PS called upon the participants to embrace technology in education as it would accelerate technological innovation and ensure the achievement of the Government's agenda in the education sub-sector. He challenged participants to ideate and plug into some of the Government's policies, especially regarding technology.

In her remarks, the CEO of Kenya EdTech, Jennifer Cotter-Otieno, noted the conference provided stakeholders in education technology with an opportunity to form a common voice that would improve teaching and learning outcomes in Kenya. Mr Martin Mungai, Deputy Coordinator, STEM, Innovations and ESD programmes at CEMASTEIA, made a presentation on using technology for teacher professional development.



Mr. Martin Mungai, making a presentation during the Kenya Ed Tech Summit & a section of the participants following the proceedings of the opening ceremony

EdTech East Africa is a community of professionals in the Education technology field who come together and share knowledge and experiences to improve the quality of their work in education delivery.



# 2nd STEM Coding and Robotics Boot Camp

By Martin Mungai and Winfred Magu

CEMASTEА has been at the forefront of promoting STEM education and particularly coding and robotics. The Centre, from 13<sup>th</sup> to 16<sup>th</sup> December 2022, organised a four-day STEM Coding and Robotics Boot Camp for 2022. The coding and robotics boot camp is an educational program that offers learners a platform to learn coding and robotics skills. Overall, the camp's goal was to provide students with the knowledge and skills they need to succeed in the rapidly-evolving fields of computer science and robotics. The camp brought together learners from pre-primary, primary and secondary schools to impart them with relevant coding and robotics skills and hands-on experience that allowed them to apply the concepts they were learning in a practical setting. The specific objectives of a coding and robotics boot camp were;

#codingislife

- i. To provide students with a strong foundation in coding and programming languages, such as Python, Java, C++, or C#.
- ii. To teach students how to design and build robots using various hardware and software tools.
- iii. To provide students with hands-on experience working on coding and robotics projects, such as building and programming a robotic arm or creating a simple computer game.
- iv. To help students develop problem-solving, creativity, and critical thinking skills through designing and building robots and coding projects.
- v. Building a community of learners by giving learners opportunities to collaborate on projects, attend guest lectures and workshops, and connect with industry professionals.

During the camp, participants undertook intensive training where they explored Bionics, Creative coding, Robotics (A) – Tetrix, Robotics (B) – EV3 Kit, Mobile App Development, 3D and Graphics design – Fabrication and Arduino Prototyping. They developed projects to address societal problems such as mental health, gender-based violence and fire safety. The camp was highly interactive and provided them with opportunities to create, collaborate and ideate some of their projects.



Participants engaged in various activities during the boot camp

The opening ceremony was graced by the SAP representatives, who encouraged the participants to use such initiatives by CEMASTEА to build on their skills. They were equally urged to make use of the open learning platform from the SAP website to acquire a skill through the freely offered online courses.

The Closing ceremony was presided over by the Deputy Director of CEMASTEА, Madam Lydia Muriithi. She awarded participants with certificates of achievement and medals. In her remarks, she urged the participants to



continue upgrading their skills and ensure that they build on what they learned during the four days course. She also urged them to train their peers in school so that they could also benefit from the skills acquired.

The Boot Camp was co-sponsored by CEMASTEIA with various partners. This includes STEM impact Kenya, Angaza Elimu, Africa Code Week (ACW) and iStart to support the camp activities. The partners offered financial and in-kind support, including trainers. Mr Martin, the deputy coordinator of STEM programmes, chaired the organising committee for boot camp. He commended the participants for observing discipline and being innovative in their projects.



## Mugoiri Girls Launches STEM & Innovations Week

By Kizito Makoba and Winfred Magu

CEMASTEIA, through its STEM Innovations, Climate change and Education for Sustainable Development (ESD) programme, supports schools and encourages the uptake of innovative teaching and learning STEM activities. This is achieved through training school leaders and teachers on STEM education, STEM outreach for learners, school visits at CEMASTEIA, the establishment of STEM and innovation activities and STEM projects such as maker spaces and projects in Education for Sustainable Education (ESD).

It is this spirit that Mr Kizito Makoba, Coordinator of STEM and Innovations at CEMASTEIA and a team of five officers from CEMASTEIA joined learners, teachers and school leadership at OLC Mugoiri Girls, Muranga County, during the launch of the 1<sup>st</sup> Edition of STEM & Innovation week. The one-week activities on the theme of '*engaged possibilities*' were organised from the 24<sup>th</sup> to the 29<sup>th</sup> of October. The launch was a culmination of the hard work teachers and learners had put into developing innovative projects.

Students' projects were in various categories: Information, Communication and Technology, ESD, Arts, science, mathematics, home science and entrepreneurship. They focused on solving social problems such as non-communicable diseases, pollution, home improvement and recycling. The team from CEMASTEIA interacted with the students and teachers as they toured the exhibitions. They appreciated the student's projects as they offered information on how best to improve all their projects. They also participated in selecting some outstanding presentations and exhibitions that were presented with trophies, certificates and tokens from the sponsors.



Mr. Kizito Makoba interacting with some of the exhibitions

During the awarding ceremony, Mr Makoba, citing examples of countries that have excelled in STEM, such as Malaysia and Japan, commended Mugoiri Girls for organising the week-long activities promoting STEM



development. Through such experiences, learners would practice skills and help reduce some of the problems in society. He added that such milestones had been achieved due to the emphasis placed on STEM competitions that exposed learners to creative and innovative thinking. STEM & Innovation and ESD programmes aim at promoting an increase in the number of students enrolling in STEM subjects and subsequent uptake of STEM-related courses in institutions of higher learning and, finally, careers.

