



MAASAI MARA UNIVERSITY

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Magazine *Enchorro Eng'eno*



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THEME:
**Positioning Higher Education
for the New Normal through
Academic Excellence for
Development**

Maasai Mara University

To be a world Class University committed to Academic Excellence for Development.

VISION

To provide quality University education through innovative teaching, research and consultancy services for development.

MISSION

1. Teamwork
2. Professionalism
3. Creativity and Innovation
4. Transparency and Accountability
5. Excellence
6. Equality and Social Justice.

CORE VALUES



Maasai Mara University Logo

Feature Descriptions

Shield :- The shield is a symbol of protection and is divided into two compartments separated by a wavy blue line representing the River Mara.

Tree and wildebeest :- The character of The University is focused on natural resources management and tourism. This is represented by the acacia tree, the type dominant in the Maasai Mara National Reserve. The wildebeest is world-famous for migration between the Maasai Mara National Reserve and Serengeti National park.

Book :- Represents knowledge

Eng'eno e puaan :- The Maa language, meaning "Knowledge for prosperity/ Success/ Progress".

Mara River and Green Colour :- Signify the University's keen association and participation in environment conservation.

Golden/Beige Color :- The University's primary Colour.

Brick Red :- The surrounding community preferred Colour, which symbolizes the strong link between the University and the community.

Maasai Mara University :- The new name of the institution.

Stars :- Aspirations and greatness of Maasai Mara University graduates.



DR. Kennedy Ole Kerei
CHAIRMAN COUNCIL

It gives me great pleasure and pride to contribute to the second edition of the University magazine which captures the challenges and achievements of the University. We are in a very unique period occasioned by the global pandemic- COVID 19. Consequently, this has created a new paradigm shift in how institutions transact business in the new normal.

The Council takes cognizance of the special role played by academic staff in preparing students for graduation in the new normal- with all efforts directed at implementing Ministry of Health’s guidelines in teaching and learning, research and scholarship, student counselling and community work.

The University Council has supported the University management through approval of relevant university learning policies during the global pandemic COVID 19 such as e-learning policy and the ongoing formulation of remote work and blended learning policies to manage challenges associated with the pandemic.

I thank members of academia for their devotion in curriculum review and development of various programmes, especially during this COVID 19 period, within the five schools for submission to the Commission of University Education (CUE).

The Government of Kenya over the years through the Ministry of Education has provided financial support to the University through recurrent and development expenditure.

The absence of development expenditures for public universities during this COVID 19 period is a monumental hurdle in attainment of universities’ mandate. The Council will continue engaging all stakeholders of Maasai Mara University regarding all matters aimed at achieving the mandate of the University either directly or indirectly.



Prof. Kitche Magak

Ag. Vice-Chancellor

Maasai Mara University

Welcome to the Second Edition of the University magazine. Our core business is to move this great university to the next level of research, innovation and knowledge dissemination. Towards this end, we operate an open-door policy and encourage constructive engagements with the wider society.

Maasai Mara University has a global name recognition than any other University in Kenya and the East African region. The Maasai Mara University Community is leveraging on this worldwide name-recognition to build a reputable world class institution. We have responded to the challenges posed by the covid-19 pandemic by deploying relevant ICT to enable us complete the disrupted semester and started the delivery of university common courses through the online platforms to our first years of the 2020 intake. Technology supported learning has emerged as a dependable strategy to mitigate total disruption of the academic calendar.

The University is strategically focusing on strengthening and upgrading existing Information and Communication Technology (ICT) infrastruc-

ture and capacity of staff to leverage ICT in delivery of academic programmes.

We continue strengthening the use of Enterprise Resource Planning system in the following key institutional processes for greater accountability:

- Financial management
- Human resource management
- Procurement and payment of goods and services
- Management of library services, and
- Management of students' data including academic progression.

