

Issue 010 April – June 2022



# CEMASTE INFO

## Newsletter

# The ABC of CBC

## Preparing for Junior Secondary



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Welcome to our 10<sup>th</sup> Issue of the CEMASTEA Info Newsletter. We are glad about the feedback we have continued to receive that has led to the improvement of the Newsletter over time.



We report on activities that have happened in the last quarter of the financial year 2021/22. The Centre implemented several activities to promote STEM education at the national and regional levels. The Secondary and Primary Programmes mounted National INSET for County trainers. The Special Programmes and Student Learning department organised training for lecturers from Meru University of Science and Technology on CBC. There were workshops for Principals from selected schools across the Counties and one for STEM Model Schools Principals.

In this Issue, attention is given to the Competency-Based Curriculum (CBC). All training and workshops implemented by the Centre included content on CBC. Focus on CBC continues to be an intentional strategy. Since CEMASTEA is an critical stakeholder in the education sub-sector, it takes cognizance of the role it needs to play, especially in the transition of Grade six pupils to Grade seven in Junior secondary. We are, therefore, deliberately taking time to inform our participants of the pedagogical expectations for the transition. In particular, CEMASTEA is having conversations with STEM school leadership and teachers on

interpreting CBC designs and how to plan and implement lessons that meet CBC expectations. Apart from content-related outcomes, CBC lessons, at the minimum, should, through well-designed learning experiences, integrate some core competencies and promote at least one value.

Another milestone is the publishing of CEMASTEA's inaugural *Practitioner Journal of Mathematics and Science Teachers (PJM&ST)*. The Journal is an innovation by the Research, Development, and Knowledge Management Department aimed at publishing reflections from practitioners to inform effective curriculum implementation and to enhance the learning of STEM concepts by learners at all levels of education. The Journal also provides teachers a platform to share experiences and promising classroom practices.

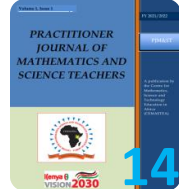
Two other breakthroughs include a successful International Webinar on STEM Education by the Partnerships and Linkages department that attracted 27 national, regional and global organisations. The other is the STEM boot camp, successfully organised by the STEM committee in partnership with stakeholders in the STEM ecosystem. Participants, mainly school-going learners, enjoyed working and practising machine learning, robotics, innovation and basic entrepreneurship skills.

We also report on the passing of the late President Mwai Kibaki, team-building for staff, capacity-building on drugs and substance abuse and COVID-19 containment.

Enjoy your reading, and kindly give us your feedback. <https://forms.gle/DNCRNEQourQpCzHfA>

Thuo Karanja, Editor

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## Message from the Director: Embracing CBC



Kenya has been implementing the 8-4-4 system of education for three decades. The 8-4-4 system of education put the 'teacher' at the centre of learning, and as a result, the pressure for good academic performance was immense. The system later faced criticism for being knowledge-based and summative with a greater focus on academic performance at the expense of skills, competencies and values. The system was also deemed wasteful in terms of human resources.

The change to CBC was embraced and welcomed, despite some stakeholders' caveats and reservations. Some questioned its overall rationale, sustainability, and whether teachers and students could cope with the new changes. While we must deal with all these challenges, observers reckon facing them is better than sticking with the old system. CBC signalled new dawn, a fresh, exciting start, where learning would be 'student-centred', and the focus would be on the student's core talents and abilities for self-learning, self-improvement and the development of

competencies required in executing tasks in the 21<sup>st</sup> Century. Experts continue to reiterate that CBC fully complies and speaks to the needs of an ever-changing labour market, for it deems both white-collar and blue-collar jobs as equally fundamental to the socio and economic development of the nation.

Alive to these curriculum changes, CEMASTEAs programmes have been realigning to respond to this need. All our core professional development and sensitisation programmes have a component of CBC. We are using our core strength in training teachers in good classroom practices to discuss two key areas—the interpretation of the CBC Curriculum Designs and effective Lesson planning and lesson Implementation in CBC. We are grateful that the feedback and the response to our interactions with course participants have been positive and welcoming.

In implementing our CBC training, we have embraced a multi-stakeholder approach. We follow the guidelines for teacher professional development provided in the Teacher Service Commission (TSC) Kenya Professional Teaching Standards on teachers' Pedagogical Content Knowledge (PCK). We consult The Kenya National Examinations Council on issues of assessment, The Kenya Institute for Special Education on inclusive education issues, and the Kenya Institute for Curriculum Development (KICD) on CBC designs and their interpretation. We are also working with universities and recently hosted training for lecturers from Meru University of Science and Technology's School of Education. The interaction focused on strengthening the capacity of teacher educators to equip teacher trainees with skills and competencies relevant to the Competency-Based Curriculum dispensation.

Finally, as stakeholders in the education sector, we are considered valuable members of society whose conduct should be beyond reproach. I urge us all to continue promoting national cohesion and peaceful co-existence in our schools, workstations and homes as the general elections draw near. Happy reading!

Thank you,

Jacinta L. Akatsa, HSC.  
Director

# The ABC of CBC: What's New?

George Kiruja and Thuo Karanja



Science process skills in CBC: Observation and recording

continuity of learning. The Kenyan Competency-based Curriculum (CBC) is a new education system designed to develop skills and knowledge (competencies) and, apply those competencies to problem-solving in real-life situations/enable the learner to cope with life challenges. The Vision for a Competency-based Curriculum is to have *Engaged, Empowered, and Ethical Citizens*, while the Mission is to *Nurture Every Learner's Potential*. CBC was launched by the Ministry of Education and rolled out in primary schools in 2017. The pioneers of CBC, who are currently in Grade 6, will transit to Junior Secondary School (JSS) Grade 7 in 2023.

Significant and notable in the shift to CBC include the change in learning years from the 8-4-4 to 2-6-6-3. The levels are referenced as 'Grades' instead of the previous use of 'Standard' and 'Form'. The syllabus is referred to as 'Curriculum Designs'. Though not easy to understand and use in the initial stages, the designs seem to have details and clarity that make lesson implementation easy. In CBC Designs, topics and subtopics are referred to as 'strands and 'sub-strands', respectively. Lesson objectives are learning outcomes, and learner activities are learning experiences. There are a few new introductions, such as using a 'key inquiry question' signifying an orientation to teaching that focuses more on inquiry-based learning. Another change in CBC is lessons that focus on developing competencies and values. The seven core competencies include *communication and collaboration, critical thinking and problem-solving, imagination and creativity, citizenship, learning to learn, self-efficacy, and digital literacy*. Values of *love, responsibility, respect, unity, peace, patriotism and integrity* are to be integrated into lessons. While planning lessons, teachers are expected to mainstream at least one competency and one value.

The three letters, CBC could be the most spoken of in the education sector in Kenya today. They evoke different reactions and emotions depending on whom one is conversing with. While to some, a Competency-Based Curriculum (CBC) is the greatest thing that could have ever happened in education, to others, it is a disruption to the

## Gearing for Junior Secondary: The Great Transition

By: Patrick Kogolla, Ag. Deputy Director Training  
CEMASTE A

Under the new 2–6–3–3–3 education system, commonly referred to as CBC, learners will spend a total of 17 years in school: two in pre-primary, six in primary school, three in junior secondary, three in senior secondary school and another three in university. One of the critical milestones of implementing CBC is the transition of the learners currently in grade six to grade seven at Junior Secondary School (JSS). Junior Secondary school (JSS) is a stage of educational transition nested in most education systems between primary and senior secondary education. It is primarily for learners of Years 7, 8 and 9 and helps to ensure the bridge between primary and secondary school is safe, solid and consistent. In the Kenya context, grades 4, 5 & 6, together with grades 7, 8 & 9, form the middle school.

Junior Secondary Education will take three years; Grade 7, 8 and 9 for learners aged between 12 and 14 years. There will be 12 core/compulsory subjects in junior secondary. These are English, Kiswahili, Mathematics and Social Studies, Religious Education, Business Studies, Agriculture, life skills, Sports and Physical Education. New subjects include Integrated Science, Health Education and Pre-Technical and Pre-Career Education. Learners with hearing impairment will undertake Kenyan Sign Language in place of English and Kiswahili. Integrated science, for example, will deal with basic concepts in science and some contents from physics, biology and chemistry. Pre-technical education prepares the learners for the world of work by instilling technical skills and knowledge needed to perform specific tasks. Pre-career Education seeks to prepare learners to choose their career paths after completing senior secondary in Grades 10, 11 and 12.

*Continued next page*

Assessment is another essential aspect of the CBC curriculum. Emphasis is on the ability of every learner to demonstrate learning or competencies as opposed to the hitherto right or wrong approach to assessment. In CBC, learners are assessed along a continuum of personal capabilities, with feedback forming a more significant part of the assessment.

A learner can demonstrate learning by exceeding or performing below the assessor's expectations. Using rubrics in assessment enables a teacher to map out effective feedback related to the individual learner or a group of learners.

Other features of CBC include a greater emphasis on parental involvement in the business of their children's education. The design is such that learners collaborate with their parents to produce learning artefacts and portfolios via extended learning activities.

