



# CEMASTEA INFO

## Newsletter

Issue 004 September- December 2020

# Transforming Learning and Training Environments

The prevailing long-term school lockdown occasioned by the COVID-19 pandemic has revealed the critical role played by teachers in delivering quality education globally. These are unique times which call for innovative thinking to maintain quality education standards. Educational entrepreneurship and innovation are promising endeavours in expanding activities in education



and society. Educators find the need and raise diverse entrepreneurial ideas and creative solutions to deal with a complex reality in the new scenarios. The emerging gaps in the virtual teaching and learning process require that teachers, educators, parents, students and stakeholders at large think critically as they seek to solve emerging problems, be creative, communicate, collaborate and be agile.

Science Technology Engineering and Mathematics (STEM) education acts as a catalyst in the process of enabling teachers to gain adequate skills and develop creative thinking skills to design virtual lessons. Since the adoption of the 17 Sustainable Development Goals (SDGs), education has continued to play a key role in impacting skills, norms and knowledge to populations all around the world. CEMASTEА in its mandate to promote STEM education recognizes this important role through its Education for sustainable development (ESD) programme. The Centre has been on the frontline in implementing the National ESD policy for the Education sector developed in collaboration with UNESCO which is the United Nation's Global lead Agency for Education for Sustainable Development.

CEMASTEA has particularly focused on transforming learning and training environments using the 'Whole of School Approach' which empowers teachers and learners with knowledge and skills to enable them to adopt sustainable living practices both at school and at home. Through the 'Greening schools Programme', CEMASTEА has empowered schools to engage in tree planting activities to contribute to the national efforts of increasing Kenya's tree cover from 7% to at least 10% by 2022. This has ensured that over 40,000 tree seedlings have been planted and survived in various beneficiary schools.

Jacinta L. Akatsa, HSC, Director, CEMASTEА

## Editorial

We are pleased to present to our esteemed clients, stakeholders, and staff the September-December 2020 issue of CEMASTEAM INFO Newsletter. This issue focuses on two thematic areas, education for sustainable development and STEM education

The Centre Director, Mrs Jacinta Akatsa, HSC has detailed in the cover article CEMASTEAM's frontline activities in implementing ESD in the Education Sector. The centre had paid particular focus on transforming learning and training environments to empower teachers and learners with knowledge and skills to enable them to implement ESD programmes and the planting of trees.

We also highlight CEMASTEAM's other STEM programmes over the period including the shift from training to the implementation of STEM programmes in schools and the use of the Google classroom for learning. We report on the successful remote learning competition where national winners were announced in November. We also highlight the celebration of long-serving former staff of CEMASTEAM led by Hon. Stephen M. Njoroge as well as celebrate Ms Jane Kimiti of Othaya Girls for her AU Teacher of the Year award. We continue being hopeful for a return to normalcy as the response and measures being put in place to contain COVID-19 bear fruit and that learners will safely get back to school. In the meantime, continue being safe by wearing your masks correctly, constantly washing your hands and keeping distance. The editorial team is grateful to members of staff and colleagues at CEMASTEAM for contributing articles leading to the production of this issue. We welcome feedback from all stakeholders. Kindly use the link <https://forms.gle/RkXNWXQ3ehEsqhr48> to give your feedback. Enjoy your reading.

**Thuo Karanja, Editor**

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### EDITORIAL Team

#### Editor in Chief

Mrs. Jacinta L. Akatsa, HSC.

#### Editors

Thuo Karanja  
Ann Jane Mumbi  
Phillip Maate  
Kizito Makoba  
Dr. Njoroge Mungai  
Njeri Mburu  
Agnes Mwangi  
Richard Jakamanyo  
Winfred Magu  
Benson Mwangi  
Dan Orero

#### Feedback

Comments and contributions can be sent to the editor on the below address. Contributions may be edited for clarity, space or legal consideration.

[director@cemastea.ac.ke](mailto:director@cemastea.ac.ke)

[director@cemastea.ac.ke](mailto:director@cemastea.ac.ke)

# CEMASTEА Webinar Series

CEMASTEА in conjunction with MASHAV, Israel's official international development cooperation successfully run webinar series under the theme *Educational Innovation in STEM: Towards Enhancing Continual Learning during Crisis Times*. The webinar attracted over 450 participants drawn from 19 countries that included officials from Ministries of Education, university lecturers, school leaders, quality assurance officers, members of NGO's, teachers, and teacher trainers. This article focuses on the webinars' to the closing ceremony messages and follows up activities whose guest speaker was speaker Mrs Yudit Rosenthal, Director MASHAV. In her speech, the guest speaker urged the participants to stay

up, jump into the water, and start swimming! That they needed to use the knowledge and skills gained educational entrepreneurship to reshape education.



Speakers at the closing ceremony: Dr. Reuben Nthamburi, Director Quality Assurance and Standards at the Teachers Service Commission (TSC); Mrs. Yudit Rosenthal, Director MASHAV; and Mrs. Mary Rotich, Director Field Service, (TSC).

needed to use the knowledge and skills gained educational entrepreneurship to reshape education.

Dr Reuben Nthamburi, Director Quality Assurance and Standards at the Teachers Service Commission (TSC); assured participants of the Teachers Service Commission (TSC) commitment to supporting and empowering teachers and educators come up with innovative ways to help the learners continue learning during and post COVID-19 period. While thanking MASHAV for the training, he encouraged participants to continue being ambassadors of innovation as they implement the lessons learned. During her remarks, Mrs Mary Rotich Director Field Service, (TSC) reiterated that solutions to human problems are within the capabilities of the same humans to solve them. She thanked CEMASTEА for coming up with the initiative and appreciated the participants for joining the training. Director CEMASTEА Mrs Akatsa urged participants not to be just consumers of knowledge but to put into good use the knowledge and skills acquired and come up with innovative pedagogical.



