



CEMASTEA INFO

Newsletter

Issue 005 January-March 2021

Innovative Ways to Training

It is my pleasure to take this opportunity to wish our esteemed readers a happy and blessed 2021. We thank the Almighty God for the gift of good health and life. For the better part of last year, CEMASTEIA implemented its activities through the virtual space with staff working from home due to the COVID-19 pandemic. Most staff continue serving from home since the COVID-19 pandemic has not subsided.

Despite the setbacks of COVID-19, the Centre has continued to implement its core mandate employing the blended approach of virtual synchronous and face-to-face in the activities. In partnership with Education Development Trust (EDT), we successfully implemented a Quality Gender-Responsive STEM Education course for teachers from public primary schools in Nairobi County. The course's objective was to develop capacity in planning



A pupil in a class presenting his ideas through one of the most powerful teaching resource_ The Blackboard

STEM lessons that promote gender-responsive strategies and activities. For the first time, we also designed and implemented a lesson study for SMASE County trainers and teachers at the County cluster levels online. We used the Google classroom (asynchronous) and Google Meet and Big Blue Button to conduct the synchronous sessions.

As an agency of the Ministry of Education, CEMASTEIA has been active in supporting the Competency-Based Curriculum (CBC) and the School-Based Teacher Support System (SBTSS) programme. Members of staff participated in the training of teachers in the new curriculum and other programmes.

The Centre is also an extension of the larger community, and hence we consider Corporate Social Responsibility (CSR) essential. To demonstrate our CSR in line with our mandate of providing continuous professional development in education, the Centre donated mobile labs, mathematics models, and other mathematical and science equipment to two needy schools.

Since we are in the examinations season, let me wish on behalf of the CEMASTEIA family all candidates in the KCPE & KCSE 2021 success.

Thank you,

Jacinta L. Akatsa, HSC, Director, CEMASTEIA

Editorial

Once again, we are delighted to welcome our readers to the CEMASTEAM INFO Newsletter's current issue. We have written this issue of the newsletter in the backdrop of exciting yet uncertain times. The whole world is trying to adjust to life with the COVID-19. The education sector is part of that world, and so is CEMASTEAM.

At CEMASTEAM, we have endeavoured to continue with all our programmes, especially in our core mandate of training. While we cannot conduct face-to-face training, digital and virtual space has been a boon to us as an institution. We continue to break new grounds concerning online pedagogy and the promotion of possibilities of virtual learning. The training department has conducted several programmes for our teachers, and these are reported in several stories in the magazine, including ICT, Gender a STEM and lesson study. The small window of face to face schooling also enabled the Centre to engage in corporate social responsibility with mobile laboratories' donations. The Centre's performance contracting commitments are still being implemented. Indeed, we report the success story of the disability mainstreaming committee that won an award for the Centre as the most disability-inclusive Government parastatal.

At the Centre, we continue with strict observance of the COVID-19 protocols and guidelines. We continue to provide innovative solutions to the pandemic, a spirit in which we report the development of a CEMASTEAM hand wash. Excerpts from messages of H.E. President Uhuru and World Health Organization Director-General brings home the need for personal moral choices as key to fighting the COVID-19 pandemic.

Once again, enjoy your reading and not hesitate to give us feedback on any of the stories. Kindly use the link <https://forms.gle/RkXNWXQ3ehEsqhr48> to share your feedback.

Thuo Karanja, Editor

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CEMASTEA wishes all the 2020 examinations candidates success as they sit for their final exams. May God crown all your efforts with success.

ONLINE LESSON STUDY

CEMASTEA has been implementing professional development activities for mathematics and science teachers since 1998. However, there was no precise mechanism to ensure sharing of INSET skills and knowledge to other teachers and their practice in class. To ensure skills transfer and application of INSET skills in class, in 2009, CEMASTEAs introduced a new and effective model of Teacher Professional Development (TPD), The Lesson Study model. This model was revised in 2018 to align it with the requirements of TSC concerning teacher professional development. In it, teachers collaboratively plan and study their teaching to determine how learners can learn best. Teachers further engage in examining their practice systematically. Lesson study, therefore, focuses on enhancing teachers' capability in teaching for improved learning outcomes.