The success of CBC is hinged on the sensitization, awareness creation, and training of key stakeholders in the education subsector (parents, school leaders and teachers) on this transition's implications and its implementation dynamics. Parents are eager to know the role government expects them to play to facilitate meaningful learning experiences for their children at school. Teachers are keen to see the structure of CBC and especially the anticipated changes in the processes of planning and implementing instruction. School leaders are eager to understand how they must restructure school programmes and practices to accommodate CBC.

As a critical stakeholder in the capacity development ecosystem in the education subsector, CEMASTEIA has reoriented its training programmes to focus on CBC. The training for STEM teachers and school leaders is heavy on content related to CBC. We have trained teachers on the structure of the CBC Framework and Curriculum Designs interpretation, basics of lesson planning and implementation of CBC lessons and Competency-Based Assessment (CBA). The success of CEMASTEIA CBC training is hinged on the multisectoral approach in training material preparation and training. The contextualization of the training to focus on the specific needs of participants and the strategy of having input from the experts in CBCs' key outcome areas has resulted in top-rated practical training for CEMASTEIA's CBC training programmes. CEMASTEIA collaborates with institutions such as the Kenya Institute of Special Education (KISE), Kenya Institute of Curriculum Design and Kenya National Examination Council (KNEC).



## Gearing for Junior Secondary: The Great Transition

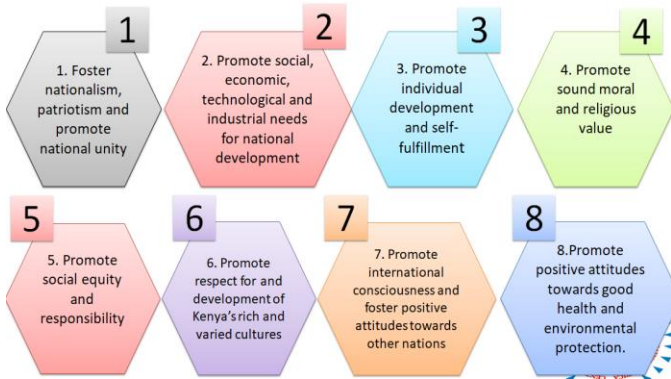
There will be a total of seven optional subjects in junior secondary. Learners will be allowed to choose a minimum of one and a maximum of two optional subjects. These subjects include Visual Arts, Performing Arts, Home Science and Computer Science, indigenous language and foreign languages, and learners' options to study the Kenya Sign Language. ICT will be cross-cutting in all subjects

The Government has given resources to construct classes to accommodate the expected large numbers. Curriculum designs for grade seven are already out, and secondary school teachers are being trained to interpret and implement the designs. To join Junior Secondary Grade 6 learners in November 2022, sit the maiden national CBC assessment test- the Kenya Primary School Education Assessment (KPSEA). Approximately 1.24 million pioneer KPSEA candidates will join junior secondary schools in January 2023.

Junior secondary school will be closely watched as a transitional stage in CBC. While the die on CBC is cast and there is no going back, it will be necessary for those concerned to pick lessons and feedback to plough back and make the implementation smooth and successful as we advance. Lastly, it is essential to note that junior secondary school learners will mostly be adolescents. School leaders and teachers must focus on the child and as they implement their lessons. The focus should be geared to assist them in navigating self-efficacy and identifying their potential and worth. This way, the vision of CBC of 'nurturing every learner's potential' will come alive.

Cabinet Secretary for Education Prof. George Magoha launching a government sponsored CBC junior secondary school grade seven classes

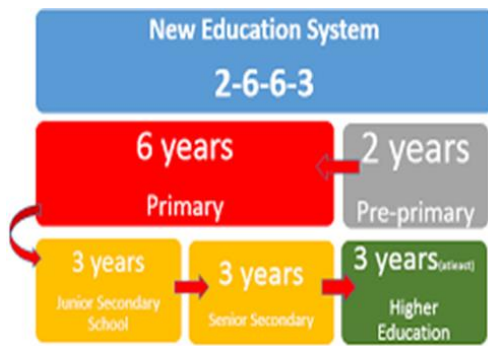
# Picture Speak: Structure of CBC



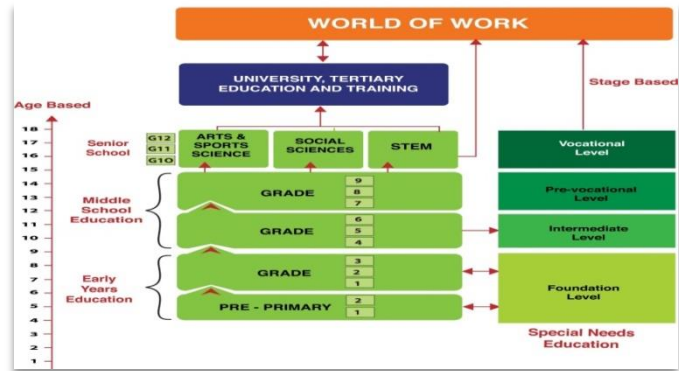
Goals of Education in Kenya



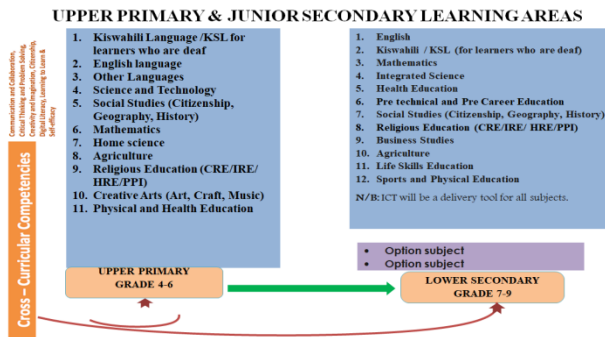
Mission of CBC



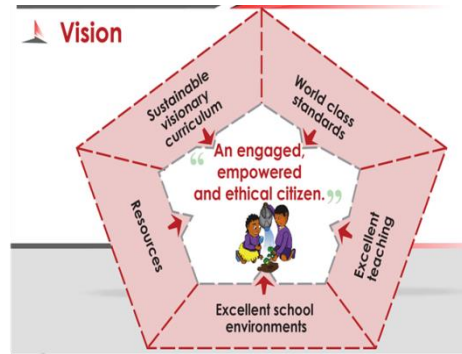
The CBC System



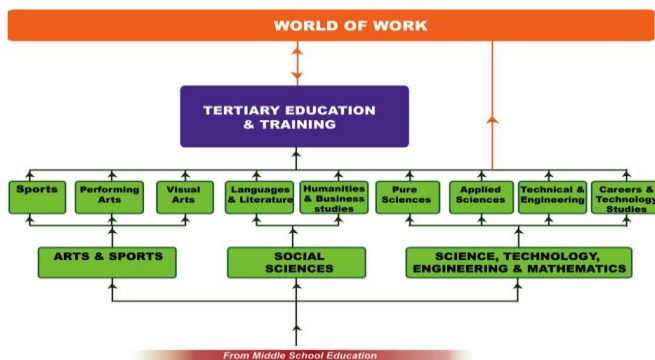
Learning progression in CBC



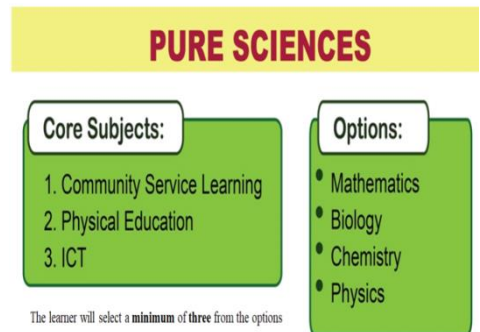
Learning areas in Middle School



Vision for CBC



Learning areas in Senior Secondary



Learning areas for Pure Sciences in Senior Secondary

# Model Schools Principals' Workshop: Quality CBC STEM Education

By: Kizito Makoba and Dan Orero

CEMASTEA organised a two-day STEM Model School Principals workshop in Nakuru from June 10<sup>th</sup> – 11<sup>th</sup>. The workshop theme was 'Enhancing Principals Pedagogical Leadership for Effective implementation of the STEM Pathway in the Competency-Based Curriculum. One hundred and one (101) Principals from the 103 STEM Model schools attended.

Some topics under consideration included understanding the STEM pathways in light of CBC, strategies for supporting STEM education programmed in their schools and the need for continued transformation into Centres of Excellence in STEM education.

Strategies included the improvement of their schools' STEM climate, making it more inviting, initiating programmes such as the maker's spaces, and integrating education for sustainable development.



From left, Chief Guest, Director General, State Department of Early learning & Basic Education, Ministry of Education, Mr. Elyas Abdi, Dr. John Aleke, Assistant Director Quality Assurance and Standards at the Teachers Service Commission and Mrs. Jacinta L. Akatsa, HSC, Director CEMASTEА while making her remarks during the workshop

The Chief Guest during the opening ceremony was the Director General,

State Department of Early learning & Basic Education, Ministry of Education, Mr Elyas Abdi. In his remarks, he challenged principals to ensure the learners got quality STEM education because of the Competency-Based Curriculum (CBC). He requested the school leaders to prepare for junior secondary intake, especially in STEM-related subjects. He encouraged principals to support their teachers continue to practice skills acquired during the STEM training by CEMASTEА. STEM model schools should stand out in every aspect such that neighbouring schools can emulate and learn from them.