Dan Orero, CEMASTEА

# Promoting Imagination and Creativity among Teachers for Effective Learning in STEM

Name: Weldon Langat

County: Bomet

School: Moi Siongiroi Girls

School

Cohort: One

Need: Sensitizing teachers on use of ICT in teaching and learning process.

Initiative: Training teachers on the importance of ICT integration in teaching and learning. This will enable abstract content to be comprehended and makes teaching of STEM Subjects lively to both teachers and learners.

This webinar series was organised for teachers from STEM Model Schools. Due to the prevailing COVID-19 situation the training was delivered virtually using the Google Classroom and Zoom. However, this training was unique not only in its mode of delivery but its focus on tangible outputs from participants in form of projects to be implemented in their schools. The projects are expected to not only serve as teaching and learning resources in STEM but also focused on promoting the entrepreneurial culture among learners and teachers.

The training was designed progressively with participants expected to grow their knowledge and skills from understanding the concept of the entrepreneurial cycle, how to initiate projects based on needs, aligning needs to resources; planning; implementation and monitoring progress. The training was attended by 674 teachers that were divided into two batches. Each STEM school was represented by 6 number of teachers.

During the training, participants were introduced to the innovative creative thinking tool SCAMPER. Using the SCAMPER tool's principles *substitute, combine, adapt, modify, put to another use, eliminate and re-use*; participants figured out how to make their initiative novel. Participants further transformed their initiatives into projects by identifying a vision statement, subjecting them to the project cycle and developing a work plan. Participants also learned the skills of marketing their projects using a *pitching tool*. Indeed, the majority developed interesting short videos talking about their initiatives and the kind of support they might need. The pitches were presented during the training and some during the closing ceremony. Some of the projects done by participants are shown in the excerpts.

Name :Ayub Were

School: Lamu Girls

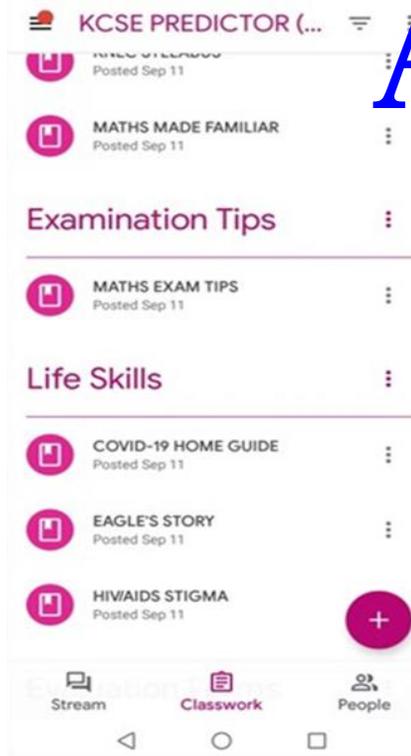
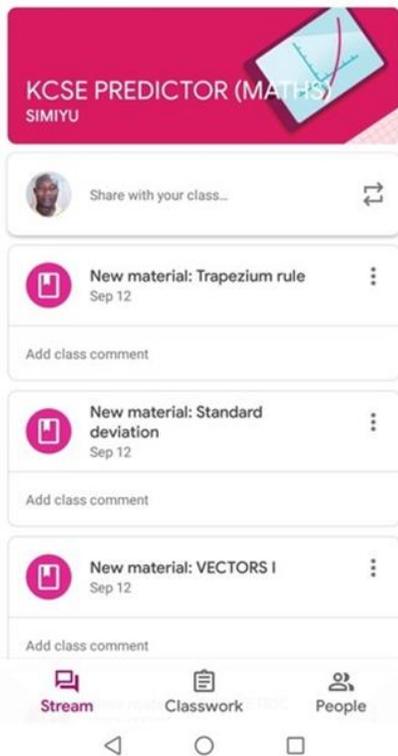
County: Lamu

STEM NEED: ATOMIC  
STRUCTURE MODELS

Chemistry teachers need to lead learners in constructing the Atomic structure models for the teaching and learning of the form two first topic" Structure of the Atomic" the abstract nature of the topic can be simplified through creative and critical thinking to improve students imagination and problem solving skills

Kizito Makoba, CEMASTEIA, STEM Coordinator

# Cascading Google Classrooms



After attending the National INSET that focused on improving the critical thinking, problem-solving skills, and integration of Information on Communication and Technology (ICT) some teachers have hit the ground running to implement lessons learned. This article reports on the testimonies of two of these teachers. Mr Robert Simiyu Lukorito, a mathematics teacher at Plateau Girls High School from Uasin Gishu County took up his love for ICT and armed with further skills and knowledge acquired during INSET developed online Google

classrooms. He also used his networking skills to reach out to principals and teachers and within

A sample of lessons created in the Google Classrooms developed by teachers

a short span, had enrolled teachers and over two hundred learners, from across the country. He uses Google classroom to teach concepts in mathematics and give examination tips.

On his part, Mr Ratemo James Ondieki, a County Trainers from Nyamira County and Head of Science Department at Gesure ELCK Secondary School believes knowledge and skills gained from the CEMASTEIA INSET programmes if well-implemented can result to a positive impact on learning. He has incorporated in his lesson strategies such as the 5E instructional model and Inquiry-Based Learning. Ratemo believes that SMASE activities should not only be judged based on performance and quality grades but also through the creative and innovative activities brought to the teaching and experienced by teacher and learners. He encourages science and mathematics teachers to share the skills they acquire from SMASE beyond their subject and school level. It's in this spirit that he teaches learners in neighbouring schools in Nyamira and Kisii counties as well as consults universities as a resource person. Like his counterpart Mr Robert Simiyu, Mr Ratemo has also set up Google classrooms and invited learners and teachers and is cascading the skills acquired and from the SMASSE INSET to them.

