

Issue 019



# CEMASTEA INFO

## Newsletter

# BUILDING TEAMS



*Together, we make it happen! The faces behind the mission: “To continuously develop capacity in STEM education for sustainable development through training, research, innovation and partnerships with related ecosystems”*

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

In the dynamic landscape of education, the strength of our institutions is not built on individual effort alone but on the collaboration, diversity, and unyielding spirit of well-constructed teams. At CEMASTEА, we recognize that the sum of our shared experiences and expertise creates a synergy more powerful than any single contribution.

Our theme for this edition, 'Building Teams,' is a tribute to the collective resilience, creativity, and commitment that define our work. Successful teams are not merely assembled—they are carefully nurtured environments of trust, innovation, and mutual respect. These pillars underpin our ability to inspire and educate, transforming challenges into opportunities for growth.

As we navigate through this issue, readers will encounter stories of cross-functional collaboration, insights, and firsthand accounts of shared triumphs across the institution. You will discover the essential components that make teams thrive: effective communication, clarity of purpose, and a culture that values every member's voice. We delve into the evolving methodologies and tools that facilitate virtual teamwork, ensuring that physical distance does not hinder the unity and productivity of our efforts. As we highlight these narratives, we hope they inspire you to reflect on your team dynamics, identify areas for growth, and celebrate the wins, big and small.



*Part of the CEMASTEА Staff during a workout session*



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"PRODUCTIVITY IS NEVER AN ACCIDENT.  
IT IS ALWAYS THE RESULT OF A  
COMMITMENT TO EXCELLENCE, INTELLIGENT  
PLANNING, AND FOCUSED EFFORT."  
PAUL J. MEYER

## MESSAGE FROM THE CEO

Welcome to Issue 19 of our newsletter, *Building Teams*.

I am proud to share with you the collective achievements and innovative spirit that define our organization.

In this issue, we spotlight how our commitment to teamwork and interdisciplinary collaboration is driving progress across our activities—from engaging team-building exercises and impactful medical camps to educational library programs and inspiring training activities.

At CEMASTEА, we believe that the foundation of innovation lies in strong, well-integrated teams.

Collaborative initiatives provide platforms for our members to connect, explore creative problem-solving, and refine strategies that are essential in today's competitive STEM landscape. Such engagements not only foster unity but also empower every individual to contribute their unique perspective to our collective success.

In addition, our medical camps have demonstrated the critical role that STEM plays in enhancing community health outcomes, while our library program continues to serve as a vibrant center for learning and collaboration. Lastly, our training and research programs underscores our dedication to nurturing young talent, encouraging academic excellence, and fostering a spirit of inquiry among emerging STEM enthusiasts.

I extend my heartfelt gratitude to everyone whose hard work and dedication have made these initiatives possible. Your collaborative spirit is the driving force behind our continued success. Together, let us continue to build teams that not only achieve but exceed our collective aspirations.

I invite you to delve into this newsletter, be inspired, and join us in our ongoing journey to build teams that are not only resilient and innovative but also capable of shaping a better future.

Enjoy!

Readers can reach us via email: [ceo@cemastea.ac.ke](mailto:ceo@cemastea.ac.ke)

Jacinta L. Akatsa, HSC,  
Chief Executive Officer



# BUILDING TEAMS: THE HEARTBEAT OF COLLECTIVE SUCCESS

By: AMumbi & RNjuki



At the heart of CEMASTEAs success lies the power of effective teamwork. Building successful teams is a deliberate process rooted in a shared vision—to elevate education standards through collaborative excellence. A thriving work environment is built on collaboration, mutual respect, and a shared commitment to excellence. Four key pillars—effective communication, diversity, leadership, and professional growth—serve as the cornerstones of high-performing teams, driving innovation and impact.

**Effective Communication:** The Heart of Collaboration: Clear, open, and honest communication fosters trust among team members, creating a supportive environment where ideas can flourish. At CEMASTEAs, transparency is encouraged, ensuring that every individual feels valued and empowered to contribute. When dialogue flows freely, innovation and problem-solving become seamless, strengthening the organization’s ability to adapt and evolve.