In promoting activities that mitigate climatic change, CEMASTEIA donated tree seedlings and participated in planting some. Mr Kizito educated the youth about the value of environmental responsibility and challenged them to plant trees in the schools and their communities. The principal, Ms Muinde, appreciated CEMASTEIA for attending the launch and being part of the sponsors for the event. [Kindly give us your feedback using the link https://forms.gle/S2DPjwEBRNrdL4bt7](https://forms.gle/S2DPjwEBRNrdL4bt7)



## STEM Outreach at Karen C Girls'

**By Dan Orero**

The Centre for Mathematics, Science and Technology Education in Africa (CEMASTEIA), through its Science, Technology, Engineering and Mathematics (STEM) programme, supports STEM skills development for learners. The STEM outreach programme enables the institution to engage directly

with the learners and teachers, putting science and mathematics into practice through learning by doing. This is vital for the



learners' success and competitiveness in STEM subjects and career pathways.

CEMASTEIA organised a one-day STEM outreach at Karen C Girls' on 7<sup>th</sup> October 2022, bringing together the teachers and learners from the institution. This was an exciting day at the school, filled with fun as learner experienced the joy of learning through activities in sciences and mathematics. Speaking during the activities, Mrs Beatrice Atieno Otieno, the

school principal, lauded CEMASTEIA for coming up with such a programme when the school is on a mission to look for means to improve learner participation and achievement in STEM subjects. She noted that the exhibitions would make a difference as learners engaged in hands-on experience with the enriching teaching and learning resources that CEMASTEIA displayed and demonstrated. Teachers



at the school also expressed gratitude, noting that the experience would positively impact their delivery in the classroom. They requested more time to ensure

that almost all the students participated and for some concepts to emerge clearly. Students also noted that they had fun all day and requested such activities regularly as the experience changed their attitude towards STEM subjects and increased their determination to give their all for a remarkable improvement.

# STEM Model Schools

## Impact of Makerspace at Nguviu Boys High School

By Mr Francis Mugendi and Ms Sophy Njoki, Nguviu Boys High School



Lenny Kaunda and Dennis Mwaura posing with the IOT award

farms where rice, millet, sorghum, wheat, sunflower and strawberries are.

Rice farmers in Mwea region have encountered huge losses severally following the destruction of thousands of acres of plantation by these birds. Farmers are forced to spend more time in the rice plantations chasing the birds away, which in most cases, outwit them due to their large numbers. The hide-and-seek game between farmers and the birds is not a productive venture, as it wastes time for farmers. When birds outwit farmers, it severely threatens food security and increases farmers' poverty index.

Two of our students, Lenny Kaunda and Dennis Mwaura, took up the challenge. Working in the Makers Space, the two students developed an innovation, "Farm LEMWA Model 1", as an intervention to the menace of the quelea birds.

The "Farm LEMWA Model 1" proto-type device designed and developed by the two students primarily uses robotic kits and laptops donated to Nguviu Boy's School by CEMASTEAs as part of infrastructure support to STEM Model Schools. "Farm LEMWA Model 1" device consists of three major components; a central system, a radar sensor, and a power bank. Cognizant of the need to embrace green energy, the

One emphasis and challenge by CEMASTEAs on STEM model schools is supporting learners to engage in innovative activities in Marker Spaces that target solutions to societal problems. Nguviu Boy's School, one of the STEM Model Schools in Kenya, has embraced the MakerSpace Concept. As part of the team of teachers trained by CEMASTEAs on STEM Education, we, Mr Francis Mugendi and Ms Sophy Njoki encourage and work with students in the Marker Space at the school. We challenge students to think of innovative ways to develop solutions to everyday problems. We posed the problem of quelea birds that threaten the enhancement of food security in the country. The quelea birds are a menace to

 **Young Scientists Kenya**  
@YSTKenya

The Most Innovative Project in IOT Award went to Nguviu Boys Schools' Dennis Mwaura and Lenny kaunda. This Award was presented by the MD @LiquidInTechKe, Mr Sajid Khan @embucountygovt



Presentation of award to Nguviu Boy's School. Proto-type of "Farm LEMWA Model 1"



power bank has a provision to tap into solar energy. A backup battery to store the power generated during the day is part of the design to ensure the device is useful also at night. Excess stored energy can be used to do other functions like charging phones and torches and lighting up the farm to enhance security. Surveillance cameras linked with the owner are fitted to the device to ensure its safety. The ultrasonic sensors detect incoming birds from all directions. Once detected, a signal is sent to activate the high-pitched speaker, distracting the birds. Several sounds can be installed to outsmart the bird to avoid the monotony of sounds.

Mr Mugendi, the lead mentor in the Maker Space, with the support of the school's Chief Principal and Patron of the Maker Space, Mr Paul Mwangele, guided the two students in enrolling the project in this year's 5<sup>th</sup> Young Scientist Kenya competitions. During the competition held at Sarit Centre Expo in Nairobi, Kenya, Farm LEMWA Model 1 emerged as the best in the *Most Innovative Project in the Internet of Things (IoT)* category. The Chief Principal thanked CEMASTEAM for the continued support of STEM Model Schools. [Kindly give us your feedback using the link https://forms.gle/S2DPjwEBRNrdL4bt7](https://forms.gle/S2DPjwEBRNrdL4bt7)

## **Picture Speak:** Launch of the Presidential Working Party on Education Reform



On 12<sup>th</sup> October, CEMASTEAM had the privilege of hosting Deputy President H. E. Hon. Rigathi Gachagua EGH, during the launch of the Presidential Working Party on Education Reform. CEO CEMASTEAM took the DP and his entourage, including the then outgoing CS for Education Prof Magoha (now deceased) and incoming CS, Hon. Ezekiel Machogu and other dignitaries on a tour of EMASTEAM's STEM facilities.