The Lesson Study process consists of three main stages, namely; Planning, Lesson implementation and

Post -lesson activities. The Planning stage has three steps: problem identification, goal or theme setting, and planning for the research lesson. The Lesson implementation stage involves teaching the intended lesson and observing the class. While post Lesson activities include post Lesson discussion, documentation, and dissemination

CEMASTEA successfully implemented the 2021 online Cluster Lesson Study with the goal: 'To enhance learner's critical thinking and problem-solving skills. The objectives were to demonstrate understanding of designing tasks based on a deep study of the curriculum and learning materials in lesson study, develop teaching-learning strategies that can promote learners' critical thinking and problem-solving, and appreciate the role of lesson study enhancing teachers' pedagogical content knowledge.

The 2021 Online Cluster Lesson Study, started in February through to March 2021, was implemented online in a cascade manner where County trainers were trained by the national trainers (CEMASTEA staff) and were then expected to train teachers at the County level. During the County training, CEMASTEAs Liaison officers and the assigned technical staff provided support to the County Trainers.

Mr Ezekiel Onyango Tumbo, Assistant Director in Quality Assurance and Standards Directorate at Teachers Service Commission (in the picture), was the chief guest during the brief virtual opening ceremony. In his remarks, he highlighted the importance of school-based teacher professional development and that lesson study was an excellent example of such. He lauded CEMASTEAs for taking the lead to ensure continued learning during the COVID-19 pandemic.

Lesson Study training provides opportunities for teachers to examine their practise through reflections, learn from one another to improve the quality of lesson delivery and establish communities of practice at the school level, providing peer support.



Teachers of Nakuru and Nyandarua Counties during past Lesson Study Sessions



Mr. Ezekiel Onyango Tumbo

Gender-Responsive STEM Education Course for Primary School Teachers Nairobi County

Quality Gender-Responsive STEM Education Course for mathematics and science training teachers was conducted online from January 25th to February 10th 2021. It targeted primary school teachers from Nairobi County and implemented under a collaborative partnership between CEMASTEА and the Education Development Trust (EDT)

The course's objective was to build teachers' capacity to conduct teaching and learning using virtual platforms like

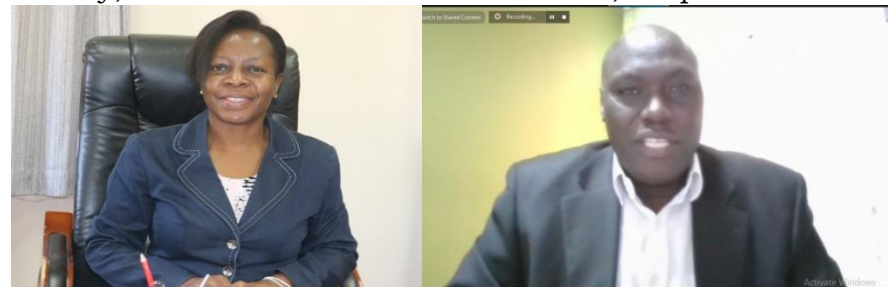
Zoom, Google classroom, Google meet, and other collaborative tools such as the Padlet. The theme, "Towards developing a quality gender-responsive STEM education through learner-centred teaching and learning practices", Participants were taken through sessions on Google Classrooms, Zoom Webinars and Padlet Media blackboard. They shared activity reports through the Padlet and took away assignments' in the Google classroom.

The chief guest during the opening ceremony was the Regional Director of Education, Nairobi County, Mr Jared Obiero. In his remarks, he pointed out that gender disparities still exist in



Figure 1 Section of the participants during the training

STEM education. He appreciated the course to equip the participants with innovative teaching methodologies to enhance and realise improved STEM subjects' performance. He encouraged them to embrace and apply gender-responsive pedagogy. Director, CEMASTEА, Mrs Jacinta



Left-Director CEMASTEА, Mrs Jacinta L. Akatsa; Right- Regional Director of Education, Nairobi County, Mr Jared Obiero

Akatsa, thanked Educational Development Trust (EDT) for partnering with CEMASTEА to mount the course. She noted that the course was designed to give the participants an interactive virtual experience and encouraged them to use the knowledge and expertise to help them achieve excellent STEM subjects' results.