**Diversity:** A Strength That Inspires Innovation: Varied experiences and perspectives enrich the decision-making process, leading to groundbreaking ideas and transformative solutions. CEMASTEAs recognizes diversity as a vital strength, embracing different viewpoints to foster creativity and drive progress. By celebrating diversity in backgrounds, expertise, and approaches, the organization cultivates an inclusive atmosphere where collaboration thrives.



**Leadership:** Guiding with Purpose and Encouraging Ownership. Strong leadership is a balance between guidance and autonomy. Inspirational leaders at CEMASTEА empower teams to take ownership of their work while fostering accountability. Management acknowledges that while individual brilliance can spark ideas, it is collective effort and teamwork that bring lasting innovation. By fostering trust and responsibility, leaders create an environment where excellence is not only expected but achieved.



**Chairman, CEMASTEА Board of Directors,  
Dr. Pius K. Mutisya, OGW**

**Professional Growth:** Nurturing Talent for Long-Term Success is a pillar that stands for commitment to continuous

learning and development to ensure adaptability in an ever-changing landscape. CEMASTEА invests in professional growth, providing opportunities for skill enhancement that reinforce its standing as a leader in educational innovation. By equipping team members with the tools to succeed, the organization cultivates a culture of continuous improvement and forward-thinking leadership.

Through these pillars, CEMASTEА continues to build strong, cohesive teams that drive meaningful change. By embracing effective communication, diversity, leadership, and professional growth, the organization sets a standard for excellence and innovation. The strength of its teams is not just a reflection of individual talent but a testament to collective dedication and shared vision. In today's fast-paced, digital world, the Centre embraces technology for virtual teamwork, maintaining unity and productivity across distances. This forward-thinking approach ensures effective collaboration regardless of location.

CEMASTEА's through end-of-year retreats and other activities unites the Board of Governors and staff to strengthen collaboration, build trust, and boost morale. Engaging activities, like STEM-themed challenges encourage creativity, problem-solving, and environmental awareness.



CEMASTEА remains committed to its vision of excellence in Teacher Professional Development in Africa. By continuously fostering teamwork and innovation, the Centre equips educators and students with the tools to excel in STEM education, ensuring a brighter, technologically advanced future.

## CELEBRATING DEDICATION AND LEGACY

*By ThuoK & AMumbi*

The CEMASTEAs community celebrates the remarkable careers of three distinguished individuals who have left an indelible mark on the institution. Their contributions, dedication, and legacy continue to create a moment of reflection and appreciation for their years of service.



**Celebrating Contributions to Leadership** is Mrs. Lydia Muriithi, the retired Deputy Director. Her leadership and dedication have set a standard for excellence within the organization. Her leadership continues to inspire.

**Dedicated service as a National Biology Trainer:** David Arimi was honored for his years of Reflecting on his career, Mr. Arimi urged colleagues to proactively plan for retirement to safeguard their well-being, while praising CEMASTEAs for fostering talent in STEM education. He highlighted the transformative power of STEM subjects, describing them as challenging, thought-provoking, and deeply motivating.



**Honoring Decades of Hospitality and Leadership** Margaret Abongo's 33 years of illustrious years of unwavering service in the hospitality department, was celebrated for her unwavering commitment and exceptional work ethic. During the event, Ms. Abongo encouraged current staff to embrace innovation and diligence in their roles to help the CEMASTEAs community reach its full potential.



Their legacy of these remarkable individuals will continue to inspire and guide the next generation of educators and leaders.



## DRIVING INNOVATION AND EXCELLENCE: AWARD-WINNING STEM DEPARTMENTS:

In alignment with Kenya's Vision 2030, CEMASTEА continues to lead in STEM education, equipping educators and students with the skills needed for a technologically driven future. But beyond its sweeping initiatives, a few outstanding programs and departments in the Centre have emerged as trailblazers, earning recognition for their extraordinary contributions to STEM. They stand as pillars of STEM advancement, reinforcing CEMASTEА's mission to bridge Kenya's skills gap and drive technological progress. With each recognition, the institution's vision becomes clearer: STEM education is not just a field of study but a transformative force shaping the future of Kenya.