The University niche is environmental resource management and conservation. This is supported through four sub niches namely:

1. Tourism, Hospitality and Natural Resource Management
2. Water Resource, Environmental Management and Technology
3. Cultural Heritage and Social Development
4. Food Security and Health

We have integrated the University niche and the sub niches in the reviewed curricular with a view to producing a unique brand of graduates who have the requisite capacity to contrib-

ute to sustainable resource management and conservation. This is anchored on the University's strategic focus area of being a Centre of Excellence in environmental resource management and conservation and has an overall goal of contributing to achieving sustainable development goals and the Big four (4) agenda.

The university has engaged our public and private partners to run the following projects:

1. Production of re-usable sanitary towels in collaboration with Bedi Textiles Limited.
2. The building of an ultra-modern funeral home in collaboration with the Rotary Club, Enkare Narok
3. The establishment of a teaching and Referral Hospital in partnership with Afri Works Investments Limited.

I urge the university community to actively aim to actualize the vision and mission of the university by engaging in quality education through research, teaching, innovation and consultancy.



Thank You for Your Resilience & Adaptation to the New Normal!

Prof. Bulitia Godrick Mathews

Deputy Vice Chancellor

(Academic and Students Affairs)

Welcome to the Division of Academic and Students Affairs which is in charge of all academic and student affairs matters at the University.

Our mission is to provide quality education through innovative teaching, research and consultancy services. We are guided by the following core values: accountability, customer focus, collaboration, empowerment and transparency.

When the University was closed in March 2020 due to COVID-19, the Division had to adjust to the new normal in order to continue with the operations of the University. We all had to remain resilient in our quest to provide quality education the circumstances notwithstanding. I wish to acknowledge and appreciate each and every supporting link which made this possible.

We wish to thank the Council for being pro-active in its oversight role which enabled the Division to smoothly operate without facing any interferences. Specifically, we are grateful for their approval and availing of resources to support the procurement of requisite items needed to comply with the Ministry of Health guidelines towards

the control of COVID-19. In addition, we thank the Council for amending and approving the University Statutes to include virtual hosting of the 8th Graduation Ceremony to compliment face-to-face congregation. We faced quite a challenge in the physical delivery of lectures since there was no face-to-face interaction taking place.

The University had to put in place measures to ensure that teaching and learning was not interrupted. We, therefore, employed the blended approach where 70% of teaching was online while 30% was face-to-face especially for practical sessions. We thank the academic staff who had to retrain themselves in order to adapt to the new approach of reaching students through multimedia.

The University has continued to teach virtually which later enabled the successful face-to-face sitting of examinations for the graduating class. We also appreciate the Library Department for coming up with an off-campus software which helped learners and students virtually access learning materials.

We are grateful to the Senate for its commitment to ensuring that results were approved and the graduation lists availed. Despite the constraints of COVID-19, they committed their time to ensure that this is done in time. We are equally grateful for the commitment of lecturers who worked towards completion of virtual learning as well as marking and processing of examinations. We thank the Department of Research and Innovation which supported the University to come up with its own COVID-19 products including the production of sanitizers and soaps and the installation of handwashing booths. These were strategically placed in various offices, eateries, lecture rooms as well as all entry and exit points. This initiative saved the University any attendant costs were the products to be purchased. We are also grateful to all our innovators and researchers at the University as well as all those who took part in various national and international conferences and those who had their papers published in reviewed journals. Their contribution will positively impact on the visibility of the University.

Lastly, we cannot fail to appreciate our student representatives who participated in ensuring that students adhere to the laid down

COVID-19 protocols and guidelines. Through various sensitization strategies, the representatives helped supervisors in going round the examination rooms to ensure that students were wearing masks and observing social distancing. Despite the circumstances brought about by COVID-19, the University was able to develop and review its curricula and integrate the University niche areas of Environment, Resource Management and Conservation into the programmes. We believe that this will elevate the competitive edge of the University. It will also play a role in attracting more students and also equip them with requisite skills for self-reliance and increase their employability.

Another achievement is the recent recognition of one of our students- Limo Kipchirchir Collins- pursuing a Bachelor's degree in Urban and Regional Planning for emerging the winner of the UN Mappers Logo Contest. UN Mappers is part of the #UniteMaps, an initiative run by the United Nations Global Service Center.