Deputy Director EDT, Sub Saharan Africa, Mr Mark Rotich, thanked the Ministry of Education (MoE), Teachers Service Commission SC and CEMASTEА for implementing such an important course. He mentioned that EDT believes in education's transformative ability, which is the reason for partnering with CEMASTEА. He emphasised that quality teaching is directly linked to the learners' outcome and promised that EDT would continue partnering with MoE, TSC and CEMASTEА to ensure quality training and professional development towards improved learning outcomes.

Dan Orero, CEMASTEА

TRAINING on COMPETENCY-BASED ASSESSMENT



Prof. Bosire Monari Mwebi, PhD

The Primary Programme at CEMASTEIA is developing a training manual on Competency-Based Assessment (CBA) in Mathematics and Science. The process is led by Prof. Bosire Monari Mwebi, PHD, (Right) Chairman of Council, Meru University of Science & Technology, and an internationally renowned expert and consultant in teacher education and curriculum development in Kenya and Canada.

The training manual provides a structured

way of training, ensuring consistent content and activities applicable to real-life

situations, self-directed and hands-on for a practising Mathematics and Science classroom teacher. The content reflects a diversity of perspectives and addresses the knowledge, skills and attitudes in line with the Kenya Professional Teaching Standards (KePTS).

A competency-based curriculum has a primary focus on what the learner can do. Competences are what students need to be able to know and do to achieve success and fulfilment. In this respect, the Training Manual details the knowledge, skills, and attitudes related to a specific level of competency.

The training manual provides an introduction to Competency-Based Curriculum (CBC); core competencies with sample descriptors at grade levels; the concept of backward lesson design that is outcome-based in planning learning experiences and assessment; effective learner-centred teaching strategies that can be used across grade levels and learning areas with the accommodation of a range of learners' differences. The concept and purposes of Competency-Based Assessment (CBA) is also given prominence. Focus on how teachers can harness CBA to support learner progress and achievement in Mathematics and Science. The manual contains sample lessons that adopt the backward design model (BDM) and learners on the Individual Education Plan (ILP and assessment).



*Mr. George Kiruja, Coordinator,
Primary Programme*

Ann Mumbi, CEMASTEIA

Collaborative Lesson Research Project

Collaborative Lesson Research (CLR) is a form of lesson study model that addresses teaching and learning gaps through collaborative planning, implementing, and organising post-lesson discussions.

The CLR study project is a three-year (2019 – 2022) collaborative teacher professional development Project between the Japan International Cooperation Agency (JICA), Ministry of Education through CEMASTEА.



CEMASTEА team and teachers from Karen C primary, who undertook the online Collaborative Lesson Research (CLR) training with their certificates. Similar ceremonies were held for teachers in other participating schools; Ooloolua, BuruBuru 1 and, Visa Oshwal, Kyamulendu primary schools

The project is being implemented in five primary schools, namely Visa Oshwal, Karen C, Ooloolua, Buru Buru, and Kyamulendu. Due to the COVID-19 pandemic in early 2020, the training was suspended. Project activities resumed in November 2020, with online training from 23rd to November 27th. The training organisers were Japanese experts from Tokyo Gakugei University (TGU) with the Lead Researcher and key trainer, Dr Akihiko Takahashi operating from the USA. In January 2021, JICA posted a long-term expert Prof. Testuya Takahashi to CEMASTEА to support the CLR Project. Participants included a team of CEMASTEА staff and teachers drawn from the five schools. The training involved synchronous activities where participants interacted with the trainers and asynchronous sessions where participants engaged in self-directed online course activities.



Long term expert Prof. Testuya Takahashi stationed at CEMASTEА and assisting in training teachers.