Interviews by Winfred Magu, CEMASTEIA

## Pace Setters: Online Learning at Baraka Oontoyie Secondary School, Kajiado

All schools closed when COVID-19 Pandemic was announced. To ensure that learning continued majority adapted online teaching and learning. Baraka Oontoyie secondary school, a girl's school located in Kajiado County, was not left out. Using skills gained by its STEM four teachers who successfully underwent online training by CEMASTEА, the school fully embraced online learning. The school with an enrolment of 615 learners is headed by Senior Principal, Mrs Jemimah Mutio. At the start of the long stay at home, the school formed WhatsApp groups for classes which were then used to send reading materials, assignments and revision papers that the learners would use to study at home with the help of their parents.

The coordinator of examinations in the school Mr Gilbert Mutuma and with four other STEM trained teachers consisting of teachers in subjects of mathematics, biology, chemistry, physics and computers, came up with an idea of exploring online learning for the Form Four class. The held a two day in house training to cascade the knowledge and skills acquired from CEMASTEА online training to colleagues

teachers from other subjects. The teachers successfully managed to start zoom classes.

To ensure all the learners accessed the online classes, the school availed internet bundles to all form four learners who did not have financial resources by availing Kshs. 150 per day to each. According to Mr Gilbert, the proceeds from the school farm were used to run the online programme including the purchase internet bundles for learners. The school principal Mrs Mutio expressed that the school management facilitated the movement of the teachers to and from school.

The school has taken up Education for Sustainable Development (ESD) and is growing a variety of foods including vegetables, fruits bananas, avocados, cassava, sweet potatoes, tomatoes Dairy and beef production is also practised. Mrs Mutio urged other principals to allow teachers in their schools to implement the skills gained following any training to improve their schools. The pandemic, she said had taught her that, teachers are dynamic when it comes to delivery of instruction and instead of having holiday tuition, the online platform



Teacher at the school conducting an online lesson. Beside: The school farm and ESD project whose proceeds are used to support the online programme.

was a better option. She lauded the online training offered by CEMASTEА; as it had empowered the teachers to manage the classes successfully.

Ann Jane Mumbi and Winfred Magu, CEMASTEА

# Dawn of Innovative Ways to Teaching Physics

Physics teachers attending the 2020 online INSET expressed their excitement at the innovatively designed training activities in the Physics sessions. Participants commended the great ideas that they learned and would be implemented back in their schools to promote critical thinking and problem-solving skills as well as the use of ICT. The topics *Waves I and II* were used to while the topic of *radioactivity* was used to demonstrate how ICT could be used to teach abstract concepts.

According to the teachers, the theoretical approach that is applied to some topics such as *radioactivity* makes it abstract. An example is a talk about the emission of radiation from radioactive substances that learners can't experience. Activities in this topic are not usually carried out due to the dangerous nature of the radiations of the elements involved. However, concepts like radioactive decay can easily be illustrated in a class by use of the 'roasting popcorn' analogy to illustrate

Collaboration with colleagues is very key as one is able sharpen as well as to be sharpened by others to enhance pedagogical skills that promote critical thinking and problem solving

Teacher Anthony Muchiri

The popcorn simulation was wonderful, everything worked out. It has demystified radioactivity decay

Teacher Daniel Orege

the unpredictability and spontaneity of radioactive decay as well as to help students to understand that the decay of one atom to another is irreversible. This is a simple in-class demonstration that the physics teacher can do after introducing radioactive decay to illustrate how radioactive decay works. In

another innovative activity designed by CEMASTE A participants are asked to use simulations to investigate how well the three forms of radiation pass through different materials such as paper, cardboard, aluminium, and lead. The training was conducted online using the google classroom. The physics department at CEMASTE A proudly salutes all the County Trainers and Teachers Physics teachers who successfully savoured the innovative new dawn to the teaching and learning of Physics.



Mr Ernest Kiprono Ngeny, Dean, Physics Edu. Dept., CEMASTE A

Popcorn simulation for showing radioactivity

# Remote Learning Competition: Unveiling Winners



National Winner County trainers Category Mr Fred Bongu Machel and First and Second Runners up Mr Evans Ngoge Asiego and Joseph Songok

(TSC). To ensure the continuation of INSET the Centre adapted its training programmes for fully online via the use of the Google Classroom and other Learning Management Systems. About 1,163 County trainers and over 11,000 mathematics and science teachers have been trained. The competition was aimed at motivating and encouraging STEM teachers who, after undergoing online INSET use the knowledge and skills gained in promotion of ICT integration as well as implement online lessons with their learners via Google Classroom. This would in turn further ensure the continual curriculum implementation. The competition was conducted and assessed at the three levels: County, Regional (8) and National level and; in two categories of County trainers and classroom teachers. The competition attracted about 400 County trainers and about 7000 teachers. They were expected to develop a Google classroom; develop and lesson implementation plan and conduct online lessons with judging focused on these three key areas as well in innovativeness each of the categories winners efforts were (see tables) rewarded with gifts including gift hampers from eKitabu, laptops, trophies, cash awards and certificates.

Pomp and colour marked the unveiling of the overall national winners of the first National Remote Learning competition organised by CEMASTEА. The overall winners announced during an online awards ceremony held on 25<sup>th</sup> November 2020 were Fred Bongu Machel for County trainers' category and Nazra Athman Mohamed for the teachers' category. Both are from Mombasa County; Mr Bongu is a Physics and mathematics teacher at Coast Girls while Nasra is a teacher of Physics at Changamwe Secondary School.

The Remote Learning Competition was organised in the backdrop of the COVID-19 that disrupted the normal flow of CEMASTEА INSET activities. The competition was organised by CEMASTEА with the sponsorship of eKitabu and

with the blessing of the Teachers Service Commission



The county trainers' category the runners up were first Evans Ngoge Asiego of Nyariacho Mixed and second runners up was Joseph Songok St Joseph's Girls Chepterit. The teacher category first runners up were Mr. Erick Onyango Mito, a Biology teacher at Maranda High. The second runners up were Ms. Jane Mbithe Muinde, a Biology teacher at the Kenya High School, Nairobi County.