The closing ceremony was presided over by Teachers Service Commission CEO Dr Nancy

Macharia, represented by Dr John Aleke, Assistant Director of Quality Assurance and Standards. The Chief Guest thanked CEMASTEА for playing a pivotal role in organising training for school principals in CBC and the STEM pathway. Noting that the training equipped the Principals with knowledge and skills to implement STEM and CBC at Junior Secondary, they needed to offer exemplary pedagogical leadership and sensitize teachers and other stakeholders. The guest urged

Principals to practice what they had been through and assured them of TSC's commitment to continually support them, teachers and learners in promoting STEM-related activities. He challenged them to make a deliberate effort to increase enrolment and achievement in STEM subjects and model their schools to be centres of excellence in STEM education.

In her remarks, Director CEMASTEА, Mrs Jacinta Akatsa, encouraged the principals to invite STEM programmes that promoted the uptake and increased enrolment in STEM subjects. Noting that a conducive teaching and learning environment could lead to great results, she requested them to put in place structures that would ensure follow-ups and strengthen the transfer of knowledge and skills gained. The participating Principals developed an action plan detailed in various programmes they intended to do. These included preparation for CBC Junior secondary, lesson study, ICT integration and STEM projects and programmes.

## CENTER FOR MATHEMATICS SCIENCE AND TECHNOLOGY EDUCATION IN AFRICA

### PRINCIPALS WORKSHOP ACTION PLAN- 2022

SCHOOL: **ST.AGNES MWIRA GIRLS SECONDARY SCHOOL** COUNTY: **KAKAMEGA**

Area	Specific action	Timeframe	Resources required	Indicator/evidence	Possible challenges	How you will mitigate the challenges
CBC (Preparation for transition)	• Sensitization of other teachers who were not trained on CBC	June – August	Teachers Papers, Computer	Notice of meeting Meeting minutes	Busy school schedule	Create time
	• Form school committee on implementation of CBC	June	Teachers and other stakeholders	List of committee members	Lack of knowledge on CBC	sensitization
	• Follow up on teachers who were trained on CBC to implement their actions plans	Continuous	Trained teachers, Principal	Action plans and success indicators	Lack of time	Continuous monitoring



# Gender-Responsive STEM Education: Heads of Departments Training Course

By: Mr. John Makanda, Ben Mwangi and Winfred Magu

In April, CEMASTEА, in partnership with Education Development Trust (EDT), the Teachers Service Commission (TSC) and the Ministry of Education (MOE), organised a four-day training on Quality Gender-Responsive Science, Technology, Engineering, and Mathematics (STEM) Education. Participants for the training included Heads of Department, Quality Assurance and Standards Officers (QASOs) and Curriculum Support Officers (CSOs) from Kilifi, Kwale, Marsabit, Mombasa, Nairobi, Samburu, Tana River and Turkana Counties. The training took place from 4<sup>th</sup> - 7<sup>th</sup> April 2022 in Christian Organizations Research and Advisory Trust of Africa (CORAT Africa), Nairobi and Diani Forest Lodge in Kwale. The training theme was *'Towards developing a quality gender-responsive stem education through enhancing learner-centred teaching and learning practices*. There were three thematic areas; *STEM and Gender, STEM Pedagogy & Gender and Communities of practice*.

During the training, participants learnt concepts of Gender-responsive pedagogy through plenary discussions, group discussions, scenarios, video clip observations, and textbook analysis. Key messages included that; teachers should encourage equal participation and involvement of boys and girls while taking into account their specific interests, learning styles and needs. Factors (individual, school, family and community) promote or hinder girls' participation in STEM learning. That it takes time to be proficient in developing and implementing lessons that have compelling gender considerations and that; gender-responsive pedagogy is part of ensuring inclusive learning environments where all learners feel respected and valued. Using models who have excelled in the field of STEM can encourage positive motivation and participation of girls in

STEM. Teaching and learning materials are fundamental to the pedagogical process and can promote inclusive learning or reinforce systems of oppression, discrimination and inequality. Some important areas for inclusive gender-responsive concerns include; lesson planning, teaching and learning materials, language use in the classroom, gender-responsive activities, teaching approaches, classroom set-up and learning infrastructure.



In Kwale, the Chief Guest for the opening ceremony, TSC-County Director Mr Elias Gitonga, was represented by Mr Bernard Okaka, County ICT Officer. He

elaborated on STEM subjects' critical role in achieving Sustainable Development Goals (SDGs) and developing a nation's socioeconomic status. Mr Okaka affirmed that teachers' roles are not only limited to imparting knowledge but competencies and skills in STEM subjects. He challenged the participants to continually improve themselves through training that provides the opportunity to grow professionally. He applauded the Education Development Trust and CEMASTEА for organizing the training. He equally lauded the teacher for attending the activity during the holidays.



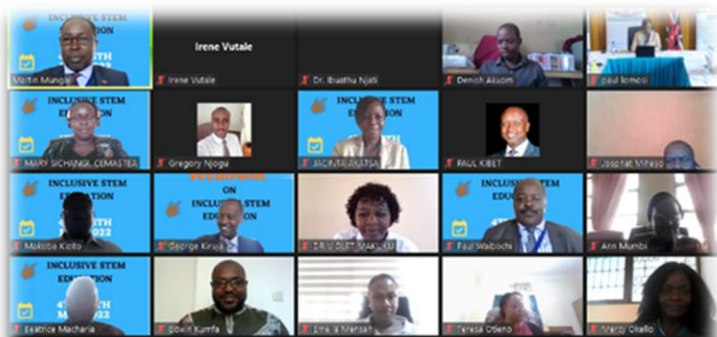
Chief Guest for the opening ceremony in Nairobi was Ms Violet Munyasi, Principal Quality Assurance and Standard Officer, RDE Office. She explained that the role of the teacher in society could not be underestimated and informed participants that they were in a privileged position to learn and equip themselves with modern skills in teaching and learning. Madam Violet encouraged the participants to take the initiative and provide an enabling environment for learners, especially in STEM and Competency-based Curriculum (CBC), to achieve positive learner outcomes. She reiterated that teachers should be the core components of the training and mentorship of learners in their schools.

Director CEMASTEAMrs Jacinta Akatsa was the Chief Guest during the closing ceremony for the training in Nairobi, where she attended in person and Mombasa, where Ms Mary Sichangi represented her. She encouraged participants to change the narrative and preconceived notions about gender in STEM and the need to treat learners equally and build their self-esteem and confidence. She reminded teachers that learners are naturally curious and should aim to utilise the learner-centred pedagogy to tap into this. She encouraged the HODs to partner with school principals to establish and sustain communities of practice through school-based lesson study and to embrace a positive STEM culture by creating an inviting school climate. She lauded Ed Dev Trust for partnering with CEMASTEAM to train the teachers and for the support that the Teachers Service Commission (TSC) and Ministry of Education (MoE) had accorded during the training

Senior officers from EDT participating in the training included Ms Margret Kamau from Nairobi and Mr Kaima Ruiga, Coordinator, Coast Region. They were happy with the training outputs and promised to continue supporting teachers, learners, and schools with relevant STEM resources.

## International Webinar on Inclusive STEM Education

By: Mary Sichangi and Ben Mwangi



A screen shot of participants during the webinar

(CEMASTEAM organized a webinar under the theme, “*Inclusive STEM education*” from 4<sup>th</sup> to 6<sup>th</sup> May 2022. The webinar’s objective was to sensitize partners and stakeholders on the Centre’s programmes to identify areas of mutual interest and establish collaborative linkages with other organizations.

Dr Elyas Abdi, Director General, Ministry of Education, represented by Mr Paul Kibet, Director, Secondary Education, delivered the keynote address for the opening ceremony. He emphasized the importance of inclusive STEM education in the 21st Century as it relates directly to achieving the

Sustainable Development Goals (SDGs), particularly Goal Four on “inclusive and equitable quality education that promotes lifelong learning opportunities for all.” In his speech, he lauded CEMASTEAM for providing leadership in unifying STEM-based organizations through the webinar. He urged the organizations to forge working relationships to strengthen the quality of STEM education towards achieving social change and development across Africa.

The three-day webinar was characterized by presentations with participating organizations pitching on respective activities and what they do. The presentations revealed rich and relevant programs in STEM education that could lead to the cross-pollination of ideas and best practices. In addition, cross-cutting issues affecting STEM education and innovative interventions emerged from the presentations. Cross-cutting themes included limited resources, regional and national peace, ICT, gender, special needs and disabilities, entrepreneurship and vulnerable communities. Without collaboration and partnerships in the STEM ecosystem, the challenges would persist.

In her closing remarks, Director CEMASTEА, Mrs Jacinta Akatsa, appreciated efforts being made by stakeholders to strengthen STEM education in Africa. Mrs Akatsa reiterated the importance of partnerships and proposed the creation of a coordinating committee drawing membership from Africa and the Diaspora to strengthen the STEM networks. The coordinating committee could be entrusted with reporting on STEM activities and consolidating promising practices and recommendations.