During the online training, participants were taken through lesson study concepts commonly known as "Kyouzai Kenkyu" (the deep analysis of teaching and learning contents and teaching strategies) in Japan. They used mathematical examples to elaborate on how teachers can collaboratively plan lessons and use learners' ideas during teaching for effective curriculum delivery. Teachers who completed the training were awarded certificates. These teachers are expected to train colleagues back in their respective schools. This would increase the number of teachers with knowledge and skills on collaborative lesson study practice

Transforming Learning through Corporate Social Responsibility

Corporate Social Responsibility (CSR) is one way of giving back to society. CEMASTEIA, in line with its mandate of providing continuous professional development for teachers in STEM education, has been donating science and mathematics resources to needy schools. This noble CSR gesture aims to equipping these schools and mitigating the shortages by donating sustainable mobile laboratories to schools. The recent beneficiaries of these donations were North Highridge Secondary



Hon. Timothy Wanyonyi Wetangula (seated) receiving the Mobile Lab and other equipment from Director CEMASTEIA Mrs Jacinta L. Akatsa, HSC, at Highridge Secondary School. Looking on is Mrs. Jane Bunyansi, the Principal, teachers and students Right: Director CEMASTEIA explores how the lab works to Mr Mailo Peter, a physics teacher in the school.

“ Nothing has been so difficult in her career teaching profession to define a lab to form four student, but for today no more definitions’ since they have seen it.”

School, Nairobi County and Kyangwasi Secondary School in Makueni County. This gesture will make teaching and learning of mathematics and science fun. While handing over the lab to North Highridge Secondary School in January 2021, Director, CEMASTEIA Mrs Jacinta L.

Akatsa, urged the students to take more interest in science subjects and have a positive learning attitude. She was impressed with the students' engagements in hands-on activities and wished the candidates success in their forthcoming exams.

While receiving the equipment, Mrs Jane Bunyansi, Principal, North Highridge Secondary School, Nairobi County, promised that the equipment would be utilised in improving mathematics and science performance. The handing over ceremony was also witnessed by Hon. Timothy Wanyonyi Wetangula, area Member of Parliament, Westlands Constituency. The MP commended CEMASTEIA for the incredible work of supporting the school and Kenya as a whole. He was optimistic that the mobile lab would assist the students and teachers for improved learning. The ceremony to hand over the mobile lab at Kyangwasi Secondary School in Makueni County was witnessed by the Sub-County Director of Education, Mr Kinuthia, members of the school Board of Management and the school Principal Mr Ken Kamendi. Mr Mutua Muyanga did the handing over of the lab on behalf of the Director CEMASTEIA.

The school management praised CEMASTEIA for promoting quality learning in mathematics and science in Kenya and the African continent. The administration was optimistic that the school would perform better in the subjects. In his remarks, Mr Mutua Muyanga encouraged teachers to use the lab to uplift their performance through innovative teaching.



Mr. Mutua Muyanga, (second from right) presenting a list of laboratory equipment to the Principal, Kyangwasi Secondary

Anderson Ndolo, CEMASTEIA

CEMASTEА wins in the 2020 National Diversity and Inclusion Awards & Recognition (DIAR)



Mrs. Jacinta Akatsa Director CEMASTEА, receiving the 2020 Award from the Executive Director, Daima Trust, Mr James Maina

During the 2020 National Diversity and Inclusion Awards & Recognition (DIAR) held at Sarit Expo Center, Nairobi, on Friday, March 12th 2021, CEMASTEА was awarded a trophy for the best Government Institution People living with disability (PWD) inclusion. The trophy was delivered to CEMASTEА by James Maina, Executive Director, Daima Trust, Kenya. Daima Trust, Kenya, runs DIAR awards. The short award presentation ceremony was attended by Director CEMASTEА, Mrs Jacinta Akatsa, HSC. John Odhiambo DMC Chair, Joseph Ngugi DMC Vice-Chair and Thuo Karanja P.C. Chair. Mr Maina having had the opportunity to tour the Centre and witness activities of the DMC's expressed that CEMASTEА well deserved the award. He advised the Committee to have more PWDs work at CEMASTEА and training programmes to be more inclusive. He expressed the willingness to partner with

CEMASTEА on such programmes. Currently, CEMASTEА has within its staff three who are PWDs.