The virtual awards ceremony (national and regional) took place on Wednesday, 25<sup>th</sup> November 2020. Chief Guest for the ceremony was by TSC CEO Dr Nancy Macharia, CBS, represented by Dr Reuben Nthamburi, TSC Director for Quality Assurance and Standards.

CEMASTE, Mrs Jacinta J. Akatsa, HSC; Mr Will Clurman, CEO eKitabu and Hon. Wesley Korir (USA Colorado) also attended and made remarks. The competition was coordinated by the ICT department at CEMASTE under the leadership of Paul Waibochi. We hope that this humble appreciation of teachers efforts will go a long way in further entrenching the culture of blended learning for the benefit of the learners.

The competition was sponsored by eKitabu

Winner Teacher Category Ms. Nasra Athman Mohamed and First and Second Runners Up Mr. Eric Mito Onyango and Ms. Jane Mbithe Muinde

and coordinated by CEMASTE under the patronage of the Teachers Service Commission

### Country Trainers' Category Regional Winners

NAME	SUBJECT	SCHOOL	COUNTY	REGION
Susan W Waiyaki	Mathematics	Heni secondary	Nyandarua	Central
Fred Bongu	Physics	Coast Girls School	Mombasa	Coast
.John Mugo	Physics	Nyangwa Boys Sec	Embu	Eastern
Bridghter Mwongli Luusa	Chemistry	State House Girls	Nairobi	Nairobi
Ali Billow Mahat	Biology	Danaba Mixed Day	Wajir	North Eastern
.Evans Ngoge Asiego	Chemistry	Nyariacho Mixed	Nyamira	Nyanza
Joseph Songok	Physics	St.Joseph Chepterit	Nandi	Rift Valley
Florence Lukamba Munoko	Biology	Friends School Bokoli Boys	Bungoma	Western

### Teacher Category Regional Winners

Name	Subject	School	County	Region
Joshua Anyoka	Maths	Tumutumumu Girls	Nyeri	Central
Nasra Athman Mohamed	Physics	Changamwe Sec. School	Mombasa	Coast
Ndungu Daniel Njoroje		St Josephine Bakhita Masinga	Machakos	Eastern
Jane Mbithe Muinde	Biology	Kenya High School	Nairobi	Nairobi
Jeremiah M. Njeri	Mathematics	Wajir Girls	Wajir	North Eastern
Erick Onyango		Maranda High School	Siaya	Nyanza
John Chumo		Chebara Girls	Elgeyo Marakwet	Rift Valley
Patrick Emukule	Mathematics	St. Thomas Amagoro Girls	Busia	Western

Ann Jane Mumbi and Thuo Karanja

# Well Done: Celebrating Long Serving Staff



Group photo of long serving and now retired members of CEMASTEA staff. From left Mr. George Gitau, Mr. Simon Mugo, Mrs. Mary Kariuki, immediate former Director Hon. Stephen M. Njoroge HSC, Mr David Nyakaru and Mr. Daniel Matiri.

Finally, the long-awaited celebration for long-serving and retired members of staff at CEMASTEA happened on the on 19<sup>th</sup> December 2020. The occasion was planned to celebrate about eight former members of staff at CEMASTEA who had retired from the teaching service after attaining the retirement age. Among them was Hons Stephen M. Njoroge, HSC who retired as the Director at the Centre. He was the Chief Guest at the event. Others include Mrs Mary Kariuki, Mr George Gitau, Mr Daniel Matiri, Dr Amimo, Mr David Nyakaru, Mrs Florence Mbaiya and Mr Simon Mugo.

Each of the guests was allowed to make remarks and it was gratifying to note that each one of the thriving outside the hustle and bustle of a daily eight to five Government job and enjoying a new freedom. They all had very kind words able CEMASTEA as a place that gave them the most conducive and gratifying working environment. They advised the staff and especially the young ones to serve with diligence and integrity and look for opportunities to upskill in their profession.

The Chief Guest Hon. Stephen M. Njoroge recounted his working journey from his days at Mbaragoi Secondary School and up to the point where he



Hon. Stephen Njoroge delivering his farewell speech.

was serving as a Chief Principal and Treasurer for the Kenya Secondary Schools Heads Association (KESSHA). That it was and remains his mantra to serve with dedication, a singleness of purpose to achieve results and with high levels of commitment and integrity. It was clear to him as a leader that when you serve humans beings and your Government well, you will surely get noticed. Indeed for him, while serving at CEMASTEIA, he was awarded the Head of State Commendation (HSC). After his retirement, the County Government could not resist enrolling the services of such a diligent servant. He was offered a position of CEC ICT, Education and Culture but has since risen to the position of CEC Finance and Economic Development.

Hon. Njoroge was grateful for the time he served at CEMASTEIA and equally full of praise for the work ethic and culture staff at the centre demonstrated right from the time he took over. During his tour of duty at CEMASTEIA, there were many firsts including the inauguration of STEM schools, Education for Sustainable Development programmes, robotics and iTOYA (ICT Teacher of the year competition), inaugural Conference for Mathematics, Science and Technology Education in Africa Conference (COMSTDA) and first CEMASTEIA STEM conference among others. He was optimistic that the centre remains and continues to play a pivotal role in the continuous professional for STEM teachers and the innovation in the field of STEM. He advised that staff to continue serving with the same commitment and zeal and that he is always available for any consultation.