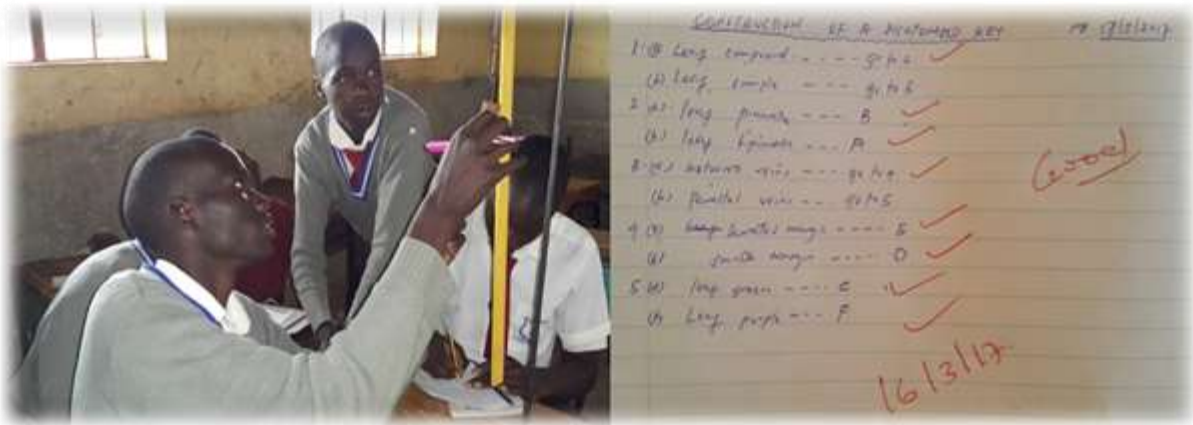


# The Nature of Science

## The Role of Feedback in Learning

By Thuo Karanja

Feedback is an essential part of science instruction. Feedback is any spoken or written response to a learner in response to their attainment levels in an assessment task, performance or product. While on most occasions, feedback is given by a teacher, learners can also give each other peer feedback. One of the most used feedback forms is grading learners' scores, marks, and grades. Such feedback is sometimes accompanied by comments such as 'good, keep it up, you need to improve, bravo, pull up your socks and see me' written on the answer scripts or in report cards. In some cases, teachers may use sarcastic, ambiguous and dismissive statements to describe attainment. Feedback is also given during the revision of assessment tasks, when teachers call up individual learners, or during academic days when parents are invited.



What is the role of feedback in learning? Feedback is intended to acknowledge learners' efforts and progress toward achieving the learning outcomes. Effective feedback should be constructive and point learners to ways to improve their learning and achievement. Studies have shown that most feedback given to learners is not practical or helpful in 'moving to learn forward'. Most learners claim that much of the feedback they receive is usually too late, vague, unclear and inconsistent to be beneficial. Feedback such as 'you are a great student', 'that was a clever response', 'well done', and 'very poor' focus personally on the learner and is not connected to the specifics of the learning goals and success criteria. It shows no evidence about the learning or the task. These are just general observations of success or failure and tend to attribute the success or failure to the personal aspects of the learner.

Research has repeatedly confirmed that feedback is more effective when it's comments based, specific and focuses more on the task, the subject and strategies for the learner's self-improvement/regulation. Self-regulation is essential, and learners need to be guided to utilise that feedback in identifying their strengths and weakness and where to put more effort into changing strategies for further development and learning. Feedback is considered weak and ineffective when it focuses on a learner's characteristics or is generalised vague comments and praise. For more knowledge and practice in the classroom and assessment feedback, watch a series of Vimeo videos by an expert on this subject, Dylan Wiliam, on <https://vimeo.com/514647973>



# Ualimu Bora: Who is a "desired classroom teacher?"

By Mungai Njoroge, PhD.

The education sector has a broad spectrum of criterion for "desired classroom teacher". This criterion is context specific and embodied through various titles and awards. In line with Sustainable Development Goal Number Four (SDG4), a desired classroom teacher ensures "inclusive and equitable quality education and promote lifelong learning opportunities for all". In Kenya, some of the titles conferred to such a teacher include the teacher of the year award (TOYA), innovative/ICT teacher of the year (iTOYA) and principal of the year (POYA).

**Table 1** Levels of Learner Knowledge (adapted from *Learning to Learn: Becoming a Self-Grower*, by Pacific Crest, 2013)

<p><b>Level I: Information</b></p> <p>You can talk about a concept, process, tool, or context in words and can provide definitions or descriptions. You are best with questions about facts.</p> <p><i>A learner at this level can answer these questions:</i> "Where is...?" "Can you list the three...?"</p>
<p><b>Level II: Conceptual Understanding</b></p> <p>You can construct an appropriate model in your mind pertaining to a particular item of knowledge. You also can link items of knowledge to each other.</p> <p><i>A learner at this level can answer these questions:</i> "How would you compare or contrast...?" "What is the main idea of...?"</p>
<p><b>Level III: Application</b></p> <p>You can apply and transfer a particular item of knowledge to different situations and contexts. You can generalize the knowledge to determine ways to apply it, testing boundaries and linkages to other information. You are able to teach this knowledge to others.</p> <p><i>A learner at this level can answer these questions:</i> "What would result if...?" "How would you apply what you learned to develop...?"</p>
<p><b>Level IV: Working Expertise</b></p> <p>You can solve complex problems by applying and generalizing multiple concepts, processes, and tools to produce a quality problem solution. You are seen as an expert in your field.</p> <p><i>A learner at this level can answer these questions:</i> "Can you propose an alternative...?" "Can you construct a model that would change...?"</p>
<p><b>Level V: Research</b></p> <p>You have innovative expertise which can be used to develop new understanding. You often make new linkages among concepts and problem solutions which have not been seen before.</p> <p><i>A learner at this level can answer these questions:</i> "Can you formulate a theory for...?" "Can you think of an original way to...?"</p>

The desired teacher facilitates meaningful learning, which occurs when learners seek to relate new concepts and propositions to relevant existing concepts, and propositions in their cognitive structures and contextual experiences. The teacher encourages learners to actively engage in learning and take responsibility for their learning.