The Disability Mainstreaming Committee at CEMASTEА is the most active in implementing yearly performance contracting targets set by the Kenya Government. The Committee aims to improve service delivery to CEMASTEА clients continually and, in particular, those with Persons Living with Disabilities (PWDs). Since its inception, the Committee, with the support of Centre management, has implemented programmes that have greatly improved the physical infrastructure at the Centre and made it friendly for the mobility and comfort for PWDs.



Left: Main Ramp through the Administration Block to the classrooms and laboratories
Right: Staff practicing Kenya Sign Language (KSL) as an ongoing best practice to ensure a friendly environment for the hearing impaired

Sample of initiatives focusing on infrastructure to accommodate persons living with disabilities (PWDs) include building ramps and rails, disability-friendly washrooms, and modification of hostels rooms. The Committee has also facilitated the training of more than 20 staff on basic Kenya Sign Language (KSL). The Committee works closely with the National Council for Persons with Disabilities (NCPWD), an established Government of Kenya Department whose mandate is to facilitate disability mainstreaming Programmes in the public and private sectors. NCPWD has elevated CEMASTEА as a Centre of excellence concerning the Mainstreaming of PWDs programmes and recommends other government institutions to visit and benchmark the Committee's success.

John Odhiambo Chair, DMC, CEMASTEА

Instructional Leadership: Supporting Teachers Implement Skills from Professional Development

CEMASTEА is committed to enhancing teachers' pedagogical skills in STEM education through continuous teacher professional development (TPD). Every year, several thousand teachers undergo training in one or more TPD activities conducted through CEMASTEА. The TPD activities include Lesson Study, ICT integration and STEM training. In 2019, a total of 18,848 teachers were involved in these activities. Even with the emergence of the COVID-19 pandemic in 2020, CEMASTEА, leveraging ICT, still managed to conduct training with over 10 000 teachers participating.

Once teachers participate in TPD activities, they change their classroom practice by drawing on the newly acquired knowledge and skills. This mostly succeeds in a supportive environment where teachers feel free and safe to explore what works and the circumstances under which it works. We envision this kind of support as being offered through instructional leadership, which is anchored on the principles of (1) defining the school mission, (2) managing the instructional program, and (3) promoting a positive school learning climate. This means that the school leadership, including the principal or headteacher, deputy principal, department heads (HODs), or senior teacher, has a role to play.

Research conducted by CEMASTEА in 2019-2020 to determine the level of implementation of inquiry-based learning (IBL) and the 5E instructional model revealed that teachers yearn to implement ideas learned through TPD programs. To implement IBL at this level, teachers need time to invest in planning the lessons. Such time may not be available as interview transcripts showed teachers have a heavy workload and emphasised the pace of syllabus coverage at the expense of quality teaching. Teachers need internal school support to get formative fulfilment from the achievement of excellence in education. School leadership needs to support exemplary teaching by providing the necessary resources teachers need to implement good lessons.

There is a saying, "a school is as good as its principal". In a school where leaders are in control, activities are usually well planned and organised. The evidence of such authority may range from a clean school environment, good working relationships between teachers, students, support staff and excellent academic work and co-curricular activities. The reverse is valid for a school where the principal is hands-off. We urge school leaders to support teachers implement TPD activities and make such a commitment and part of their school programme. To purposefully join teachers as they put into practice ideas learned through TPD programs; school leaders could provide the necessary infrastructure and resources; release time to plans in school TPD activities, observe teachers' in class and provide timely feedback. This way, the school leadership will not only be helping the teachers to learn and grow professionally but also improving learning experiences for learners as well as their learning outcomes.