In appreciation for the service rendered, CEMASTEIA gave each of the retirees a gift hamper. The climax of the celebration was the cutting of a cake with each of the guests have a piece to take home. The ceremony was attended by CEMASTEIA staff from all departments at CEMASTEIA. Other guests in attendance and who made remarks in praise of the good work by the former staff and particular former Director Hon. Njoroge, included, Mr Kahi Indimuli, Chair, Kenya Secondary Schools Heads Association (KESSHA), Dr Sylvester Mulambe, Director of Policy and Planning at the Ministry of Education; Professor David Malonza and Mrs Milcah Bwondara members of Board of Management at CEMASTEIA; Mr Ephraim Nduru of Schools Audit Unit at MOE and Dr Paul M. Kibicho, a Financial Management Strategist with Panorama Consulting. The ceremony was hosted by Director CEMASTEIA Mrs Jacinta L. Akatsa, HSC.

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Director CEMASTEIA Jacinta Akatsa, HSC gifts the guests tokens of appreciation for their long service to the teaching service and to CEMASTEIA.

Thuo Karanja, CEMASTEIA



# Top of the World: Othaya Girls Principal wins AU's Continental Teacher of the Year Award



The Principal of Othaya Girls School Ms Jane Kimiti holds the recognition certificate after she was crowned the 2020 African Union Continental Teacher of the Year: Courtesy, Nation Media

The Principal of Othaya Girls School Ms Jane Kimiti was crowned the winner of the 2020 African Union Continental Teacher of the Year Award at an event held on December 21<sup>st</sup> Addis Ababa, Ethiopia. In the AU certificate citation, Ms Kimiti was recognized for her contribution to the education sector including her positive approach towards learners, nurturing their good behaviour thus helping them achieve their long term career goals. She was also recognised for spreading the goodness of education beyond her school and working with the community by organising engagement with relevant agencies and

authorities. Other strong attributes are the use of innovative school practices and education delivery approaches and in particular team teaching and integration of ICT in teaching and learning that have resulted in exemplary quality teaching and learner achievement. During the COVID-19 pandemic, Othaya Girls through her leadership implemented a programme 'Schools without Borders' where learners from other schools benefitted from remote learning organised by the school. She expressed gratitude for the recognition saying it highlights her continued commitment to improve learning, community relations and teacher empowerment. This is not the first time Ms Kimiti's efforts are being noticed. In the year 2019, she was named Principal of the Year (POYA) in recognition of her exceptional innovations in ICT integration in the school's teaching and learning practices.

The AU Continental Teacher of the Year competition is organised by the African Union (AU). Every AU member state is expected to submit the names of two teachers, female and male, to be considered for the award. The award aims to celebrate teachers in Africa for their students' performance, utilisation of innovative education delivery approaches and positive influence in the community and school. Kenyan teachers have continued to shine in the international arena by scooping prestigious awards and indeed, Kimiti's win is a testament to Kenya as a home to some of the best teachers. Kenya has had in the past two years (2019 & 2020) had several teachers nominated for various global and continental awards. This includes Peter Tabichi, a teacher at Keriko Mixed Day Secondary School in Nakuru County who was awarded the 2019 Global Teacher Prize and Erick Ademba a teacher at Asumbi Girls who was among the three inaugural winners of the Continental Teacher Prize.

Kimiti's well-deserved award has been lauded by among others the Teachers Service Commission (TSC) Secretary and CEO Dr Nancy Macharia and Nyeri TSC County Director Elija Omwega. CEMASTEА celebrates Ms Kimiti and in particular in the recognition for the continued implementation of ICT integration in teaching and learning not just in STEM subjects but in all subjects at the school. ICT integration in teaching and learning is one of the flagship INSET programmes of CEMASTEА.

# Ensuring Food Security through STEM Education

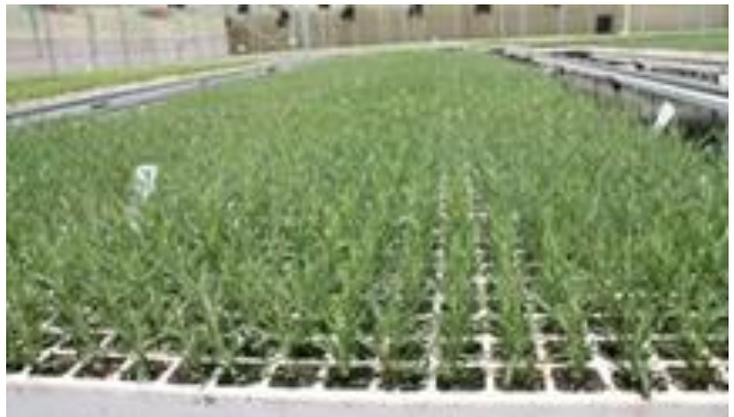
To empower teachers and learners to change the narrative and work towards a sustainable future, the Centre has been on the frontline in implementing the National Education for Sustainable Development (NESD) policy for the Education sector developed in collaboration with UNESCO which is the United Nation's global lead agency for Education for Sustainable Development (ESD). CEMASTEAM being a resource Centre has implemented some ESD projects that are used to capacity build teachers. It has trained teachers and sensitized stakeholders in education who have supported schools to undertake ESD projects that address climate change, food security, energy, solid waste management, water management, environment conservation among others. According to the Food and Agriculture Organization, about a



third of the whole global food production is lost both through pre and post-harvest losses. This is a significant proportion and the problem is exacerbated more in Africa where agriculture mainly remains rain-fed and the use of technology is limited. This is evident in the number of African countries listed in the Low-Income Food Deficit Countries (LIFDC's) list of the Food and Agriculture Organization (FAO).

Mr. Idan Salvye (left), Sales and Marketing Director & Founder of Plantech Kenya Ltd. welcoming the ESD team from CEMASTEAM guided by Mrs. Jacinta L. Katsa, HSC, (middle row) Director and Mrs. Lydia Muriithi, Deputy Director, CEMASTEAM. INSET: Some of the quality seedlings propagated by Plantech Kenya Ltd.