*The Kenya Mathematical Olympiad (KMO) Committee receiving a trophy*

One such is the Mathematics Department who are dedicated in promoting mathematical excellence through in-service training for mathematics and science educators. The department has empowered thousands of teachers to engage students in meaningful, real-world applications of STEM. In one such program is the Kenya Mathematical Olympiad (KMO) in collaboration with the University of Nairobi (UON), the Centre for Mathematics and Computing (CEMC) from the University of Waterloo, and the, CEMASTEА which have created platforms to identify and nurture mathematical talents.



*The E-Learning and E-Certification program receiving an award*

Another celebrated program is the development of the CEMASTEА's E-Learning platform. A transformative step in STEM education, fostering accessibility, innovation, and engagement. This program empowers educators in providing dynamic digital resources that enhance learning experiences and bridge gaps in STEM education.



*Mr. Isaac Gathambiri, Dean Chemistry Department, receiving an award for efficiently coordinating the training of Students from Kisii National Polytechnic on Laboratory Management*



*Mercy Mbugua, Head Administration receives an award on behalf of Robert Aura, Estates Officer for effectively managing the construction of the Ultra-modern ICT complex.*



## A HEALTHY WORKER IS A PRODUCTIVE WORKER

*By: W Magu & K Maulidi*

In an effort to ensure members of staff learn about lifestyle diseases and how to prevent and manage them, CEMASTEAs do organize free medical camps in collaboration with medical stakeholders.

CEMASTEAs management remains dedicated to hosting quarterly medical camps, ensuring staff members receive essential health education and guidance. After all, a healthy workforce is a productive one.

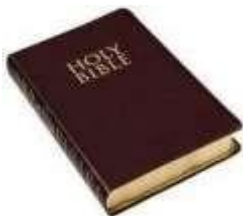
Specialists provide a range of services, among them screening for blood sugar levels, weight management and health talks to curb lifestyle diseases such as diabetes and hypertension. Members of staff are called upon to make it a habit to seek medical services rather than seek medical attention when a condition has already deteriorated. CEMASTEAs staff commends the initiative saying it has provided the necessary information on various lifestyle diseases

“Medical check-ups are essential for everyone, not just those who are unwell. Embracing a proactive approach to health ensures faster recovery and overall well-being.



***Right: Director STEM Research and Innovation Mrs. Gladys Masai, representing the CEO CEMASTEAs, Mrs Jacinta Akatsa, speaking in one of the medical camps.***

***Other photos: Staff undergoing some checkups***



### Psalm 133

Behold, how good and how pleasant it is for brethren to dwell together in unity!

<sup>2</sup> It is like the precious ointment upon the head, that ran down upon the beard, even Aaron's beard: that went down to the skirts of his garments;

<sup>3</sup> As the dew of Hermon, and as the dew that descended upon the mountains of Zion: for there the Lord commanded the blessing, even life for evermore.



### Quran 5:2

And cooperate in righteousness and piety, but do not cooperate in sin and aggression. (Surah Al-Ma'ida,

## PICTURE SPEAK

### PRINCIPAL SECRETARY, STATE DEPARTMENT FOR BASIC EDUCATION AMBASSADOR, PROF. JULIUS BITOK VISITS CEMASTEAM



*Right: The Principal Secretary, the State Department for Basic Education Ambassador Prof. Julius Bitok is welcomed by the CEO CEMASTEAM, Mrs Jacinta L. Akatsa, HSC and in Other Photos, the CS is taken through STEM hands-on activities in the in the Centre.*

### CEMASTEAM HOSTS A DELEGATION FROM RWANDA'S MINISTRY OF EDUCATION



*Director Gladys Masai, representing the CEO CEMASTEAM, Mrs Jacinta Akatsa, receives delegation from Rwanda*



## HARNESSING VIRTUAL LABORATORIES FOR EFFECTIVE STEM LEARNING

By: P Maate & W Magu

CEMASTEА continues to lead in teacher capacity development, ensuring that Kenya's STEM education goals are realised. In its aim to making STEM education accessible to all learners, the Centre leverages in equipping Junior School teachers with skills to integrate virtual laboratories into STEM education, focusing on bridging resource gaps and enhancing teaching and learning outcomes in line with the Competency Based Curriculum (CBC), and equipping learners with critical thinking and problem-solving skills essential for the 21st century are addressed.