Such a teacher helps learners improve their learning skills, including those in the affective domain, such that students achieve a positive attitude toward learning concepts – irrespective of the subject, a sense of self-efficacy, the ability to manage frustration, and a willingness to take risks in learning. These desired teachers are also masters of scaffolding learning. These teachers strive to continuously improve student learning outcomes, such that learners move from the level of mere information and memorisation through conceptual understanding to application, working expertise (problem-solving), and then possibly to the highest level of creativity – as detailed by Bloom's taxonomy; that of the researcher who has "innovative expertise which can be used to develop new understanding and problem solutions" (see table)

*Acknowledgement:* The Ualimu Bora column has drawn some of the content (excerpts and the table) on "desired classroom teacher" from the following source:

Gathumbi, A. W., Njoroge, J. M., & Hintze, D. L. (2013). Towards Comprehensive Professional Development of Teachers: The Case of Kenya. *International Journal of Process Education*, 5(1), 3 – 14. Available: <http://www.ijpe.online/2013/kenya.pdf>

# Promoting Inclusive Education

By Thuo Karanja & John Odhiambo

Inclusive educational practices are attitudes and methods, policies, values and practices that ensure all learners can access mainstream education regardless of whether they have exceptional 'labels'. In an inclusive school, everyone ensures learners feel welcome and valued and get the proper support to develop their talents and achieve their goals.

All children have a right to education. Inclusive education is the most effective way to give all children a fair opportunity to learn and develop the skills they need to thrive. However, in most contexts, learners with disabilities are often overlooked in policymaking, limiting their access to education and their ability to participate in social, economic and political life and decisions that most affect them. They are robbed of their right to learn through persistent barriers to education stemming from discrimination, stigma and failure of decision-makers to incorporate disability in school services and programmes.

Applying the Universal learning design (UDL) forms the solution for practising inclusive education. UDL is an instructional design used to teaching and learning products, resources, methods of instruction and learning environments for all learners to the greatest extent possible without the need for adaptation or specialised design. In UDL, teachers use various teaching methods adjusted for every learner's strengths and needs and build-in flexibility that removes barriers to learning, giving all learners equal opportunities to succeed. Briefly, it is driven by three principles.

**Representation** is where learners are offered information in more than one format. While textbooks are primarily visual, providing text, audio, video, and hands-on allows all learners to access the resources in whichever way best suits their learning strengths. In **action and expression**, learners are given more than one way to interact with the material and show what they've learned. Learners could choose between taking a pencil-and-paper test, giving an oral presentation or doing a group project. **Engagement** is where learners can make

choices and do assignments relevant to their lives and interests, including the selection and opportunities for students to get up and move around the classroom.

Gender-responsive pedagogy (GRP) is also inclusive practice. In the cartoon about hearing impairment, not many would consider gender as a



Janet and James are learners with hearing impairment; what strategies would a school, implement to promote inclusive education for them?

factor in inclusive education. Gender-responsive pedagogy entails teaching and learning processes that encourage equal participation and involvement of boys and girls. It considers boys' and girls' specific interests, learning styles and needs. GRP is not just looking at how to teach but also how to address gender in lesson planning, classroom management and assessment.

Other success factors for inclusive education include developing school leadership and teacher capacity to effectively implement universal design principles and inclusive psychosocial support for learners with disabilities. There is also the need for developing communities of practice to share best practices among teachers and raise community awareness on supporting children with disabilities.



# Ubuntu Special Needs and Inclusive Conference

By Thuo Karanja

The Kenya Institute for Special Education (KISE) hosted the 1<sup>st</sup> Special Needs and Inclusive Education Conference from the 16<sup>th</sup> to 18<sup>th</sup> November 2022. The conference was organised by Africa Special Needs Network and run under the theme "Reimagining Inclusive Education". This timely conference brought together participants, including Ministry of Education officials, Directors of Schools interested in SNE, educators, specialists in SNE, Non-Governmental



Reuben Kigame: Giving his testimony on experiences vying as a Presidential candidate during the 2022 General Elections.

Organisations, parents and learners with special needs. Eva Naputuni Nyoike (OGW), a champion of SNE and Chair of Africa Special Needs Network, chaired the conference. Ambassador Simon Nabukwesi, Principal Secretary State Department for University Education and Research, Ministry of Education, officially opened the conference. Other keynote speakers included Dr Desire Chiwandire of the University of Illinois at Chicago, USA, who made a presentation on Disability and Human Development, and Fredrick Haga, OGW, Director of Special Needs Education, MOE; Reuben Kigame gave a powerful testimonial on his journey and experiences vying as a Presidential Candidate.

The conference adopted various presentation models, including keynote speeches, testimonials, paper presentations; 'fireplace' talks; panel discussions in breakouts, and testimonials. Under interrogation were different themes in inclusive education, including *The Ubuntu philosophy and rethinking of social inclusion; Demystifying disabilities myths and misconceptions, Importance of early identification and interventions; Implications for inclusive SNE and training on Competency Based Curriculum (CBC); partnerships and resource mobilisation for successful inclusive SNE; Caregivers, parental and community involvement; Mental health; Insurance and health covers for SNE.*

'Umuntu ngamuntu ngabantu': a person is only a person through others is the Ubuntu philosophy that formed the banner under which the conference was organised. Ubuntu ensures human dignity is always at the core of people's actions, thoughts, and deeds when interacting with others. Mr Chui Nyoike, an Ubuntu philosophy scholar, expounded on this philosophy and suggested the need to develop contextually relevant and all-encompassing inclusive education tools, policies and resources. The conference noted that schools' tools for inclusive education are devoid of African contextual realities and that there are numerous misconceptions about the practice of inclusive education. It was recommended that school leaders, teachers, parents and caregivers adopt inclusive and accommodative practices for dealing with special needs learners.