Grace Orado, PhD

Coordinator, Research and Development Knowledge Management, CEMASTEА

BIRTHDAY CELEBRATIONS

Birthdays are typically the occasions for delight and feasting as they come only once a year. For many, there are all the reasons to smile as most people think of what made them strong in the previous years. In the CEMASTEА spirit of togetherness, birthday celebrants and staff gather every last Monday of the month

beautifully decorated with vibrant and lively bunting and balloons to celebrate these occasions.

The January and February celebrants were



Left: January celebrants and Right: February celebrants pose during the monthly birthday celebrations.

treated each with a cake to

take home and extend the joy to their families.

The Director thanked the Human Resource Department for taking up the birthday party celebrations initiative that instils collegiality and togetherness at the Centre. She also appreciated the CEMASTEА staff for taking the time to celebrate their colleagues' special days with great enthusiasm.



Willy Kirui, CEMASTEА

Words of Encouragement



Surah 47: Muhammad Ayah (verse):15

Here is the parable of Paradise which the God-fearing have been promised: in it shall the rivers of incorruptible water, rivers of milk unchanging in taste, and rivers of wine, a delight to those that drink; and rivers of pure honey. In it, they will

have every kind of fruit as well as forgiveness from their Lord. Can such be like those who will abide in the Fire and will be given a boiling water to drink that will tear their bowels apart? The parable of Paradise where we are promised all the hardship and difficulties will end here on earth! And since our permanent abode is there, then it gives us hope.

Amina Sharbaidi, Biology Department

COVID-19 Containment

CEMASTEА Produces Hand Wash

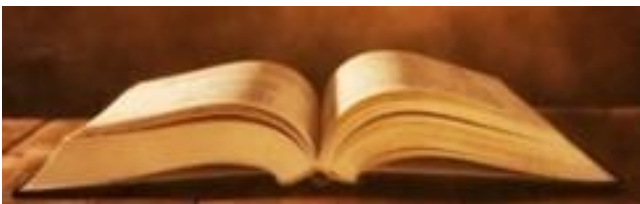
The emergence of the COVID-19 pandemic resulted in numerous changes in daily hygienic human behaviour. Citizens are expected to protect themselves from infection through frequent proper hand washing in running clean water with soap detergents or by use of 70% ethanol to sanitise the hands. Being conscious of the Ministry of Health and World Health Organization guidelines, CEMASTEА has ensured



stringent adherence to these measures. At the start of the year 2021, through the chemistry department leadership, the Centre innovated and processed an antibacterial liquid hand wash. This is the second product CEMASTEА has produced in response to the COVID-19 situation. The first being the alcohol-based hand sanitiser, which registered approval by KEBS and was a resounding success. The Centre no longer relies on procured hand sanitisers. These products are currently sufficient for use within CEMASTEА and available for sale at affordable and promotional prices compared to those from commercial agencies.

Paul Akoko Twenyo, Laboratory Technician, CEMASTEА

Words of Encouragement



2 Corinthians 4:8, we are hard-pressed on every side, yet not crushed; we are perplexed, but not in despair; persecuted, but not forsaken; struck down, but not destroyed. We go through so much, but I want to encourage all that God remains God

in every situation. It is essential to focus on God, don't focus on the destructions; focus on God who never fails. What are you going through at a personal level, family level, organisational level, and you feel you want to give up? The Lord is reminding us, he shall not let us be destroyed. We shall testify of His goodness. Finally, friends, Habakkuk 3:2; May God remember mercy.

Pauline Njiru, Supply Chain Department

Leaders Take on COVID-19

It's Now All about Personal Choices



I am convinced that the cost of not acting now would be far greater. This is not an enemy that we are called upon to fight with bullets and bombs, but rather one that can be defeated by physical and social distancing, wearing appropriate facemasks, frequent hand washing with soap and running water, and compliance with all other anti-coronavirus guidelines and protocols. I want to emphasise that COVID-19 is an invisible ENEMY, and the war against it is complex. As Government, we have co-created solutions where we act together with citizens, the private sector, faith groups, civil society, and community organisations to wage and win this war.