The virtual forum attracted an attendance of up to 27 organizations interested in STEM education from Africa, the USA, the Middle East and Canada. Global Peace Foundation, Kenya, Association of African Universities (AAU), Africa Teen Geeks, African, Institute for Mathematical Sciences (AIMS), British Council, Education Development Trust, CASIO Middle East, FAWE Kenya, CASIO-Kenya (Sangyug), University of Waterloo – CEMC, Meru University of Science & Technology, Junior Achievement Kenya, Kenya Institute of Special Education (KISE), Kenya National Commission -UNESCO (KNATCOM-UNESCO), Minnesota State University Mankato, MwalimuPLUS, Practical Education Network, STEM Centre Africa, STEMPower Inc, TechQuest STEM Academy, Young Scientists – Kenya, Zambian National STEM Foundation.

## **Primary INSET 2022: Enhancing Teachers’ Pedagogical Content Knowledge (PCK) in Digital Literacy**

By: George Kiruja, Njeri Mburu and Ann Mumbi

CEMASTEА implemented the National Primary INSET 2022 from 18<sup>th</sup> to 29<sup>th</sup> April 2022. The training theme was *Enhancing teachers’ pedagogical content knowledge (PCK) in digital literacy through collaborative lesson planning to implement the Competency-Based Curriculum (CBC) effectively*. The two-week online training targeted 282 Primary County Trainers. The trainers were to cascade the training over to 3,000 mathematics and science teachers drawn from all the 47 counties.

Expected outcomes included the ability to use the Google classroom, develop teaching and learning resources to promote digital literacy, collaborative analysis of curriculum materials, and prepare lessons that integrate CBC core competencies and values. Three online tools and applications, MS Teams and Google Classrooms, were used to facilitate the course. The strands of coding and geometry in mathematics and scientific investigations in science were used as a sample to drive the course. A lesson plan one of the main outputs was one of the main outputs of the training. The lessons were modelled to promote the integration of CBC core competencies, and values were uploaded into Google classroom.

The Teachers Service Commission (TSC) officers and the Ministry of Education County Education in the Counties presided over opening and closing ceremonies. The guests encouraged participants in the training to use the opportunity to enhance their knowledge, skills and attitudes on digital literacy and practice collaborative lesson planning and implementation. This would improve their competence in promoting digital literacy among learners and effective complementation of the Competency-Based Curriculum (CBC). Participants were urged to be positive ambassadors of Kenya's CBC and education reforms.

Director CEMASTEА, Mrs Jacinta Akatsa, noted that the time used in professional development was worth it. It acts as a catalyst for teachers’ effectiveness as teachers update their skills and knowledge in teaching and learning, leading to a better learning outcome and job performance. INSET also offers teachers skills and knowledge to implement policy changes in education and confidently confront contemporary and

By: John Livingstone Makanda and Winfred Magu

The 2022 SMASE Secondary Online National In-service Training (INSET) for County trainers took place from 16th-27th May 2022. The two-week training targeted mathematics and science teachers and was themed “Enhancing teachers' capacity in the implementation of Competency-based Curriculum (CBC) for effective learning in STEM subjects”.

The training in all 47 counties had over 1300 county trainers participating. The participants were grouped into seven cohorts of about 170 drawn from various counties and mathematics and science subjects. Participants went through an overview of CBC and Transition to Junior Secondary Schools, interpretation of the curriculum designs for integrated science and mathematics and those of pre-technical and pre-career studies.

The Chief Guest during the opening and closing ceremonies was the Director General, Ministry of Education (MoE), Mr Elyas Abdi, represented by Mrs Jacinta Akatsa, Director and CEMASTEА. The Chief Guest appreciated the efforts CEMASTEА was making to ensure the teachers were prepared for the Junior Secondary School (JSS).

During the closing ceremony, Mr Abdi, represented by Deputy Director Training CEMASTEА Mr Kogolla, urged the participants to cascade the skills they had acquired in preparation for changes in the education sector. Guests who presided over the opening and closing ceremonies in the various cohorts reminded County trainers of their critical role as change agents, especially in implementing CBC effectively.

At the end of the training, the County Trainers were expected to demonstrate understanding of CBC for effective implementation and interpret Grade 7 curriculum designs for effective teaching and learning of STEM subjects. The Teachers Service Commission (TSC) and the Ministry of Education monitored the training.

## Lesson Study for County Trainers

John Makanda and Winfred Magu

CEMASTEА offered virtual training to 260 county trainers on Lesson Study. The training on the theme “Enhancing learner’s critical thinking and problem-solving skills” targeted mathematics and science teachers from the 47 Counties. The training took place from 6th -17th June 2022.

The two-week-long training introduced the lesson study process and how to practice the same in the school, focusing on promoting critical thinking and problem-solving skills. Areas covered included a background on the concept of lesson study; development of the lesson study goals; planning for lesson study (including analysis of curriculum materials, teaching strategies, teaching activities and learner tasks); lesson implementation and post-lesson discussion and report writing. The training allowed participants to enhance their knowledge and skills for planning and implementing school-based lesson study and using learner-centred pedagogies.

The opening and closing ceremonies were presided over by the CEO Teachers Service Commission, Dr Nancy Macharia represented by Ms Alice Gathi, Deputy Director and TSC Quality Standards Assurance. The Chief Guest urged the trainers to cascade the knowledge and skills acquired in their learning institutions. She reminded participants that training on lesson study were a fulfilment of Teacher Performance Appraisal and Development (TPAD). Not only did the training focus on pedagogical knowledge, but it also offered them an opportunity to learn about the competency-based curriculum and thus assisted them in preparing them for transition to Junior Secondary School.

In her remarks, Director CEMASTEА, Mrs Jacinta Akatsa, noted that the training would greatly benefit the Kenyan child and challenged the participants to build communities of practice around teaching.

# Picture Speak: School Visits at CEMASTEA



Lamu Girls



Gakii High



St. Aquinas High



Ngaru Girl



Good Testimony Primary School



Witu Mjini teachers

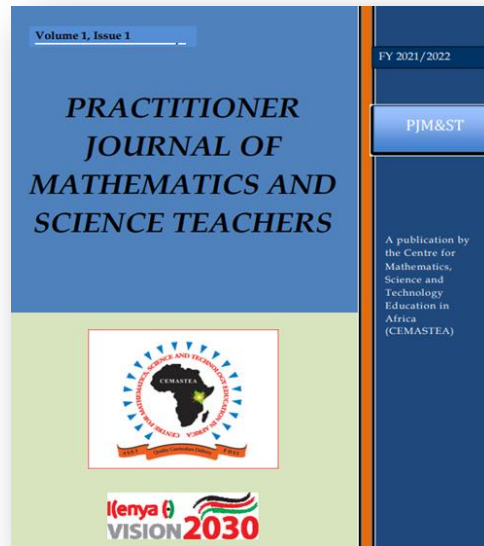


Witu Mjini teachers

# UALIMU BORA: Introducing CEMASTEAs Practitioner Journal of Mathematics and Science Teachers

By: Mungai Njoroge, PhD.

The Centre for Mathematics, Science and Technology Education in Africa (CEMASTEA) has established a *Practitioner Journal of Mathematics and Science Teachers* (PJM&ST). The PJM&ST is a publication innovation by the Research and Development department aimed at publishing reflections from practitioners to inform effective curriculum implementation and to enhance the learning of STEM concepts by learners at all levels of education.



Cover page impression of Volume 1 Issue of the PJM&ST

Seven peer-reviewed articles are published in Volume 1, Issue 1 of PJM&ST for the FY 2021/2022. The articles address practice issues in the education and training sector pertinent to supporting the Social Pillar of Kenya Vision 2030 and Sustainable Development Goal No. Four aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". The following is a synopsis of the articles in the order of appearance in the publication.

1. *Expanding Instructional Spaces for Biology: The Role of "Talking Walls"* article by Joseph Karanja Thuo emphasizes the role of the teacher in ensuring that students reap maximum benefits from 'Talking walls' in their schools.
2. *Learners' Unique Responses: Can they be used to promote learning?* Rahab Chiira & Agnes Mwangi encourages teachers to draw on learners' unique responses and use them to promote learning.
3. *Modelling how to Elicit Learners' Ideas* by Grace N. Orado calls on teachers to seek to understand learners' ideas, the thinking behind those ideas, and leverage learning based on those ideas.
4. *Demonstrating the critical angle and total internal reflection using a laser beam* by John Kiplimo Chumo shares an experience of designing an Optical Model for use in teaching the content on a critical angle and total internal reflection in physics.

5. *The Magic of "Prerequisite Knowledge" in Meaningful Learner Engagement* article by Hilliard Peter Kiwaza Righa reflects personal experiences depicting that prerequisite knowledge is vital if learners are to be fruitfully engaged in lesson activities.

6. *It can be done: Innovative Biology Practical Activities that Learners Can Identify with* by Kennedy Kivonya is an appeal to teachers to come up with innovative activities and modify existing ones to make them learner-friendly for teaching Biology concepts.