CEO CEMASTEAM, Mrs Jacinta Akatsa, was represented at the conference by Mr Thuo Karanja. CEMASTEAM showcased its continued role in bringing to the attention of school leaders and teachers the need and importance of practising wholesome inclusive education that is not limited to disabilities. CEMASTEAM presentation on inclusive STEM practices focused on teacher pedagogical preparedness for inclusive education. The presentation inquired about possibilities for educators in designing instruction and learning environments to maximise learning. This included applying universal designs in pedagogies, learning spaces and policies focusing on special needs. The paper also touched on Gender Responsive Pedagogies as part and parcel of inclusive education (*read the article on promoting inclusive education in our schools*). Kindly give us your feedback using the link <https://forms.gle/S2DPjwEBRNrdL4bt7>

# COMSTEDA 19



By Mary W. Sichangi, Ben Mwangi & Irene Vutale



Hon. Janet Kataaha Museveni, First Lady and Minister of Education and Sports, Republic of Uganda was the Chief Guest for COMSTEDA19

SMASE-Africa, in collaboration with the Ministry of Education and Sports (MOES), Republic of Uganda, successfully hosted a blended 19<sup>th</sup> Conference on Mathematics, Science and Technology Education in Africa (COMSTEDA 19) in Kampala, Uganda from 22<sup>nd</sup> – 24<sup>th</sup> November. The theme of the conference, "*Teacher Professional Development in Africa; Knowledge, Skills and Values in STEM Learning Environments*", attracted research papers under the four sub-strands, namely: *Teacher Professional Development in Africa; Knowledge, Skills and Values in STEM Learning Environments; School Culture and Learning in STEM; Curriculum Development, Implementation and Assessment and ICT Integration in STEM Education*. The conference attendance of 1,124 was the highest in all

COMSTEDA forums, having brought on board Ministers of Education, senior government officials, students and teachers.

In his opening remarks, the SMASE-Africa president, Dr Benson Banda, emphasised the need for educating the 21st Century Africa on learning approaches that enable balancing of the reflux between the pedagogical triangle of curriculum, teachers and learners. The Chief Guest, Hon. Janet Kataaha Museveni, the First Lady and Minister of Education and Sports, Uganda, amplified the conference theme by expressing the importance of focusing on the teaching force's skills. She further reiterated the need to maximise the existing in-service teacher training programmes and, where necessary, develop new programmes for teachers of STEM subjects.

The conference was graced by three keynote speakers who made introductory presentations aligned with the theme and strands of the conference. Dr Joab Ezra Agaba sensitised participants on the importance of Blended Learning Environments for Teaching and Learning Science, Technology, Engineering and Mathematics (STEM). Dr Padmanabhan Seshaiyer (Padhu) gave insights into the Competencies for Problem-Solving through innovative STEM education in the post-COVID-19 era. He emphasised the need for educational frameworks, effective instructional strategies and technological innovations that engage students to learn and apply STEM in a meaningful way. He further proposed the need to use educators' pedagogical practices that engage the next generation of problem solvers. Dr Marguerite K. Miheso-O'Connor's (PhD) presentation focused on Transforming STEM Education through STEM Communication to address the fundamental beliefs and norms towards achieving perspective transformation in STEM education among learners.



Ms. Ketty Lamaro, Permanent Secretary, Ministry of Education & Sports, Uganda and Dr. Benson Banda, President, SMASE Africa, addressing the conference

CEMASTEAs were represented at the conference by several members of staff led by Mrs Jacinta L. Akatsa, the CEO of CEMASTEAs and Executive Secretary, SMASE-Africa and one member of the Board of Governors, Ms Margaret Ngina Kairu. CEMASTEAs staff who made presentations and participated in panel discussions and workshops included: Ndung'u Martin Mungai: *The Role of Social Networking Sites in Crisis Management in Public Secondary Schools in Westlands Sub-County, Nairobi County*; Mary W. Sichangi: *Enablers of Learner-Centered Assessments in mathematics Lessons*; Paul Waibochi: *Continuous Professional Development Remotely Through CEMASTEAs Portal*; Makoba Kizito: *When will teaching stop for learning to happen?*; John Odhiambo et al.: *The impact of adopting a scientific calculator in modern education to promote critical thinking and project-based learning in STEM education*; and Thuo Karanja & Kireru David: *COVID-19 Pedagogies: Usage, Experience and Challenges going into the Future*. Gregory Njogu was part of the Conference Secretariat.

In his closing remarks, the president SMASE-Africa lauded participants for their fruitful contributions to making the conference a success. He further urged the participants to invest in strengthening the local hubs by equipping them with ICT facilities to support continuous professional development as the cornerstone of curriculum development. Ghana will host COMSTEDA20, and we look forward to your participation.



## Picture Speak: The joy of learning!



By Mary W. Sichangi & Ben Mwangi

The Association for the Development of Education in Africa (ADEA), working closely with Mauritius' Ministry of Education, organised and hosted the 2022 Triennale, held from 19<sup>th</sup> to 21<sup>st</sup> October 2022 at Le Meridien Hotel, Mauritius. The theme of the Triennale was: *"Reflecting on the impact of COVID-19 on Africa's educational systems and how to build resilience to sustain the development of skills for the continent and beyond."* The 2022 edition was structured around Africa's key priorities of foundational learning, the impact of COVID-19 on educational systems in terms of policy and practice responses, Technical and Vocational Skills Development and Higher education, gender, equity, inclusion and climate change.

The Triennale is ADEA's flagship event that brings together policymakers, decision-makers and key stakeholders in the education sector for political dialogue and sharing of knowledge and experiences. ADEA Triennale fosters continental, regional and cross-country interactions, supporting peer learning and knowledge exchange and promoting Africa's development agenda. The event adopted a hybrid approach comprising in-person and virtual participants from Africa and globally. There were plenary sessions, breakout sessions and exhibitions on the theme organised by ADEA or partners.

The forum was graced by various dignitaries, with the key speeches delivered by Hon. Dr Monica Musenero, Minister of Science, Technology and Innovation, Uganda; Chairperson, AU STC-ESTI Bureau; ADEA Steering Committee, H.E. Macky Sall, President, Republic of Senegal and Hon. Mrs Leela Devi Dookun-Luchoomun, Vice Prime Minister and Minister of Education, Tertiary Education, Science and Technology, Mauritius. The constant highlight in all their remarks revolved

around the need to embrace change, adapt accordingly and seize the opportunities brought on by the emergence of COVID-19 which have tested and strengthened our resilience in curriculum implementation.