Together as a community, we keep soaring and flying high the flag of the Maasai Mara University. As we start the year, we wish to urge you to keep the dream of a world class institution alive.



DR. James Simiren Ole Nampushi

Ag. DVC (AF&P)

The Coronavirus (COVID-19) has caused an unprecedented impact across the world. As a result, we have reshaped our education and transformed many areas of service. We thank you for your resilience as we continue to implement the significant University changes. Every decision we make is informed by the most reliable information from the Kenyan Government and the Ministry of Health.

We know the uncertainty of this situation is challenging for everyone in different ways. Our goal is that you will be able to focus on your studies, wellness and your life. We will provide the support and resources to protect you and our entire community.

The faculty members are already in touch with students for teaching and research purposes and are doing their best to come up with the most effective pedagogical strategies and

Congratulations to the Editorial Team for their determined efforts in bringing out a very informative and fabulous magazine.

skills to create a conducive online learning environment in the current situation. We, as the Administration, will continue to provide face masks, thermoguns, hand washing facilities and ensuring social distancing in the lecture halls and hostels. I believe that through our concerted efforts, we will get through this challenging times. Finally, I want to assure you that we have a dedicated health staff who have been working for long hours to ensure we are prepared for any extraordinary situation. Our aim is always to ensure minimal disruption for you and your studies. Moreover, we will always undertake to ensure the best possible environment to protect the safety of our staff and students.

The second magazine is informative and resourceful, and is a forum which could aptly be used for recording events, fond memories and creative writing.

Magazine Chief Editor

Prof. Bulitia Godrick Mathews



A university magazine is a mirror of the university life. It reflects the literary, educational and sports activities going on in the college. It projects the important events celebrated in the college during a certain month or year. It also contains news and events about the university.

A lay man can judge the standard of the education of a university just by going through the research work, innovation and creativity like university magazine. It shows the activities of students in the field of their extracurricular enthusiasm as well as in their academic and students/staff ventures. That is why both students and staff look forward for its publication and positively contributes to it.

The magazine prepares students for their future and it gives them training in concentration of thoughts and ideas and in discipline. It can educate and prepare students

for their different roles in society which they will certainly play in the near future. Students can benefit a lot from the friendly guidance of a university magazine.

The young writers and poets get an excellent opportunity for displaying their talent. essays, short stories, poems, informative articles are written by students and are published in the magazine. This cultivates a fine literary taste among the students. Amateur photographers among the university students are keen to publish photographs taken by them. Their joy knew no bound when their photographs are published in the university magazine. In this way the university magazine helps boost new talent. The young budding authors and poets are encouraged a lot when their works are published in the magazine. Obviously, it is a rare pleasure to see one's work in print in the university magazine.

The university magazine is a comprehensive publication as it contains valuable articles from the university professors and from the ex-students, who want to convey about their successful career and about their interesting experiences. Thus a university magazine plays an important role in the life of university students. For old students, it revives their memories.



Editor & Graphics Designer
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DR. Aloys Mosima Osano
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INNOVATION & design

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Big Story

US EMBASSY, IAWRT & MMU MENTOR FEMALE MEDIA PROFESSIONALS

The US Embassy, International Association of Women in Radio and Television (IAWRT), Maasai Mara University have agreed to advance its partnership geared towards mentoring young and upcoming female media professionals into authentic media professionals for the future generations. This was revealed during the graduation of 10 mentees drawn from the Department of Media Film and Communication, Maasai Mara University. The ten had undergone year long mentorship despite the challenges brought by COVID-19 pandemic that could not provide room for adequate intended mentor-mentee engagement through physical meetings. Speaking during the event held at Mara Frontier Hotel in the outskirts of Narok Town, the Maasai Mara University Deputy Vice-Chancellor (Academic and Student Affairs) Prof. Bulitia Godrick Mathews, who represented the Acting Vice-Chancellor Prof. Kitche Magak, assured the US Embassy and IAWRT that the University was ready for further partnerships so that students will harness more opportunities. He welcomed the proactive challenge that had been posed earlier by the US Embassy Press Attache' Madam

Emily Fertik, who attended virtually. "We laud you Madam Emily Fertik for the great work you are doing. We appreciate that you have recognized Maasai Mara University as an institution that has potential to nurture talents in the media industry. Indeed, we have what it takes for our students not only in journalism but also in other professions, to maximize programmes offered by the US Embassy. We will be walking together to achieve more in shaping the lives of young people positively," Prof. Bulitia said.