The Centre has successfully conducted trainings with the theme: *"Harnessing Virtual Laboratories for Effective Learning in STEM,"* to Junior School County Trainers. All over the 47 counties

The Ministry of Education (MoE) officials who presided over the trainings highlighted Kenya's commitment to global and regional policies that champion STEM education and the significance of STEM literacy in fostering innovation, economic competitiveness, and addressing national challenges. They cited the government's ongoing investments in physical and virtual laboratories to complement teacher capacity building efforts.

Virtual laboratories they said, offer a critical solution to address gaps in physical science resources and provide an innovative and scalable solution to support teachers in delivering effective lessons, even in resource-constrained environments. The training objectives they noted, aligned with key national and international policies, including the African Union Agenda 2063 and the UN Sustainable Development Goals, which focus attention on STEM education as a cornerstone for sustainable development.

CEMASTEА was commended for its leadership in advancing STEM education.

reaffirmed the Ministry's commitment to supporting STEM education through professional development programs and school-based interventions.



**Dr. Batholomew Lumbasi** Director Partnership, Policy & EAC Affairs, speaking to the participants **Dr. Elyas J. Abdi**, OGW, MOE.



**Participants sourcing for digital resources in Maths and Integrated Science subjects during the trainings**

aligning them with the aspirations of the Competency-Based Curriculum.

Participants "The trainers are expected to gain practical insights into using virtual labs and learner-centered teaching approaches to revolutionize STEM education at the grassroots level. They were urged to integrate the skills gained from the training into their teaching practices, ensuring they cascade this knowledge to other educators within their regions. They were reminded their role as being vital in cascading these insights to other educators and therefore key to transforming classroom practices and

CEMASTEА remains committed to driving impactful teacher capacity-building initiatives, ensuring the aspirations of CBC and Kenya's STEM education goals are realized, recognized that the training provided participants with practical knowledge on utilising virtual laboratories, mathematics rooms, and e-learning platforms to enhance lesson delivery.

## INNOVATIONS: BRIDGING HEALTHCARE AND AGRICULTURE

By: WMagu & DRasto



*Learners developing innovations in a recent STEM Boot Camp*

Recent developments in healthcare and agriculture have demonstrated the potential for significant improvements through innovative solutions. Under CEMASTEAs guidance, Junior Secondary School students are able to address the challenge of accessing specialized medical services. One such mobile application, "MedicalNet," by learners was designed to streamline referral processes between low-resource facilities and central hospitals by enhancing communication, reducing delays in emergency situations, and facilitating telemedicine. It encompasses functionalities such as patient tracking, drug management, laboratory integration, and billing, thereby providing users with efficient access to healthcare services while offering policymakers real-time data for strategic decision-making. This pioneering innovation has been recognized with the 6th CEMASTEAs Gold Medal Award.

In a related advancement, a 14-year-old engineered an Internet of Things (IoT) system tailored for agricultural applications, specifically for greenhouse management. The system employs sensors to continuously monitor and control essential parameters, including watering, temperature, lighting, humidity, air quality, and soil moisture. Engineered to automatically adjust conditions to prevent over- or under-watering, the prototype supports both automatic and manual operations through a smartphone application or SMS. Additionally, it provides notifications with intelligent recommendations to optimize crop yield, thereby reducing labor intensity, enhancing resource efficiency, and attracting youth to modern agricultural practices.

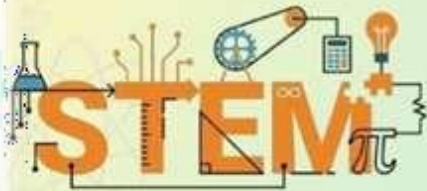
These innovations are prominently featured during CEMASTEAs **boot camps**, which showcase projects encompassing robotics, creative coding, and 3D/graphic design.

Supported by the Ministry of Education's Digital Literacy Programme, this initiative reinforces CEMASTEAs commitment to fostering STEM education and empowering learners to address complex, real-world challenges through technological innovation. CEMASTEAs is committed to fostering continued interest in STEM among learners.