However, amidst all these challenges lies an opportunity to exploit technology to increase agricultural productivity in Africa and reduce production losses. CEMASTEAM through its ESD programme recognizes the role that technology can play in ensuring a steady growth towards a food secure nation. It is for this reason that the ESD team visited Plantech Kenya Limited in Naivasha which is one of the largest seedling propagators in Africa, using cutting-edge technology to produce healthy planting materials for farmers. The objective of the visit was to learn how technology is being used to propagate high-quality seedlings and to forge a working partnership that will benefit STEM and ESD schools across the country. Schools form an important linkage to the communities and when the schools are empowered, the students transfer the knowledge back to their parents, guardians, and eventually to the community at large.



Some of the quality seedlings propagated by Plantech Kenya Ltd.

Dan Orero, CEMASTEAM

# Heeding the President's Call on 10 % Forest Cover



The Rotary club officials receiving the seedlings from Mr. Patrick Wanjohi of CEMASTEA Education for Sustainable Development (ESD) Programmes. Besides is CEMASTEA Tree Nursery.

As part of efforts to contribute to the national target of at least 10% forest cover by 2022, CEMASTEA in partnership with the Rotary Club, Limuru conducted a tree planting exercise in October 2020 at the Thogoto home for the aged and at Ngong hills forest. The trees were donated by the education for sustainable development avocado seedlings were planted at the Thogoto Home for the Aged to promote fruit trees growth. At Ngong Hills, five species

were planted including wild olive, *podocarpus latifolius*, African greenheart, *croton megalocarpus*, and Whistling Thorn *Acacia seyal*. CEMASTEA operates an onsite tree nursery for both internal and external customers. The nursery can produce 90,000 seedlings.

[Patrick Wanjohi, ESD](#)

## Environmental Responsibility

CEMASTEA in partnership with Karen Langata District Association (KLDA) adopted a bin that was put up at the junction of Karen road and Bogani as a responsibility to take care of its surroundings and keep it clean. This will create awareness on cleanliness and throwing garbage in the dustbin, making the place clean and stop the public from littering on roads. The move will help the environment as it shows environmental responsibility and contributes to restoring its natural beauty and condition. It will be taken care of since there is an assigned person to empty it and ensure its cleanliness.

[Dan Orero, CEMASTEA](#)



The bin adopted by CEMASTEA

# Empowering the Out of School Youth

Following the successful handover ceremony of various tool kits for beekeeping to youths in Chaka, Nyeri County in July 2020 CEMASTEIA, the Out-of-School Youth Science, Technology and Innovation (OSYSTEI) Program moved to the next level of construction of the bee house and the capacity building the youths in beekeeping.



This is in line with the spirit of the OSYSTEI program which is to catalyse pro-youth actions to address the dreams, ambitions, and hopes of the out of school youth in the country by creating a culture of curiosity, creativity, innovation, and productive entrepreneurship. The OSYSTEI youth from Chaka is a special group that the program targeted. The youth were given beehives, protective gear, and other equipment so that they can begin a new livelihood project in beekeeping. The group developed a bee house where the beehives are housed and are currently undergoing training on beekeeping, in readiness for their first harvest. All these are geared towards building resilience and planting the seed of hope among the youth.

So far, 40 out of school youth are undergoing training in beekeeping, out of which 60% are women. The capacity building initiatives are all voluntary, where each of the youth trained to sponsor themselves to attend the training, and facilitation is done by Richard Waithaka. This helps to bring about ownership of the program and to address issues of sustainability where the youths can identify the problem themselves and address it with support from partners like OSYSTEI.



A sample beehive

The OSYSTEI program works in partnership with the Strategic Initiatives Unit, Office of the President and CEMASTEIA to promote the application of science, technology, and innovation in creating alternative and productive enterprises that will lead to jobs and wealth creation among the out of school youth from across the

country. With the easing of the COVID-19 restrictions, OSYSTEI hopes to roll out more initiatives across the country.

Eric Nyamwaro Head of Secretariat  
Out of School Youth Science Technology and Innovation (OSYSTEI) programme

# Education for Sustainable Development (ESD)

Since the adoption of the 17 Sustainable Development Goals by nearly all countries on earth, education has continued to play a key role in impacting skills, norms, and knowledge to populations all around the world. CEMASTEА in its mandate to promote STEM education recognizes this important role through its Education for sustainable development programs.

**What?** According to UNESCO which is the global lead agency for Education for Sustainable Development, ESD is that type of education that is lifelong, holistic, and transformational and which addresses learning content and outcomes as well as pedagogy and learning environments. The whole objective is to impact skills and knowledge to learners that are necessary to transit to a more sustainable future.

**Who?** All learners need to be exposed to the concepts and principles of ESD through integration into learning curriculums. Anthropogenic (human) activities have been the biggest contributor to the climate change crisis and therefore the need for people to change behaviour and adopt more sustainable living and economic practices that are within the earth's carrying capacity.

**Why?** The current trend of economic development world over has placed immense pressure on natural resources to support economic advancement and the rate at which these resources are over-exploited is much greater than the replenishing rate. ESD aims to counter this imbalance by empowering people to think critically about sustainable exploitation and shift more towards renewable sources over non-renewables.

**When?** There has never been a more urgent time for all countries to adopt and mainstream ESD into their governance and development policies than now. The United Nations dedicated this decade to restoring ecosystems all around the world through the "UN Decade on ecosystem restoration". The objective is to restore degraded ecosystems that support all forms of life on earth and ESD plays a major role in achieving this objective.

**Where?** Education is universal and everyday learning takes place in essentially every part of the globe. ESD impacts the skills and knowledge necessary to live a sustainable lifestyle and therefore every country should reorient its education systems to ensure citizens are empowered to change lifestyles that continue to contribute to detrimental impacts to the global climate.

**How** is ESD implemented? CEMASTEА implements ESD using the "whole-school approach" that means that the school incorporates sustainability principles in all aspects of the school operations from teaching and learning, governance, school facilities management as well as community engagement.