7. *An Interpretation of Universal Design for Learning and its Application in the Competence-Based Curriculum* by Mungai Njoroge shares an interpretation of UDL principles. It gives examples of how to actualize them to support the inclusion of all learners in the learning process.

The publication of Volume 1 Issue 1 of PJM&ST is available on the following:

- CEMASTEAs Website link: <https://www.cemastea.ac.ke/index.php/tech/2014-11-18-13-33-16/publications>
- Online Journal System link: [ojs.cemastea.ac.ke](https://ojs.cemastea.ac.ke)
- CEMASTEAs Content Repository Link: <https://repository.cemastea.ac.ke/course/view.php?id=41>

Plans are in progress to transition the publication of the PJM&ST to the Online Journal System (OJS) platform. Application for an International Standard Serial Number (ISSN) is in progress. Teachers and practitioners in STEM education are invited and encouraged to support PJM&ST by contributing articles in the upcoming Volumes and Issues.

# Coding Boot Camp: Mentoring Young Kenyans in STEM

By: Martin Mungai, Promina Kairu and Winnie Chepkurui

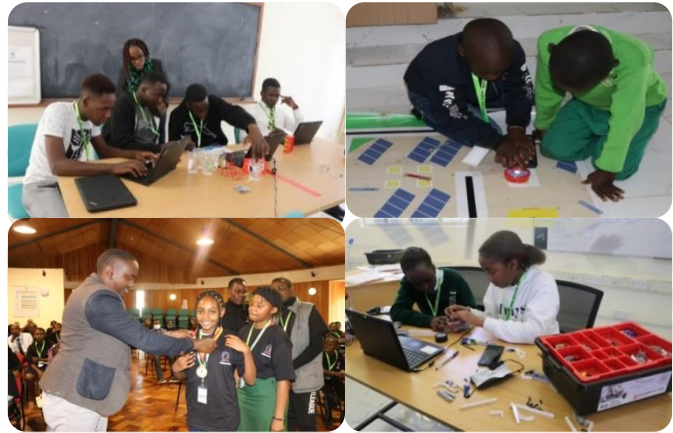
## #Coding4Life

CEMASTEА, in partnership with STEM impact Centre and I-START, hosted a coding and robotics boot camp from 4<sup>th</sup> to 8<sup>th</sup> April 2022. The activity aimed to offer learners an opportunity for increased understanding of Science, Technology, Engineering Mathematics education (STEM), improve their creativity and innovation skills, and strengthen the acquisition of 21st Century skills through hands-on activities. The Boot camp was attended by students from different schools around Nairobi who were on holiday. The learner engaged in programming fundamentals and hands-on activities, including Creative Coding; Robotics (A) – Tetrix; Robotics (B) - EV3 Kit; Mobile App Development; 3D – Fabrication and Arduino Prototyping. They also listened to expert talks from experts in applications development and robotics.

The Chief Guest for the opening ceremony was Director General (DG) Ministry of Education Dr Elias Abdi, represented by Assistant Director, National ICT Integration and Innovation Centre, Mr Dominic Kasim. In his remarks, the DG noted that the Ministry of Education had introduced the robotics program to stimulate the concepts of design thinking, complex problem solving, critical thinking and creativity to students at an early age. This kind of knowledge and skills was to form a critical mass of young learners motivated and interested in the areas of STEM and ICT and who would possibly pursue careers in this path. He was optimistic that the knowledge and skills acquired at the boot camp would continue even in the higher levels of learning and in creating solutions to real-world problems.

In her remarks, Director CEMASTEА, Mrs Jacinta L. Akatsa, HSC, noted that STEM Education was introduced to nurture students to become effective long-life learners equipped with appropriate knowledge, skills and values relevant for the 21<sup>st</sup> Century living. She also pointed out to learners that the opportunity at the boot camp was not for them to be taught but rather a space to exercise problem-solving skills. There was excitement throughout the week as learners demonstrated enviable ICT and programming skills. Some of the innovative ideas, applications and projects from the learners included:

- ‘A CBC Curriculum Application’ helps children understand the CBC curriculum by using animations, cartoons and videos to explain and demonstrate assignments.
- ‘Tano Uzaledo Application’. Designed to provide civic education to the public during the general election to enhance national security and can be modified for online voting via fingerprint and face recognition.
- ‘Our Worlds Nature (Own)’ was created to educate people on Environmental Conservation and Food Security, demonstrating how cutting down trees leading results in affects humanity and the economy.
- ‘Jionee Project’. Created to promote local tourism by educating people on the various tourist attraction sites in different parts of Kenya. On the App, you click on a region and the places you can visit in the selected area are displayed.
- The ‘Care for Mental Health App’. Self-test questions educate people struggling with mental issues about their mental health status. The App can connect with doctors all over the world.
- ‘Agriculture and Business App’ focused on Agro business in boosting the agricultural economy in Kenya by e explaining what agribusiness is all about. The App has pages for dairy farming, fish farming and food page.
- ‘The Solar Panel App’ is an innovation to save energy and fuel, especially in dry places. The innovators argued that solar energy is cheap and economical since it is a natural resource.



Children engaged various innovative activities during the Boot Camp

- ‘3D Brail Alphabetical Board’ is a board to help the visually impaired people enhance equity and integration among the visually impaired hence minimizing isolation.

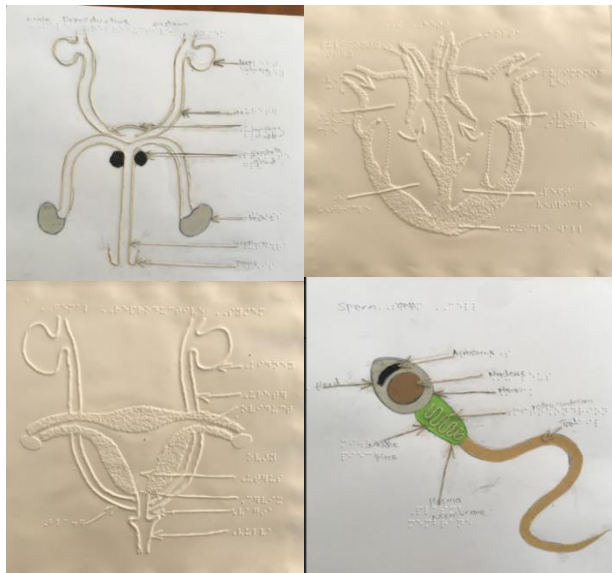
The STEM committee coordinated the boot camp, with Mr Martin Mungai and Kizito Makoba taking leadership. Participants were awarded certificates for completing the one-week coding and robotics boot camp. The next Boot Camp will be announced soon, and we encourage teachers and students to plan for their participation in the next boot camp.

## Disability Mainstreaming: Biology Lessons for the Visually Impaired

By: Odhiambo John & Thuo Karanja

Research has shown that learners who are blind or visually impaired have the same range of cognitive abilities as other students. However, the predominant teaching methods heavily relying on vision are insufficient in meeting their needs. They cannot, therefore, appreciate anything around them because of their inability to see and synthesize whatever is within their vicinity. Moreover, blind and visually impaired learners' most reasonable accommodation and accessibility strategies involve adaptations to the physical environment, mobility and emotional aspects. This is more common for learners in mainstream education systems.

Blind and Visually-impaired learners have difficulties in accessing and applying science process skills since their vision is affected in one way or another. When engaged in practical work, it is seldom and mainly limited to elementary exercises that provide a little intellectual challenge with no opportunity for developing critical thinking and problem-solving skills.



Sample tactile resources for teaching biology for visually impaired learners

Therefore, teachers must-have skills for planning lessons that demonstrate reasonable pedagogical accommodation of visually impaired learners. One way to enhance the potential of such learners to mitigate their challenges involves using Braille (for the total Blind) and large prints for the low vision learners. Braille enables learners to conceptualize what they cannot see; hence, tactile diagrams become necessary to help such learners develop their science processes to a level they could otherwise not reach. By touching or feeling the tactile diagrams with their fingers, blind or low visual learners are capable of learning concepts. Tactile diagrams are raised representations of graphical images adopted for the sense of touch. Tactile graphics can be pictures, maps, graphs and photographs (see attached photos)

The Disability Mainstreaming Committee (DMC) at CEMASTEIA, working with the assistance of the National Council for Persons with Disability (NCPWD) and Kenya Institute for the Blind(KIB), have developed a policy aimed at mainstreaming, among other issues, a pedagogy that is responsive to the needs of Persons with Disability (PWDs). The idea is to increase relevant teaching and learning resources available to the Blind and visually impaired regarding content and forms of information media that suit their needs. The disability mainstreaming committee is piloting tactile teaching and learning resources for use with Blind and Visually impaired learners in Moi Girls High School, Nairobi. The activity involves mainstreaming disability-friendly pedagogies to assist eight students at the school. The Centre will provide the learners with graphic tactile modifications for biological structures, starting with reproduction in humans and flowering plants, the circulatory system (heart) and the nervous system.