Centre for Mathematics,  
Science and Technology  
Education in Africa  
(CEMASTE)



# Boot Camp

22nd - 25 April  
2025

## VENUE

**CEMASTE, KAREN -  
BOGANI JUNCTION.**

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**0721 584 147**

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## THE PORCUPINE FABLE: INSIGHTS INTO TEAM WORK



In the realm of fables, one charming tale—*The Porcupine Fable*—reveals profound lessons about teamwork and the value of unique qualities. In a forest teeming with diverse creatures, a group of porcupines sought warmth on cold nights by huddling together. However, their protective quills caused discomfort when they drew too near. Recognizing this challenge, the porcupines adapted by adjusting their positions so that they could still share warmth while minimizing injury. By accepting their natural defenses as part of their identity, they achieved a balance between togetherness and self-preservation.

### Several key lessons for fostering effective team dynamics:

#### **Embrace Individuality:**

Like the distinct quills of each porcupine, every team member possesses unique skills and perspectives. Celebrating these differences enhances overall team synergy.

#### **Collaborative Adaptation:**

The porcupines' strategic positioning highlights the need for flexibility. Effective teamwork requires adapting and compromising to accommodate individual needs.

#### **Balancing Individual Needs:**

By considering personal comfort alongside group unity, teams can create environments where all members feel respected and supported.

#### **Strength in Unity:**

The story demonstrates that unity is most effective when built on respecting individual traits and working towards shared objectives.

*The Porcupine Fable* teaches that by embracing diversity, adapting collaboratively, and balancing individual and collective needs, teams can cultivate an atmosphere of inclusivity and strength.

Source: [The Porcupine Fable: Lessons for Building Stronger Teams • SIDECAR](#)



*By Eunice Tarus*



***CEMASTEALibrary Entrance***

In an era of abundant information, Library and Information Science (LIS) has assumed a critical role. No longer limited to managing physical collections, LIS now bridges traditional library functions and modern information management—encompassing the acquisition, organization, retrieval, and preservation of data in both physical and digital formats.

Historically, library science originated in ancient civilizations, where libraries served elites by preserving religious and governmental texts. During the Renaissance and Enlightenment, the development of classification systems like the Dewey Decimal System transformed librarianship. In the twentieth century, the integration of technology—transitioning from card catalogs to computerized systems—laid the foundation for today's information science.

Modern information science addresses a broader spectrum: it ensures data quality, accessibility, and relevance across various platforms. Technological advances, notably artificial intelligence and machine learning, have improved cataloging and search functionalities while revolutionizing digital preservation.

These innovations, however, also introduce challenges such as ensuring data security, maintaining privacy, and preserving digital resources over time.

Contemporary LIS professionals must blend traditional skills with robust digital competencies. They are tasked with managing both physical and digital resources, fostering information literacy, and upholding ethical standards related to intellectual property, censorship, and user privacy. Moreover, addressing the digital divide remains a priority to ensure equitable access to information.

Emerging trends include data librarianship, where professionals curate and analyze extensive datasets, and interdisciplinary collaborations that transform libraries into dynamic centers of innovation. In an age rife with misinformation, librarians increasingly assume an educational role, equipping users with the skills to discern credible information.

Looking ahead, technologies such as blockchain and advanced AI are poised to redefine digital archives and data security, while librarians may further expand into cybersecurity roles. In developing regions, libraries will continue to be pivotal in promoting education and economic advancement by facilitating digital access.

## CROSSWORD

[illegible]

**Complete the crossword by filling in the correct words for each clue**

## ACROSS

- 1. The study of earths structure (7)**
- 2. Force that attracts body towards earth (7)**
- 3. Interconnected system (7)**
- 4. Rectangular array of numbers (6)**
- 5. Natural science of matter and energy (7)**
- 6. Measure of induced voltage in a circuit (12)**

## DOWN

- 1. Visible part of the electromagnetic spectrum (5)**
- 2. Oscillation that transfers energy (4)**
- 3. Combination of components to form a whole (9)**
- 4. Branch of math dealing with shapes (8)**
- 5. Essential part of calculus, opposite of derivative (8)**





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