Prof. Bulitia also acknowledged the unwavering support that the Media Council of Kenya (MCK) is offering IAWRT towards realizing professionalism and hands-on nature among young female professionals in the media and communication industry. "To our students, please maximize all the skills and networks you have earned during this programme and share knowledge and experience with your colleagues who did not manage to be part of this cohort. Never relent but keep striving for more mentorship opportunities," he urged. He also acknowledged the critical role that the media plays in shaping

agendas in the national and international arena, education, peace, development, innovation among others taking the lead.

The US Embassy Press Attache' Madam Emily Fertik congratulated the mentees for embodying resilience throughout the endeavour and officially declared them alumni of US Programmes. 'I applaud each of you for realizing this great milestone. It is not easy to comprehend how you

source news, how do you report... how do you do all these at the time of COVID-19. I am saying this because it is not an easy job to achieve this at the middle of a pandemic,' Madam Emily Fertik said. She also advised the mentees to utilize opportunities offered by Information Communication Technologies (ICTs) promising that they will impact positively on their career progression.



Her sentiments were backed up by the IAWRT Chair Josephine Karani who recounted how COVID-19 shortchanged their mentorship plans, but through reengineering the process, they made it to graduate all the mentors who were admitted into the programme a year ago.

The February 2020 launch was accomplished at Maanzoni, Machakos County where four Universities were involved but the event this year has been scaled down to individual universities, informed by a vicious war humankind are engaged in right now (COVID-19). "It was a difficult year for the media profession, colleagues lost jobs and those who survived took pay cuts. We had to quickly go back to the drawing board and find ways of soldiering on with our assignment, of coaching and mentoring the young and

upcoming soldiers of our noble profession-journalism. The mentors stepped up their engagement through virtual meetings, calls, messaging and social media to keep the fire burning," she said. She also recognized the efforts of mentors who soldiered on despite the disturbing fact that the disease had affected them, their families and their work. Among the topics covered and skills gained by the mentees were: Online meeting platforms like Zoom, Google meet, Webex, and Webinars; Digital Media in the face of COVID -19, Holistic digital security and footprints, Demanding a seat at the table, ICT opportunities, Community Radio, US Elections in November.

Judie Kaberia, a multi-award-winning journalist presently working for a Canadian organization dubbed Journalists for Hu-

man Rights, presented a vote of thanks on behalf of other mentors. She appreciated Maasai Mara University for investing in the mentorship project. "It is not every institution or every University in this country that allows its students to experience what these students have experienced. So, we do not take that for granted. Thank you for per-

mitting them to set aside time to pursue this venture. Today these are younger people and next time like the way you have inspired them, say in five ten years' time, they should be sitting at the decision table," she said. She also decried the limited representation of female media professionals in the country and globally, calling for more



interventions to strike gender mainstreaming in the honorable profession. The reason why we have been empowering women and girls mostly especially female journalists is because this is the crisis that we are facing in the media. We are having few and fewer women at the decision-making table. We are having few and fewer women at the top level hence we are not able to decide which content is good and which content is not good. Kaberia also al-

luded that Journalists for Human Rights is intending to roll out a curriculum that will spice journalism with human rights perspectives. This will commence with acquainting lecturers with the concept before full implementation in Universities. In Kenya we have a project called 'Voice for Women and Girls' and one of the things we are trying to roll out is a Human Rights Journalism Curriculum. One of the things that we are trying to do and it is a free consultation we are offering to the Universities, that we want to incorporate in the core journalism curriculum. This is the fu-