Kenya was represented at the event by a delegation from the Ministry of Education led by Joshua Mwangi, ADEA Focal Point Person and Darius Mogaka, Director of Higher Education. Other members of the delegation included Dr Pius Mutisya, ICQN-MSE; Jacinta L. Akasta, Chief Executive Officer, CEMASTEAM, Mary W. Sichangi, Coordinator, Inter-Country Quality Node on



Mathematics and Science Education (ICQN-MSE); Dorah Kitale, Coordinator, ICQN-Peace Education (PE) and Emily N. Simiyu, ICQN-MSE Project officer. The delegation made presentations on The power of School-Based Teacher Support Systems in enhancing classrooms practices in STEM education, Digitization, the Status of STEM education in basic learning levels in Africa and Strengthening synergies between the 21<sup>st</sup> Commonwealth Conference for Ministers of Education (CCEM) outcomes and ADEA Triennale. Overall, African countries were encouraged to prioritise school-industry linkage as it is a critical element in ensuring lifelong learning and enhancing the impact of education. Kindly give us your feedback using the link <https://forms.gle/S2DPjwEBRNrdL4bt7>



# KEPSHA 18th Annual AGM & Conference

By George Kiruja and Dan Orero



A young attendant at the conference demonstrating concept to visitors at the CEMASTEAM stand

The Kenya Primary School Heads Association (KEPSHA) 18<sup>th</sup> AGM conference took place in Mombasa at Sheikh Zayed Children Welfare Centre, December 3<sup>rd</sup> to 9<sup>th</sup>, 2022. The conference's theme was, *managing the transition of a competency-based curriculum for effectively nurturing each learner's potential*. It brought together school heads from all over the country. The conference gave participants by gave participants opportunity to discuss various topics related to the theme. The AGM and conference are an opportunity to discuss and make decisions affecting the running of the Association.

Among the guests were the Principal Secretary (PS), Ministry of Education (MoE), State Department of Basic Education and Early Learning, Dr Belio Kipsang,

representing the Chief Guest, His Excellency Dr William Samoei Ruto, C.G.H. President of the Republic of Kenya and Commander-in-Chief of the Defence Forces. In his speech, the Principal Secretary lauded KEPSHA for ensuring the education programmes were carried out smoothly. He assured the Association of the Government's support and looked forward to working closely with them.

CEO CEMASTEAM was represented at the conference by Mr George Kiruja, Coordinator of Primary Programmes, who led a team of officers. Other guests were members of the education committee from the National Assembly, the Senate, and several other senior Government officers. The team from CEMASTEAM used the opportunity to exhibit a sample of innovative pedagogical activities and network with other exhibitors to acquire ideas to transform CEMASTEAM programmes. The demonstrated activities impressed the PS during his visit to the CEMASTEAM stand. The many enthusiastic visitors to the CEMASTEAM stand had a chance to try out some of the activities. Teachers were guided on accessing more through the various CEMASTEAM online platforms.

## The African Pocket: Tips on Personal Finance



By Clara Mwangi



Money management should be a life skill everyone needs to succeed in life. Freewheeling in money matters can cost you far more than proactive planning and self-discipline. If you don't plan for the Future, you probably will spend your later years in misery. We have two tips on personal finance you could adopt to help you save for a rainy day. **Live below your means.** If you spend all the money you earn, you don't have money left to either save or invest, achieve your financial goals, grow and develop yourself, and multiply the money you make. Spend your money with the Future in mind. Eliminate wasteful spending, and ensure your spending is aligned with your budget and vision. Before making any purchase decision, think it through and avoid impulse spending. **Stay out of bad debt:** There are good debts and bad debts. "Good" debt is money owed for things that can help build wealth or increase income over time, such as student loans, mortgages or business loans. "Bad" debt refers to things like credit cards or other consumer debt that do little to improve your financial outcome. Avoid bad debt.

# Climate Change: Is it our journey to Armageddon?

By Makoba Kizito



## Paleolithic era

Early humans had great respect and attachment to their environment. They lived in harmony with it. The environment was everything

During the Paleolithic era, the world population was just about five or ten million inhabitants. We were spoilt for space. We fished, hunted and gathered. We also never lived in one place for long. We knew that nature needed space to replace what we had taken from it.

turning point in human history. We pushed those who remained resilient hunters and nomadic herders to places no one wanted. We started calling them marginalised and primitive communities. Yet these are the only communities that are well integrated with nature. They understand the true meaning of an ecosystem-as a complex web that connects animals, plants, air, water and every other living thing in the biosphere.

Agriculture spread throughout the world. We raided the natural ecosystems to plant food crops and keep domesticated animals. Following these, we invented fire leading to the rapid development of tools for agriculture. That was the birth of industrialisation. We built more

factories to produce the tools and machines to process the farm produce. Wood and coal were burned in abundance to provide the required energy for the factories. Gradually urban settlements were everywhere, leading to large populations staying together. More pressure was put on natural resources, which was the beginning of the social conflict - the struggle



## Neolithic era

We got tired of hunting and gathering as well as moving about hence we invented homesteads and agriculture

## Cost of Civilization

Fossil-fuel combustion and other industrial activities are raising the carbon dioxide content of the atmosphere hence raising the temperatures and the resulting climate change effects.



for resources. We called it the era of civilisation. Industrialisation and deforestation have disrupted the carbon cycle leading to the drastic rise in temperature that we are experiencing today. This contributes to the current massive crop failures, flooding due to melting ice caps, erratic weather and climatic patterns. These disruptions, if left unchecked, will cause economic meltdowns and instability, civil unrest and even wars.

But finally, as human beings, we must be worried about the natural catastrophes that will likely wipe us from planet earth. The time to act is not now but yesterday. Nature knows what is best for us, but we must listen. Kindly give us your feedback using the link <https://forms.gle/S2DPjwEBRNrdL4bt7>

<https://www.oxfam.org/en/5-natural-disasters-beg-climate-action>  
<http://fubini.swarthmore.edu/~ENVS2/S2007/rmckenn1/FirstEssay.html>  
Picture source-<https://ideas.pixton.com/neolithic-revolution>



# Combating Climate Change through Education for Sustainable Development

By Winfred Magu and Patrick Wanjohi



Left: Learners interacting with Mr Wanjohi of ESD at CEMASTEIA and right, Naivasha girls holding speedballs.