CEMASTEIA is making efforts to ensure the participation of learners with Special Needs in the competency Based Curriculum STEM pathway. As the country progresses with implementing CBC, there is a need to empower teachers to handle learners with various forms of disabilities. CEMASTEIA and Kilimanjaro Trust are forming a partnership to develop more teaching and learning resources for special-needs learners.

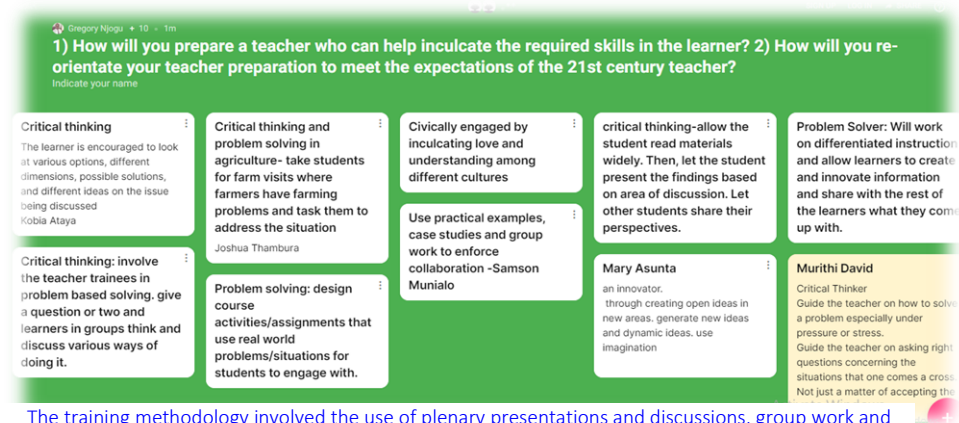


# Meru University of Science & Technology (MUST) Collaborates with CEMASTEA on Competency-Based Curriculum

By: Beatrice Macharia and Ben Mwangi

The introduction of the Competency-Based Curriculum (CBC) signalled the end of an era in Kenya's Education where ranking and cut-throat competition were at the heart of the sector. It heralded the dawn of a system of equal learning opportunities for all, which would usher opportunities for learners to identify and exploit their talents and God-given abilities. One of the expectations for the successful implementation of the CBC lies in creating awareness and training key sector players with a vested interest in this matter.

In this spirit, CEMASTEA implemented customized training for lecturers from Meru University of Science & Technology's (MUST) School of Education in topics aligned to CBC. The training was conducted virtually from 9<sup>th</sup> - 12<sup>th</sup> May 2022.



The training methodology involved the use of plenary presentations and discussions, group work and take-away assignments via resources such as the Padlet tool shown

The four days of training under the theme “*Strengthen the capacity of teacher educators to equip teachers with the requisite skills and competencies relevant under the Competency-Based Curriculum*” registered participation of 30 educators. The course covered four topics: *Basic Education Curriculum Framework (BECF) and Competency-Based Assessment Framework (CBAF); Interpretation of Curriculum designs; ICT Integration in CBC, and Teacher Professional Development and Records.*

The opening ceremony's Chief Guest was Professor Fatuma Chege, represented by Ms Ruth Mugambi. She informed participants that the State Department for the Implementation of Curriculum Reforms was mandated jointly with higher learning institutions and other stakeholders to prepare a rollout rationalization and migrate university education towards CBC aspirations. She noted that CBC is designed to offer a broad-based curriculum at the junior-school level that forms a foundation selection of pathways at Senior secondary and career-focused –schooling at the tertiary level. She was hopeful that the training would be a turning point for MUST to join other universities and stakeholders in the education sector in ensuring harmonious education reforms and migration to CBC. She told the university leadership that the Ministry of education was ready to provide any assistance as requested.

The closing ceremony was presided by the MUST Vice-Chancellor, who was represented by Dr Ibuathu Njati, Dean, School of Education. He acknowledged that while CBC is relatively new in Kenya, it has been fully operational in the United States of America since the 1960s. He indicated that CBC is the Philosophical umbrella that informs the core basics of teaching and notes that Africa has embraced this by focusing on student-learning outcomes. He reiterated that the job market has not been welcoming to university graduates; therefore, universities need to equip their graduates with 21<sup>st</sup>-century skills to counter this. He thanked training organizers for the effort, and exemplary work put in and wished for more engagements in the future.

The training was graced by the Principal Secretary of State Department For The Implementation Of Curriculum Reforms, Professor Fatuma Chege, represented by Ms Ruth Mugambi; University Council Chairperson, Professor Bosire Mwebi; Vice-Chancellor, Professor Romanus Odhiambo, represented by Acting Deputy Vice-Chancellor; Academic & Student Affairs, Professor Simon Thurairia; Director, Quality Assurance and Standards, Teachers Service Commission (TSC), Dr Reuben Nthamburi and Director, CEMASTEA, Mrs Jacinta L. Akatsa.

## CEMASTEA Participates in the 45<sup>th</sup> KESSHA Conference 2022, Mombasa

By: Ann Mumbi and Paul Waibochi

CEMASTEA participated in The 45<sup>th</sup> Annual Kenya Secondary schools Heads Association (KESSHA) Conference held in Mombasa from April 18<sup>th</sup> – 22<sup>nd</sup> at the Sheikh Zayed Hall and grounds. The conference's theme was "Re-examining our future together; a new era of education in Kenya". The meeting was attended by 9500 principals and was graced by his Excellency the President of the Republic of Kenya, Hon Uhuru Kenyatta, who presided over the opening ceremony. In his message to the school leaders, Mr Kemyatta reiterated the Government's commitment to putting policies and



President Uhuru Kenyatta having a chat with school leaders after opening the conference

structures to make CBC a success. He reported that the Government is financing the construction of an additional 10,000 new classrooms and training over 60,000 secondary school teachers on CBC ahead of the junior secondary rollout in January 2023. He appreciated the role of principals and other stakeholders in promoting education in the country.

Discussions revolved around implementing a Competency-Based Curriculum (CBC) and the role of the principals. Other keynote presentations were delivered by the Minister for Education, Professor George Magoha, Principal Secretaries in the Ministry of education Dr Julius Jwan, Principal Secretary, State Department for Early Learning and Basic Education. Professor Fatuma Chege, Principal Secretary for State Department for implementing Curriculum Reforms and Teachers Service Commission CEO Dr Nancy Macharia, among other dignitaries.

CEMASTEA though Director Mrs Jacinta Akatsa, presented a paper on the role the Centre, in conjunction with MOE and TSC, plays in capacity development for teachers and school leaders in STEM education and preparation for the transition to Junior Secondary. She also gave insights about the learning management system, a portal and a learning resources repository being developed

<https://portal.cemastea.ac.ke/> that the Centre will use for future training and where teachers and learners will be accessing digital learning materials. CEMASTEA had a stand where teaching innovations and improvised learning resources were exhibited. School leaders who visited the stand were very impressed by the displays.



Madam Amina of CEMASTEA demonstrating the working of some of the innovations on display at the Conference

By: Thuo Karanja

On 21<sup>st</sup> April, Kenyans were united in grief at the loss of one of the most outstanding leaders of our times, President Mwai Kibaki. He served the nation for half a century in various capacities, including Member of Parliament, Cabinet Minister, Vice President and President. Throughout his public service and political life, President Kibaki was always a man focused on a vision. As President Uhuru Kenyatta and Kibaki's son, Jimmy eulogised, they called him a 'quintessential gentleman and economist par excellence' who lived to excel in all his public, private and family engagements.

Perhaps the best chance President Kibaki got to put his economic prowess into practice was through the development of the Kenya Vision 2030. Vision 2030 was launched in 2008 as Kenya's development blueprint covering 2008 to 2030. The vision aimed at making Kenya a newly industrialising, "Middle-income country providing high-quality life for all its citizens by the year 2030". Most social and economic ideas in the Medium Term Plans (MTPs) can be traced to President Kibaki's leadership.

One of the greatest successes of his visionary leadership in education was the universal free primary education. Coming from a humble background in which his other siblings were denied an opportunity for an education for his sake, President Kibaki knew the value of basic education too well. Though the goal appeared insurmountable, President Kibaki pressed on and proved the naysayers wrong. Currently, the nation is witnessing 100 % transition. His next stop was the massive expansion of tertiary education, with more universities starting to accommodate the increased numbers from the basic levels. This, too, has been a great success. Maybe his wish would be that the economy would grow proportional to accommodate the graduates into the job market.

Vision 2030 is implemented through five-year Medium Term Plans (MTPs), and MTP III ends in 2022. MTP IV is being developed to accelerate *the social and economic transformation to a more competitive, inclusive and resilient economy*. When President Kibaki left office, his successor, His Excellency President Uhuru Kenyatta's Government, adjusted the approach to MTP implementation to focus more on the citizenry's well-being. The vision was re-conceptualized to pay more attention to food security, affordable housing, manufacturing, and affordable healthcare referred to as the Big Four Agenda. As his term ends, President Uhuru Kenyatta has called on the next administration to honour Kibaki's achievements in developing a Vision 2063.

While no words can express the nation's loss upon the demise of such a gallant leader, we pray that God comforts and sustains his loving family and the country now and in the future.