ture of journalism. The future of journalism dictates that when you report about women's rights, when you report about girls' rights or when you even report about boys or children rights; how do we support it with journalism that is updated?" Judie Kaberia explained. The mentees were awarded certificates that were presented by Prof. Bulitia on behalf of the US Embassy and IAWRT. Mentees who were present at the event were: Annitah Gachuma, Ruga Eval, Pendo Abulitisa, Lilian Ndong, Carolyne Konya, Priscar Njeri and Elizabeth Ayuma. Those

who graduated in absentia are: Dinnah Ekhaba, Victoria Shangwe and Sylvia Jerono. The next cohort will be launched in March this year where applications from University students are being reviewed. The IAWRT mentorship programme was kickstarted in 2019 with Maseno University, and last year the four Universities involved were Maasai Mara University-MMU, the Technical University of Mombasa-TUM, Masinde Muliro University of Science and Technology-MMUST and Moi University.



MMU Partners with ENA to Spearhead Women Empowerment

Maasai Mara University has sealed a partnership with Echo Network Africa (ENA) to catalyze societal development through executing programmes that are centered on women and girl's empowerment.

The Acting Vice-Chancellor, Prof. Kitche Magak, led a University fraternity in signing a Memorandum of Understanding (MOU) with ENA. The ENA Group Chief Executive Officer CEO Dr. Jennifer N. Riria, who has been instrumental in fast tracking the collaboration, led the team from ENA into signing the agreement with MMU, a step that she said was long overdue.

The partnership will see Maasai Mara University epitomize women and girl's empowerment, gender and brand positioning, sexual reproduction and mental health advocacy, fostering youth empowerment as well as championing research and innovation.

The ENA Group Chief Executive Officer CEO Dr. Jennifer N. Riria who has been instrumental in fast tracking the collaboration led the team from ENA



Image: The Maasai Mara University Acting Vice-Chancellor Professor Kitche Magak (seated Left) and the ENA Group CEO Dr. Jennifer N. Riria (seated Right) sign an MOU to catalyze societal development through women empowerment programmes. The MOU was signed at the Maasai Mara University Conference Hall.

Technology & Learning

Covid-19, E-Learning and The Digital Divide



Mr. Anil Kumar
Ag. Director E-Learning
Snr Lecturer
Maasai Mara University

The Coronavirus crisis is forcing a global experimentation with e-learning and remote teaching. Now more than ever, Internet access is critical in higher education worldwide. The global pandemic is just one example of how advanced technology can improve students' ability to learn and provide solutions when in-class teaching is disturbed for any reason.

E-learning, also referred to as online learning or electronic learning, is the acquisition of knowledge which takes place through electronic technologies and media. In simple language, e-learning is defined as "learning that is enabled electronically". Typically, e-learning is conducted on the Internet, where students can access their learning materials online at any place and time. E-Learning most often takes place in the form of online courses or online programs. Many institutions have successfully been able to shift their teaching online, with staff and faculty utilizing e-learning innovations to improve the learning experience and content delivery. However, for others, the advanced technological nature of these education tools has presented several issues. Even as post-COVID-19 universities take great-