To reduce the effects of climate change, the Government has

launched the national tree-growing restoration campaign that aims to plant 15 billion trees across the country by 2032. Indeed His Excellency President has committed to *ensuring 30% tree cover* by 2032. CEMASTEIA remains committed to contributing to these efforts through tree planting and growing in collaboration with schools.

Under the STEM, Innovations and ESD Programme, CEMASTEIA has donated seed balls and tree seedlings to visiting schools. From July to September, more than 300 hundred learners and teachers from Good Testimony International Schools, Upper Matasyia Primary, St. Bakhita Primary School and Masavi High School received tree seedlings for planting back at their schools. Karen C Secondary School and the OLC Mugoiri Girls received tree seedlings and seed balls during STEM Outreach activities.

During the school visits at CEMASTEIA, learners tour the tree nursery, vegetable gardens and wastewater treatment plants, where they learn about sustainable development. They learn about biodiversity, sustainable production and consumption, and climate change's effects. The objective is to teach the value of responsibility and care for the environment through sustainable exploitation, production, and consumption. The Centre looks forward to engaging more schools in the coming quarter and continuing with national efforts to ensure a greener future. **Kindly give us your feedback using the link <https://forms.gle/S2DPjwEBRNrdL4bt7>**

Do you still remember me?  
I am still quite useful.



# Kenya Economic Report 2022

## Building Resilience and Sustainable Economic Development

By Thuo Karanja

The Kenya Institute for Public Policy Research and Analysis (KIPPRA) launched the Kenya Economic Report (KER) 2022 on 21<sup>st</sup> December 2022 at the Sarova Stanley Hotel, Nairobi. The report under the theme, "Building Resilience and Sustainable Economic Development in Kenya", highlights recent trends and developments in macroeconomic performance and medium-term economic prospects for Kenya.

The Chief Guest was Cabinet Secretary, National Treasury and Economic Planning Prof. Njuguna Ndung'u. KIPPRA Board member, Mr Zachary Mwangi Alt. PS, Planning represented the Chief Guest. Dr Benson A. Ateng' the KIPPRA Board Chair, delivered the opening remarks. Dr Rose Ngugi, Executive Director, KIPPRA, gave the report's highlights. The launch included ministries, departments, agencies, and non-state actors, including the World Bank. Mr Thuo Karanja, Coordinator of Performance Contracting, represented CEMASTEAC CEO at the launch.



The report highlights recent trends and developments in macroeconomic performance as well as medium-term economic prospects for Kenya. It was developed in an economic backdrop characterised by shocks and stressors such as COVID-19, the persistent locust invasion, the war in Ukraine and the electoral process. It also covers building a drought, resilient manufacturing sector for sustainable development; building a resilient economy through trade; enhancing a resilient and sustainable livestock industry in Kenya; building resilience through the digital economy; leveraging Science, Technology and Innovation for building a resilient knowledge-based economy; entrenching a resilient, creative economy; the role of national values in enhancing socio-economic resilience and good governance in building resilience.

The REPORT provides evidence-based recommendations to support policy initiatives and mitigate the impacts of shocks and stressors towards sustainable development through building resilience across the highlighted economic sectors. The report can be accessed at <https://kippra.or.ke/download/kenya-economic-report-2022-main-report/>

## Coffee Break



The grid has more than 25 terms related to cell and cell biology. Find them.

Animal cell, cell membrane, cell theory, cell wall, chloroplasts, chromosome, cytoplasm, diffusion, DNA, endoplasmic reticulum, Golgi body, lysosomes microscope, mitochondria, mitosis, nucleolus, nucleus, organ, organ system, organelles, organism, osmosis, photosynthesis, plant ,ribosome, RNA, tissue, vacuole



# Gone too Soon: Tributes to Our Departed Colleagues

By Jacinta Akatsa, CEO & Thuo Karanja

It was a sorrowful December at CEMASTEА as we gathered twice to say tributes and bid goodbyes after the most untimely loss of two of our staff members, Madam Ann Wairimu Nderitu and Madam Lillian Atieno Okoyo. The good ladies worked in the Administration Department, Ann at the Office Services and Lillian at the Records Management Unit. Ann passed away after a short illness. Lillian's life was taken away through a tragic road accident. We are yet to come to terms with the reality that these two beautiful souls are no more. Here are short work-life tributes to both ladies.

## Ann Wairimu

Ann was full of life and has worked at CEMASTEА for the last 20 years. She was a diligent worker, and her commitment to duty was unmatched. Ann had very enviable leadership and people skills. Ann was always composed, patient and respectful to both staff and visitors to CEMASTEА. She treated those in authority and colleagues at work with a lot of respect and would rarely refer to a staff member without attaching their official titles, such as Mr, Mrs, or Madam. Her team spirit was evident, and one never got concerned that work was slowing, even when some of her colleagues were out of the station. She was also a mentor to the youthful ladies at CEMASTEА, always modelled the character of being a woman of virtue. She was always there for friends and colleagues and would visit with them and contribute to their needs in prayers and in kind. Ann adored her daughter Christine and would occasionally bring her along to work.



## Lillian Atieno

Lillian has worked at CEMASTEА since the year 2012. She was self-driven and took on her duties and responsibilities with high devotion and commitment. She had a natural passion for keeping things in order. Lillian initiated the re-organisation and mainstreaming of proper record-keeping in all sections at CEMASTEА. The result was the establishment of the Records Management Committee and the Record Management Unit. Lillian immensely contributed to the successful internal, and external ISO audits leading to ISO 9000:2015 Certification and Recertification for the Centre. She was passionate and committed to the success of performance contracting and always kept tabs on the progress of all target areas. Lillian was cordial in her working relationship with colleagues, keen, attentive to detail and always ready to provide excellent advice and counsel, especially when helping colleagues with work-related matters.