Patrick Wanjohi, ESD



# COVID-19 Containment

## CEMASTEА Produces Hand Sanitizer



**NO MASK  
NO SERVICE**

formation of a committee at CEMASTEА to assist in designing and implementation COVID-19 containment measures, the committee embarked on programmes aimed at keeping the people at the centre and visitors safe. In this issue, we report on one of the successes in the production of an instant hand sanitiser for use that the centre. The project was spearheaded by the Chemistry department lead by the Dean of Studies Mr Gachuhi Samuel, working closely with Chemistry department members and laboratory technicians. The team followed all the laid down government regulations, especially the Kenya Bureau of Standards in the process of research, sample production, and quality control by. The team visited a local pharmaceutical company, VIVA Healthcare Limited which produces hand sanitisers among other healthcare products to benchmark on industrial standards of sanitiser preparation. During the visit, the team gained invaluable knowledge and skills in the production of sanitisers as well as learned about regulatory requirements, safety Measures, among other operational conditions in the production of hand sanitisers. Following successful submission of samples to KEBs and inspection of the production process, the Centre was awarded a permit for production of hand sanitisers on 25th November 2020. The self-production will help the centre cut costs of buying sanitisers by a larger margin. While the hand sanitiser will initially be produced for in-house consumption and sale to visitors, plans are being put place to scale production for external and income-generating marketing.

The development of a hand sanitiser is one of the success stories at CEMASTEА during the COVID-19 period. After the

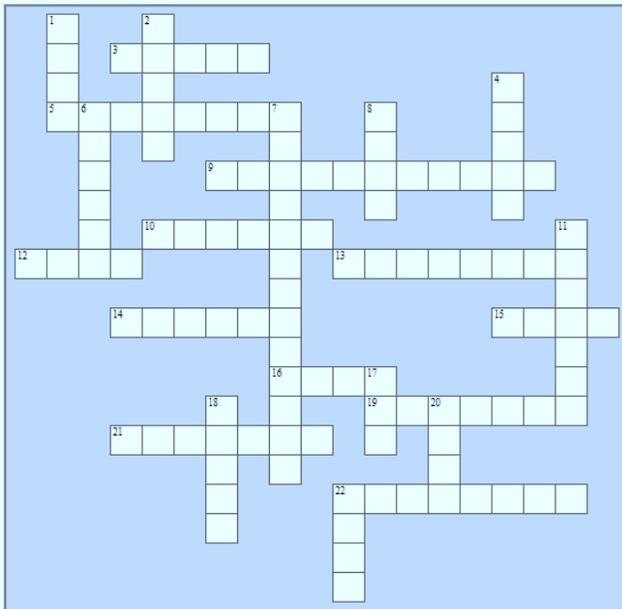


Samples of the sanitizer produced by CEMASTEА

Samuel Gachuhi and Paul Akoko, Chemistry Dep., CEMASTEА



## Biology: Crossword



### Across

3. A group of tissues in our bodies that has a specific form and function
5. The process by which new cells are made is called cell \_\_\_\_\_
9. We have 23 pairs of these
10. Carbohydrates are made up of the elements \_\_\_\_, hydrogen, and oxygen
12. Part of the plant that supports the leaves and flowers
13. Single-celled microorganisms
14. Fats, waxes, steroids make up this group of organic \_\_\_\_\_ molecules
15. We need these to see
16. Plants begin their lives as one of these
19. Control center for the cell
21. Tiny invaders that can make you sick
22. Plants use photosynthesis to get energy from this

### Down

1. We eat this to give us energy
2. This holds our memories
4. The skeleton is made up of these
6. Our \_\_\_\_ system helps protect us against diseases
7. Brain, spinal cord, and nerves
8. The part of the plant that grows underground
11. Heredity says we get certain traits from these people
17. Initials for deoxyribonucleic acid
18. Mushrooms, mold, yeast
20. Basic unit of life
22. Organ that covers our body

[https://www.ducksters.com/games/crossword\\_puzzle/biologyprint.php](https://www.ducksters.com/games/crossword_puzzle/biologyprint.php)

## Mathematics: Number puzzle

Arrange the numbers 1, 2, 3, ..., 24 in a 4\*6 grid as shown beside such that the sum across all the rows is equal, and the sum down all the columns is equal.


Thuo Karanja, Biology dept. and Agnes Mwangi, Mathematics dept.

## COVID-19 QUOTES



Although slowed down by the health crisis and the economic downturn caused by COVID-19, I am further comforted by the teachings of our Founding Fathers. They instructed us to be "...our VERY BEST at our DARKEST moment". They taught us not to question in the dark, the dreams we dreamt in the light.

And when our dreams hit rock-bottom, they taught us not to abandon them, but to re-imagine them, instead. They told us that 'rock-bottom' is actually a foundation you can build on.

This CORONA Moment we are in is, yes, a DARK moment, alright, but the founders of our nation require us to be at our very BEST. And this demand is not a lofty ideal; they practiced it themselves as they fought to bring us self-rule.

Excerpt from a speech by His Excellency, Hon. Uhuru Kenyatta, C.G.H., President Of The Republic of Kenya during 57<sup>th</sup> Anniversary of Madaraka Day. Monday, 1<sup>st</sup> June 2020.



" We are in this together  
– and we will get through  
this, together. "

UN Secretary-General António Guterres



#coronavirus | #COVID19

## Words of Encouragement



For God so loved the world, that He gave His only begotten Son, that whosoever believeth in Him should not perish, but have everlasting life: John 3:16: KJV: Our Heavenly Father loves us just the way we are, it doesn't matter who we are or what we have done in the past; Now, should we choose to believe in His Son, eternity is ours.