You, *kama wananchi watukufu*, have equally an important role to play. The starting point is for us to agree that the Government cannot police your morality or impose prudence and love for self and others. Individual Kenyans must shoulder their role in the fight against COVID19. Your health, that of your family, that of your friends and neighbours, depends on the decisions you make and the actions you take.

I am confident that working together, we, as a government upholding our duty of care to you, our citizens, and you, as citizens, responding by exercising your civic responsibility, we will defeat this Third Wave of COVID. We will defeat it because we all did our part to the best of our ability. God Bless You; God Bless Kenya.

Excerpts from a speech by His Excellency, Hon. Uhuru Kenyatta, C.G.H., President of The Republic of Kenya during THE FIFTEENTH [15TH] PRESIDENTIAL ADDRESS ON THE CORONAVIRUS PANDEMIC, FRIDAY, 26TH MARCH, 2021 STATE HOUSE NAIROBI.

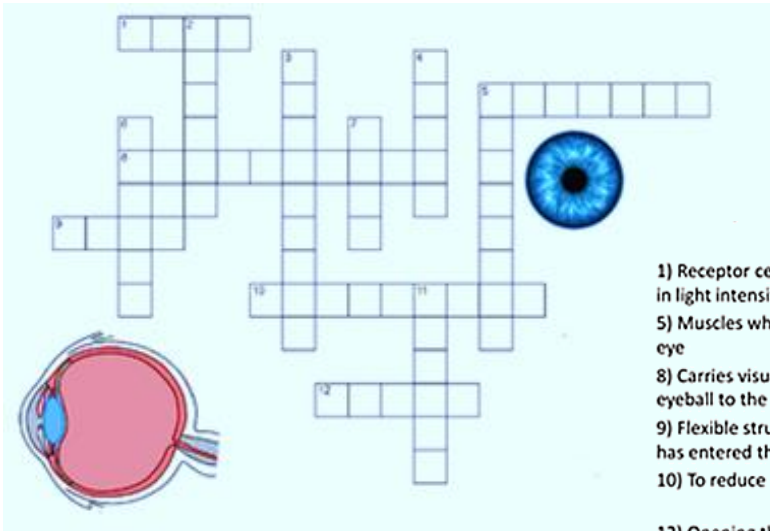


We are asking everyone to treat the decisions about where they go, what they do and who they meet as life and death decisions because they are. It may not be your life, but your choices could be the difference between life and death for someone you love or for a complete stranger. In recent weeks we have seen outbreaks associated with nightclubs and other social gatherings, even in places where transmission had been suppressed. We must remember most people are still susceptible to this virus. As long as it's circulating, everyone is at risk.

It's all about making good choices. Know your situation. Do you know how many cases were reported, where you live, yesterday? Do you know where to find that information? Do you know how to minimise your exposure? Are you being careful to keep one metre from others? Are you still cleaning your hands regularly? Are you following the advice of your local authorities? Don't expect someone else to keep you safe. We all have a part to play in protecting ourselves and one another.

*Dr Tedros Adhanom, Ghebreyesus, 2021 WHO Director-General
Excerpts from his message during the Daily, WHO COVID-19 Briefings*

Coffee Break



Across

- 1) Receptor cells which detect differences in light intensity
- 5) Muscles which alter the shape of the eye
- 8) Carries visual information from the eyeball to the brain
- 9) Flexible structure that focuses light that has entered the eye
- 10) To reduce diameter
- 12) Opening through which light enters the eye

Down

- 2) To make wider
- 3) Point at which the optic nerve leaves the eye
- 4) Receptor cells which detect the colour of light
- 5) Build up of protein in the lens
- 6) Clear tissue that covers the front of the eye
- 7) Regulates the amount of light entering the eye
- 11) The layer of receptor cells at the back of the eye



Source: <https://www.tes.com/en-nz/teaching-resource/biology-crossword-puzzle-the-eye-12156535>

Use the QR image to open the puzzle in your mobile phone

Hand washing tips



healthdirect

Picture Speak: Events for Q3



Traditional cooling of water using principles of science



Students and pupils learning concepts in various subjects both in primary and secondary



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



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