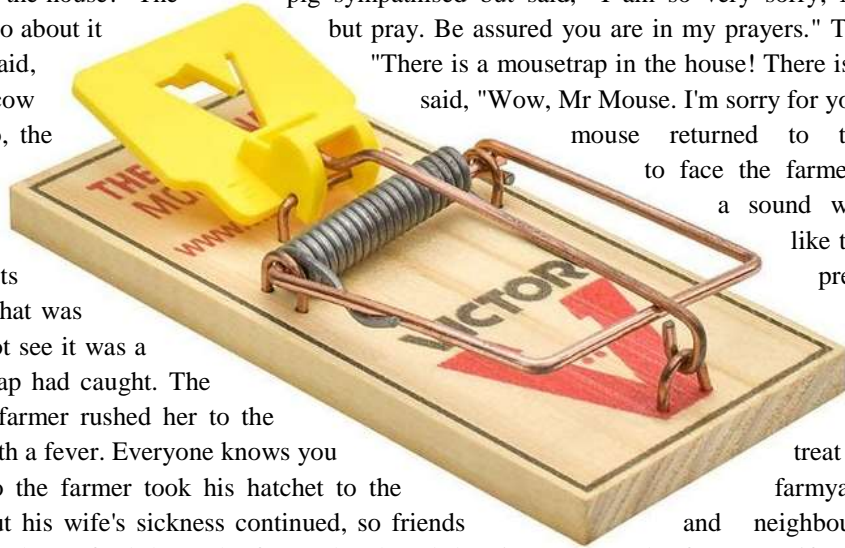


While we feel the loss of the two ladies and their departure saddens us, we also take the opportunity to celebrate their brilliance, talent and service to CEMASTEА. We will miss them dearly. Our thoughts, commiserations and prayers will always be with their families. Eternal peace be granted unto them, perpetual light shine upon them, and may their wonderful souls rest in peace.



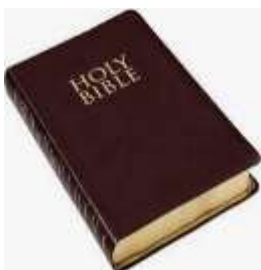
## Aesop's Fables: The Mouse Trap

A mouse looked through the crack in the wall to see the farmer and his wife open a package. "What food might this contain?" The mouse wondered – he was devastated to discover it was a mousetrap. Retreating to the farmyard, the mouse proclaimed the warning: "There is a mousetrap in the house! There is a mousetrap in the house!" The chicken clucked and scratched, raised her head and said, "Mr Mouse, I can tell this is a grave concern to you, but it is of no consequence to me. I cannot be bothered by it." The mouse turned to the pig and told him, "There is a mousetrap in the house! There is a mousetrap in the house!" The pig sympathised but said, "I am so very sorry, Mr Mouse, but there is nothing I can do about it but pray. Be assured you are in my prayers." The mouse turned to the cow and said, "There is a mousetrap in the house! There is a mousetrap in the house!" The cow said, "Wow, Mr Mouse. I'm sorry for you, but it's no skin off my nose." So, the mouse returned to the house, head down and dejected, to face the farmer's mousetrap alone. That very night a sound was heard throughout the house — like the sound of a mousetrap catching its prey. The farmer's wife rushed to see what was caught. In the darkness, she did not see it was a venomous snake whose tail the trap had caught. The snake bit the farmer's wife. The farmer rushed her to the hospital, and she returned home with a fever. Everyone knows you treat a fever with fresh chicken soup, so the farmer took his hatchet to the farmyard and neighbours for the soup's main ingredient. But his wife's sickness continued, so friends and neighbours came to sit with her around the clock. To feed them, the farmer butchered the pig. The farmer's wife did not get well; she died. So many people came for her funeral; the farmer had the cow slaughtered to provide enough meat for all of them. The mouse looked upon it all from his crack in the wall with great sadness.



### Moral

Next time you hear someone is facing a problem and think it doesn't concern you, remember: when one of us is threatened, we are all at risk. We must keep an eye out for one another and make an extra effort to encourage one another. We are all involved in this journey called life. Kindly give us your feedback using the link <https://forms.gle/S2DPjwEBRNrdL4bt7>



## Word of Encouragement

*He will wipe every tear from their eyes. There will be no more death or mourning or crying or pain, for the*

*old order of things has passed away. Revelation 21:4*

**My mercy encompasses all things [Quran 7:156]**







# National Values and Principles of Governance

By David Kireru and Pauline Njiru

Article 10 of the Kenya Constitution defines the National Values and Principles of Governance that Kenyans are expected to espouse. National values are a Nation's lasting beliefs and ideals, guiding its citizens' actions and behaviours. They define what is important and worthwhile; and what is right versus wrong. Principles of Governance are standards that oblige the state to perform its functions in a manner that promotes the general well-being of its people.

Whenever State organs, State officers, public officers and all persons apply or interpret the Constitution; enact, apply or interpret any law; or make or implement public policy decisions: they are expected to abide by these National Values and Principles of Governance. The Kenya Constitution has 17 National Values and Principles of Governance. In this Issue, we briefly explain *Patriotism*, *National Unity* and *Human Dignity*.

1. **Patriotism (Uzalendo)** refers to love, loyalty and devotion shown to one's country. It calls for one's selfless services and sacrifice for their motherland by, e.g. paying taxes, protecting national resources, and working hard to build the nation. We should be proud of our brand Kenya and CEMASTEIA and defend it.
2. **National Unity (Umoja wa Kitaifa)** refers to a state of oneness which results from shared values, vision, purpose and aspirations irrespective of the ethnic, cultural, economic, and religious or any other superficial status while recognising diversity. It is a choice to work as a team tracking the challenges Kenyans face as a Nation.
3. **Human Dignity (Hadhi ya Binadamu)** is an honour bestowed on individuals and people, and the upholding of individual rights as spelt out in the Constitution and the Bill of Rights, regardless of one's status (Article 28). It is the idea that all humans should be treated with love and respect since they are human regardless of class, race, gender, nationality, sex, education and religion. [Kindly give us your feedback using the link https://forms.gle/S2DPjwEBRNrdL4bt7](https://forms.gle/S2DPjwEBRNrdL4bt7)





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