Paul Ombasa, HR Department



May Allah grant us the strength to fulfil our obligations to the best of our ability and confirm our entry into the highest rank in JANNAH by HIS Mercy. Ameen. May Allah answer from HIS infinite mercy, all that we need and ask for, from the dreams of our heart to the prayers on our lips, to every expectation and aspiration we have that He is.

James Olekima, Transport Department

# Customer Service Week



Children at Shades Riruta Orphans Children Home in Dagoretti receive items donated by CEMASTEА

Customer Service Week is an international celebration of the importance of customer service and of the people who serve and support customers daily. At CEMASTEА we celebrated the customer service week by engaging in Corporate Social Responsibility (CSR). The centre visited Shades Riruta Orphans Children Home in Dagoretti Constituency and donated an assortment of items including firewood and housekeeping items like curtains, mosquito nets, slippers, and bedsheets. The children's Home management thanked the Centre for the donations. CEMASTEА too was celebrated as a

valuable customer by First Assurance and honoured with a cake.



Cake served to CEMASTEА staff by First Assurance in celebration of customer service week.

Ann Jane Mumbi, CEMASTEА

## Hand washing tips

- 1 Remove any jewellery
- 2 Wet hands with running water
- 3 Apply soap
- 4 Rub hands together for at least 20 seconds
- 5 Wash all areas, including in between fingers
- 6 Rinse hands and turn off tap
- 7 Dry hands thoroughly with a paper towel

healthdirect

# What others are saying

## SMASSE online training was a timely idea

BY MUTAHI MIRICHO

In a departure from the past, SMASSE (Strengthening of Mathematics and Science in Secondary Education) training for secondary school mathematics and science teachers in August this year was conducted online. This was the first time the Centre for Mathematics, Science and Technology Education in Africa (CEMASTEA) conducted the training online since it started the capacity building course nearly two decades ago.

More importantly, particularly from the Covid-19 lessons learnt, the teachers were trained on how to conduct Google classes for their students. In the fifth week, they were required to liaise with their school heads and parents to create Google classrooms, add their students and start engaging them online, particularly the Form Fours.

Apart from enabling a teacher to teach students who are distance away, it could also be organised in such a way that students from different schools can be brought together to share ideas. In future, teachers should also be encouraged to enroll 100 per cent. They should be encouraged to have active email addresses and smart phones or tablets.

The writer is the author of *Writing School Compositions and Msingi wa Insha*. He is a PhD student at Laikipia University

Media is considered as the fourth estate of any society. It collects and transmits information and gives us immense knowledge and understanding of what is happening around us. CEMASTEА continues to leverage on both electronic and print media to connect its programmes with the world. Here are some items on what is being reported about CEMASTEА: Click on the links to follow/read the articles.



Acting Deputy Director Training, CEMASTEА, Mr Patrick Kogolla (In a suit) during an interview by Benji Ndolo of Ebru TV.

If you missed the interview, follow through the link below:

<https://www.youtube.com/watch?v=h9fGwK0glRM&t=6s>

### BRIEF

## Teachers, trainers feted for innovative practice in online curriculum delivery

by Elly Gitau  
@EllyGitau

As an intervention measure to mitigate the impact of Covid-19 pandemic and an endeavour to ensure quality teaching and learning continues after closure of schools, the Centre for Mathematics, Science and Technology Education in Africa (Cemastea) has gone fully digital and converted its training programmes from face-to-face to fully online.

This new development by

institution, whose mandate is to build the capacity of mathematics and science teachers for effective classroom practices is meant to make it relevant and also fit into the dynamics of the new normal.

Placed under the Ministry of Education, Science and Technology (MOEST), Cemastea has been conducting online In-service Education and Training (Inset) using online learning management systems notably, the Google Classroom. "The focus of Inset was to build capacity of teachers on innovative pedagogy

[method and practice of teaching] so that they could deliver the curriculum online.

Already, 1,163 county trainers and more than 11,000 mathematics and science teachers have been trained online," reads a statement by Cemastea.

To motivate the teachers to develop the requisite skills and be innovative in teaching learners online, Cemastea in collaboration with eKitabu introduced an online competition where teachers were expected to develop and deliver

content online to learners using a suitable learning management system.

The competition started at the county level, then proceeded to the regional level and finally the national level. The winners were announced on Wednesday last week.

Mathematics and science teachers Nazra Athman Mohamed, Erick Onyango and Jane Mbithe from Changamwe in Mombasa county, Maranda High School in Siaya and Kenya High School in Nairobi

respectively, were the national winners.

Fred Bongu, Evans Ngoge and Joseph Songok from Mombasa, Nyamira and Nandi counties respectively were the county trainer national winners.

County trainer regional winners were Susan Waiyaki from central, Fred Bongu from coast, John Mugo from Eastern, Nairobi's Bridgter Mwangi, Ali Billow from North Eastern, Nyanza's Evans Ngoge, Joseph Songok from Rift valley and Florence Lukamba from Western region.

*Newspaper article on CEMASTEА's Remote Learning Competition that appeared on the People Daily on 30th November 2020*

*Click to the link below: Newspaper article on CEMASTEА's Remote Learning Competition that appeared in the Standard Newspaper*

<https://www.standardmedia.co.ke/education/article/2001395448/centre-awards-the-best-teachers>

## Picture Speak: Events for Q4



Tree planting at the Ngong Forest and, at the Thogoto Home for the



Gifting the former Director, CEMASTE A Hon. Stephen Njoroge, HSC



Remote learning competition winners receiving their gifts including laptops, trophies and certificates



CONTACTS: Please visit us on our social media platforms  
Click on this link to give feedback: <https://forms.gle/RkXNWXQ3ehEsqhr48>



+254-2044406  
+254-70-6722697  
+254-78-0797648



[director@cemastea.ac.ke](mailto:director@cemastea.ac.ke)



[www.cemastea.ac.ke](http://www.cemastea.ac.ke)



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WISHING YOU A PROSPEROUS 2021