# Picture Speak: Presidents Kibaki's Final Journey



# Keeping Damita's Promise

By: Winfred Magu and Thuo Karanja

This story is about keeping a promise to a beautiful girl, Damita Nyambura, a grade six pupil at Karen C Primary School, Nairobi. While in class two, she participated in a welcoming party for His Excellency President Uhuru Kenyatta by presenting him with a bouquet. The day was 14<sup>th</sup> February 2019 when His Excellency President Uhuru Kenyatta visited CEMASTEА to preside over a Ministry of Education ceremony of flagging a caravan of vehicles carrying free secondary textbooks for distribution to secondary schools across the country. That day, Damita had the honour, at the short invitation of the President, to accompany him during the whole ceremony, including the signing of the visitor's book and the flagging of the caravan. It indeed was a moment of pride for the then little girl. After the ceremony, the Communications department selected some photographs of Damita and the President and persuaded the then Director CEMASTEА, Hon. Stephen Njoroge, to have them developed and gifted to Damita. This request was granted, and shortly after, she visited CEMASTEА to pick up the framed photographs. During that short ceremony, the former Director of CEMASTEА promised to later gift Damita a laptop for courage and confidence.

This promise has been kept alive, and after four years, Damita was invited to CEMASTEА by current Director Mrs Jacinta Akatsa, HSC, to receive her gift. She was accompanied by her parents, Mr and Mrs Vincent Gichure Waiganjo and her head teacher, Mrs Grage Adagala. Damita could not hide her excitement as she received the laptop gift from her head teacher, who had shortly received it from Director



Director CEMASTEА, introduces Damita to staff

CEMASTEА. In her short speech, Damita was grateful for the pleasant surprise and promised to work harder at school. She is interested in becoming a doctor, with her favourite subjects being mathematics, science and social studies. The head teacher described Damita as a hardworking and disciplined girl. She encouraged her to continue working hard at school. Director CEMASTEА urged Damita to remain focused and disciplined as she pursued her dreams. Her parents were grateful for the kind gesture by CEMASTEА.



2019: Damita with H.E. President Uhuru Kenyatta and, 2022: with parents and head teacher as she picked her gift.

# Leadership Training on Alcohol and Substance Abuse

By: Philip Maate

Mainstreaming programmes to prevent alcohol and drug abuse (ADA) and support those affected is an essential plan for government performance contracting. Successful mainstreaming is made possible through implementing certain activities such as training and sensitisation of staff. It is in this spirit that a group of nine supervisors and managers at CEMASTEА participated in a joint training (Kenya Rural Roads Authority (KERRA), Kenya Roads Board (KRB and CEMASTEА) conducted by the National Authority for the Campaign against Alcohol and Drug Abuse (NACADA). The training was held from 16<sup>th</sup> to 18<sup>th</sup> March 2022 at Mombasa Beach Hotel. The main objective of this training was to build the capacity of the managers and supervisors to understand and implement evidence-based interventions and help to prevent alcohol and drug use in the workplace.

Some training contents included facts and statistics about commonly abused drugs, with alcohol coming on top as the most highly used drug in Kenya and worldwide. In another session, participants discussed and identified stressors at the workplace. Some stressors included ad hoc or unplanned activities, heavy workload and stagnation in one job group. It was noted that stressors are key triggers of drug abuse.

After the discussion, participants came up with remedies to the stressors. Two officers facilitated the training from NACADA, Susan Maua, manager of public education and policy and Miriam Medina, a senior trainer.

Further facilitators led participants to identify components of substance use prevention programs and policies.

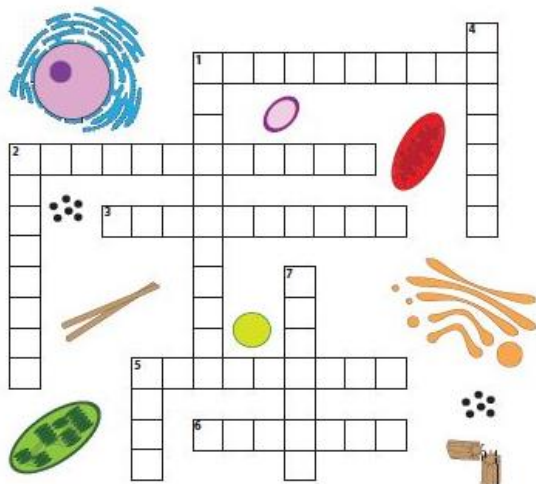


CEMASTEА staff and other training participants in a gallery walk

## Coffee Break



By: Kizito Makoba



### Across

1. An organelle that organises microtubules
2. A bean shaped organelle that supplies energy
3. It contains enzymes that break down fatty acids
5. A jelly like substance within the cell
6. A fluid filled storage bubble in the cytoplasm

### Down

1. A plastid found in green plants
2. A thin pliable sheet that covers the cell
4. Is part of the golgi network
5. Is the basic unit of life
7. An organelle that contains genetic materials

## African Union Commission CEMASTEPA Partnership



AU Commissioners pose for a group photo with Director, CEMASTEPA

On 26<sup>th</sup> April 2022, CEMASTEPA had the honour of receiving visitors from the African Union Commission (AUC). The head of the delegation was His Excellency Prof Mohammed Belhocine, the Commissioner for Education, Science, Technology and Innovation (ESTI). Prof. K. Mategu accompanied him; President of Pan African University Council, Mr Hambani Masheleni; Director, Education and STI at AUC), Dr Gilles; Administrator PAU), Ms Chancelle (Commission Officer PAU) and Prof. Gabriel Magoma; Director PAU.

The delegation had a tour of the Centre's STEM facilities, including a visit to physics, chemistry, biology, and ICT laboratories, innovation hub, maker space, Education for Sustainable Development (ESD) projects, and mathematics department. At each station were staff who demonstrated engaging activities and projects that CEMASTEPA used to make learning fun and captivating.

Some commissioners attempted to design robotic machines. In his brief remarks after the tour, H. E Prof. Mohammed Belhocine appreciated CEMASTEPA's creativity in developing simple but relevant pedagogical tools from cheap, locally available materials. He pointed

out the challenge in acquiring and distributing scientific equipment in African schools. He also noted that, unlike other sciences, chemistry experiments are affected by the lack of chemicals in schools. He further opined that countries should rely on government subsidies and links with local Polytechnics to provide school equipment annually to bridge the gap.

A presentation on the status of the AUC - CEMASTEPA partnership was made, highlighting achievements and challenges experienced over the period. Challenges that need to be addressed include; inadequate funds to access the francophone and lusophone countries, ineffective policies that support STEM education in Africa, a low number of Africans who benefit from CEMASTEPA's programs and ignorance of underperformance in mathematics at the primary level. In his remarks, HE Prof. Mohammed Belhocine noted that concentration in ICT and mathematics at the primary level is critical for overcoming challenges in STEM education in Africa. He urged African countries to unite and give youth opportunities in innovative spaces to promote the spirit of Pan-Africans. In conclusion, he assured CEMASTEPA of the commission's support in accessing the non-responsive countries and the deployment of the AUC-Youth Volunteers.

The discussions emphasized the need to create health education systems that are not just the cause of a government but the cause of teachers, students and professional organisations. In her closing remarks, Director CEMASTEPA reiterated the importance of coming up with innovative ways to break the existing technological divide between African and developed countries.

## Encouraging Word: Hope and Peace



**“And whoever relies upon Allah – then He is sufficient for him. Indeed, Allah will accomplish His purpose. Allah has already set for everything a [decreed] extent”**

**[Quran 65:3]**

## Team Building: Celebrating Outcomes

### Communications Department

In April, CEMASTEА staff participated in a team building event organised by the Human Resource (HR) department and Human Resource Management Advisory Committee (HRMAC). The event occurred at the North Coast Beach Hotel in Mombasa in April. Team building is fundamental in organisations looking to improve their productivity and quality of service. The purpose of team building is to motivate staff, strengthen teamwork, and interpersonal relationships, increase productivity and self-awareness and increase cohesiveness.

The outing allowed staff to build cooperation and collaborative problem-solving skills, developing and sustain group morale, effective teamwork and leadership. Staff participated in outdoor team building activities and expert talks on wellness by a team of facilitators led by Mr Stephen Muthima of Kenya School of Government. Accompanying the staff were the Board of Management members, Chair Dr Wanjiru Kariuki and member Professor David B. Malonza.

The lead facilitator, Mr Stephen Muthima, highlighted the importance of teamwork, noting that a good-performing team values every member and focuses on collective outcomes. Objectives of the team-building activities included; increasing self and peer awareness; effective team working and leadership skills: Increasing group morale, and having fun! Team building activities tasked staff to develop strategies for cooperation, collaboration in problem-solving and celebration of success.



CEMASTEА staff enjoying some teambuilding activities

During her remarks, Dr Wanjiru Kariuki took staff through the growth journey of CEMASTEА and noted that she had witnessed a lot of change. She lauded comradeship usually demonstrated by staff as they discharge their duties. Professor David B. Malonza pointed out that every staff member was essential in achieving the organisational goals and challenged the staff to continue working as a team. Director, CEMASTEА highlighted challenges that hinder the staff from attaining the corporate objectives, such as frustrations resulting from the inability to manage expectations. She was optimistic that the outing would yield positive outcomes.

One of the memorable experiences during out was the talk on team building was mental health delivered by Madam Blaze of the National Council for Persons Living with Disability. She noted that mental disability results from a person's failure to manage and stabilise themselves on issues at home and the workplace and a lack of people who understands them. Better mental health higher leads to high levels of job satisfaction and thus more commitment to duty. The work environment needs a place where one feels safe mentally. She lauded the team-building activity as one step towards better mental health and allowing diverse co-workers to understand one another.



## To God and Man: Celebrating Long Service

During the team building outing, CEMASTEA took time to cut a cake in celebration of staff who had retired in the last two years. They included Mrs Priscilla Ombati(Mathematics), Mrs Loice Masese, Dr Grace Orado and Mr Benjamin Kilonzo (Chemistry) and Mr David Njoroge(Estates). During the short but memorable ceremony, Director Mrs Jacinta L. Akatsa thanked them for contributing to Nation building, particularly their service at CEMASTEA. She challenged them to utilise their expertise in the private and public sectors. Prof Malonza noted that they all looked energetic and needed to positively take that new phase of their life as there were more significant opportunities in life. We wish them all the best in their new various endeavours and as they enjoy working more out of formal structures!



From left to Right: Mrs. Ombati, Dr. Grace Orado, Mr. Benjamin Kilonzo, Mr. Davind Njoroge and Mrs. Loice Masese pose for a group photo during the retirement celebration

## Inaugural CEMASTEA Director's Awards

A surprise inclusion in the team building programme was the 'Inaugural CEMASTEA Director's Awards'. The awards were a special recognition to teams for outstanding service to internal and external clients of the Centre. The inaugural recipients of the Director's Awards included Mathematics, Finance & Accounts and ICT Departments. While noting that all staff was putting in a lot of effort in their respective areas of operation, Director cited the awardee departments for exemplary performance. ICT department was lauded for developing the learning management portal, mathematics for delivering on the Diploma teachers INSET programme and finance for outstanding service turnaround time. She challenges other departments to emulate the awardees.



Director CEMASTEA and Board member Prof Malonza presenting the trophies to winning teams



# Picture Speak: Team Building



# COVID-19 Containment: It's Now Upon You



By: Thuo Karanja



This column has been a constant in this Newsletter since the outbreak of COVID-19. The messages either from the Global stage (World Health Organisation), Regional stage (Africa CDC), National stage (The Presidency and Ministry of Health) or from us at CEMASTEVA has also been constant. The coronavirus disease is going to be around for some time. While the good news is that most of the adult population has been vaccinated against the disease, one enduring misconception is that those

vaccinated cannot contract the disease. Weekly epidemiological updates from WHO and the John Hopkins University of Medicine, highlighting critical data on the COVID -19 pandemic at the global, regional, and country levels, have shown that while the outlook is not so grave, it is essential for countries to take precaution. There are situations in some countries and pockets where the disease is resurgent. In some cases, the situation has gone south.

Kenya is no exception, and indeed, the scare that just ended in May and June proved that even when vaccinated, one can still get the disease and develop symptoms ranging from mild to severe.

**Confirmed Cases**  
**335,861**

**Deaths**  
**5,667**

**Doses Administered**  
**18,608,768**

**People Fully Vaccinated**  
**9,223,230**

**% of Population Fully Vaccinated**  
**17.15%**

*Corona virus disease statistics for Kenya, John Hopkins University of Medicine, 11/07/22*

The simple and easy-to-follow safety precautions must be adhered to even now. It is essential to constantly wash hands with soap and water for 30 seconds, keep your conscious distance and wear a mask, especially in new and crowded places. The other message now is that 'it is up to you'. It's now a personal choice to wear a mask, sanitize and keep safe distances.





Republic of Uganda



SMASE  
AFRICA



African Union

## VIRTUAL 19<sup>TH</sup> CONFERENCE ON MATHEMATICS, SCIENCE AND TECHNOLOGY EDUCATION IN AFRICA (COMSTEDA 19) AND ANNUAL SMASE-AFRICA DELEGATES MEETING



### CALL FOR PAPERS

Send abstracts and full papers to  
[Comsteda19@smase-africa.org](mailto:Comsteda19@smase-africa.org)

### ABOUT COMSTEDA

COMSTEDA is a continental platform for educators to share innovative ideas, best practice, and interrogate issues relating to STEM education. The international forum brings together educators, policy makers, researchers, teachers, NGOs, and public / private sector stakeholders to present papers, posters, exhibitions and workshops.

### AUC CESA STEM CLUSTER

CESA is AUC's revolutionary approach for implementing Agenda 2063 & SDG 4 on education. The STEM cluster was launched in 2016 with mandate to operationalize CESA Strategic Objective Seven. SMASE-Africa is a member of the cluster. The cluster serves to consolidate information on STEM education in Africa for peer learning, enhance alignment and harmony to facilitate identification and creation of synergies.

**THEME:**  
Teacher Professional  
Development in Africa:  
Knowledge, Skills and Values in  
STEM Learning Environments

**CONFERENCE DATES**

**22<sup>nd</sup> -24<sup>th</sup>  
NOVEMBER, 2022**



SCIENCE
TECHNOLOGY
ENGINEERING
MATHEMATICS

STRAND ONE

*Teacher Professional Development in Africa: Developing Knowledge, Skills, and Values in STEM teaching & learning engagements*

1. School-based Teacher Professional Development: Policy, Strategies and Practices
2. Teacher Professional Development for Competency Based Education
3. Promising Approaches in Teacher Professional Development

STRAND TWO

*School Culture and Learning in STEM*

1. Leadership for Learning & role of professional associations: Case Studies on Support and Supervision
2. Creating Space for in / out of school STEM Learning and application
3. Equity and Access in STEM Education
  - a. Gender-based STEM Education
  - b. Inclusive STEM Education for Learners with Special Needs
  - c. Increasing STEM Learning Outcomes for Vulnerable Children

STRAND THREE

*STEM Curriculum Development Implementation and Assessment*

1. Learner Engagement: Evidence-based Lessons on STEM / STEAM Education
2. Pre-Service Teacher Development: Abilities, Skills and Values

STRAND FOUR

*ICT Integration in STEM Education*

1. Resources and Solutions for STEM Learning
2. Fun Learning STEM through Games and Robotics
3. Link School and Industry on STEM Education

## KEY DATES

- 1<sup>st</sup> call for papers: 9<sup>th</sup> June., 2022
- 2<sup>nd</sup> call for papers: 8<sup>th</sup> July., 2022
- 3<sup>rd</sup> call for papers: 8<sup>th</sup> Aug., 2022
- Submission of full papers & registration deadline: 21<sup>st</sup> Oct., 2022
- Conference dates: 22<sup>nd</sup> – 24<sup>th</sup> Nov., 2022
- Delegates Meeting: 25<sup>th</sup> Nov., 2022

### CONFERENCE REGISTRATION

Registration fees covers admission to conference sessions. In order to publish your paper in the Journal on STEM Education in Africa (ISSN2617-6300) you will be required to pay an additional USD. 50. These rates are applicable to COMSTEDA 19 Only. Register Here: <https://bit.ly/3Oou2ec>

### REGISTRATION FEES

- ❖ Focal point / Student: **USD. 30**
- ❖ Non-Student **USD. 40**

### ACCOUNT DETAILS

**Payments to:** NCBA BANK KENYA PLC  
**Account Name:** SMASE-AFRICA  
**Account No.:** 654 356 0017  
**Branch:** MAMLAKA ROAD  
**S.W.I.F.T. BIC:** CBAFKENX  
**Currency:** US DOLLAR ACCOUNT  
 Bank Code: 07  
 Branch Code: 000  
**Send Bank slips to:**  
 Email: [treasurer@smase-africa.org](mailto:treasurer@smase-africa.org)  
 Copy: [info@smase-africa.org](mailto:info@smase-africa.org)  
 Website: [www.smase-africa.org](http://www.smase-africa.org)

Session Format

- **Paper:** 20 minutes presentation & 10 minutes QA
- **Poster** presentation includes a graphic presentation of a research study or otherwise on visual display. 3 minutes presentation and 2 minutes QA.
- **Workshops:** In-depth training or learning experiences. Presenters to pre-register for a workshop by submitting a one-page workshop concept note.
- **Innovations:** STEM-based innovations or otherwise. Show case and exhibit at the conference

Instructions to Authors

- **Paper Abstract:** 250 words: Indicate Strand & Sub-Strand
- **Full paper:** **Language:** English, Portuguese, French; **Margins:** 25 mm margins all around; **Line spacing:** 1.15; **Justification:** Full; **Font:** Times New Roman 12; **Referencing,** APA style; **Pages,** 10 Max
- **Authors:** First name, initials, surname, affiliations, e-mail address and WhatsApp telephone number
- **File:** "your name\_country.doc". (No PDF)
- **Images:** High resolution Joint Photographic Experts Group (JPEG or JPG) format.
- **Papers:** that meet the above criteria will be published in the Journal on STEM Education in Africa (ISSN2617-6300)



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