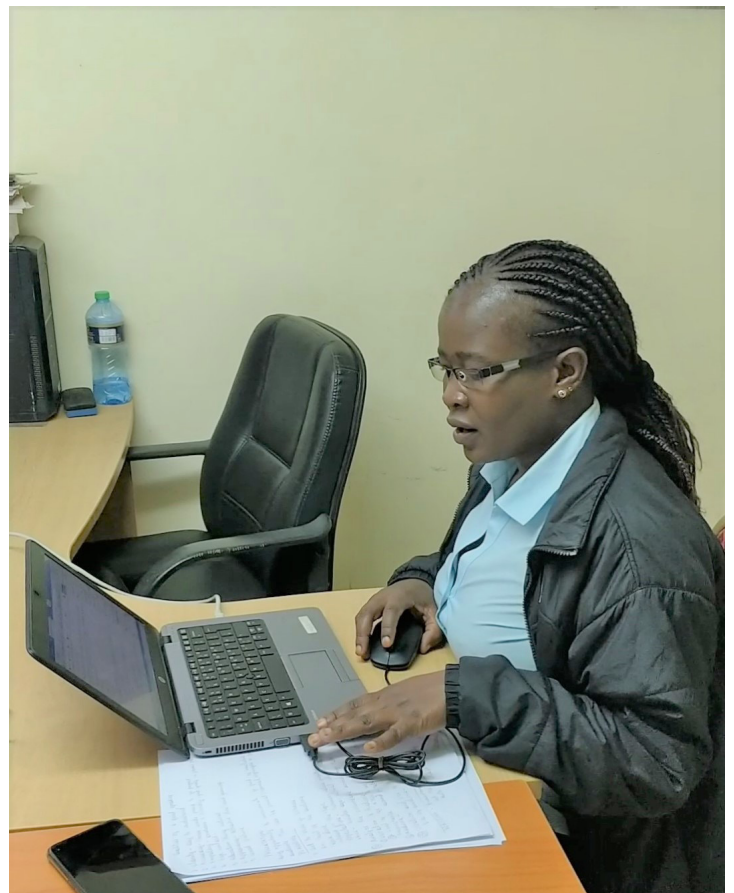
er advantage of online learning to accommodate students with a variety of learning challenges, simply getting online and participating in the digital classroom is an even more distant dream for many students than it was before the pandemic.

Digital divide is a term used to describe the gap present in society between those who have access to the internet and technology and those who do not. It can also be defined as the gap between those students and

er not have, and know how to use the internet and the information technologies that are currently transforming education. It speaks directly to a primary challenge facing our education system in this COVID-19 era; Some students and families have the means to succeed in a remote learning environment while others do not.

The digital divide is a serious concern and a painful dimension of the higher education technology experience. By underscoring

E-learning, also referred to as online learning or electronic learning, is the acquisition of knowledge which takes place through electronic technologies and media



the digital divide in higher education, COVID-19 has exacerbated a societal issue that has been present for years, especially in our rural and low-wealth communities. The problem may worsen as many colleges are planning for online or hybrid instruction for the start of the new school year.

As institutions across the nation host a series of difficult conversations about how to ensure the health and safety of students, faculty and staff, they should also prioritize plans to ensure these groups have access to the technology they need to succeed. That means institutions now have the responsibility of ensuring that their students are best prepared to succeed in the new COVID-19 era.

CHALLENGES

The outbreak of the Coronavirus has become a major disruption to colleges and universities across the country with most institutions canceling in-person classes and moving to online-only instruction. Students who enrolled with the intent of receiving face-to-face instructions, laboratory time and academic support were thrust into remote instruction—a mode in which not every student is prepared to succeed. This reality may have severely hurt workforce certificate and degree hopefuls, as many career and technical programs tend to not lend themselves to modes of teaching other than face-to-face lab instruction. Mandating a sudden switch to online learning was always likely to be chaotic and cumbersome for students, staff and

lecturers because none of them had been trained to conduct lessons in this way. That neither faculty nor students were familiar with these platforms is another big problem. Much of the faculty may find the technology more suitable for simply sharing course materials or relaying formative feedback rather than creating a truly interactive student-teacher experience. There is an existing digital divide between students from urban and rural backgrounds.

The current digital divides have many implications for higher education and technology. To begin with, learners lacking sufficient network access will have a harder time completing their Internet-dependent studies whether taking LMS-based quizzes, engaging in video-

conference conversations with classmates and outside experts or exploring simulations. Also, many students lack digital proficiency as well as the finances to buy reliable high-speed internet access. Indeed, many people in remote regions have no electricity, let alone internet access. In some remote areas, the unstable internet access is unable to support most of the online portals that universities use for teaching, such as Zoom. For a fairly large percentage of college students, having access to a stable, high-speed internet connection could be challenging if they continue their education online. Sometimes, the universities themselves lack sufficient resources to make success of online teaching. Studying in shared family





spaces or cramped living conditions also makes it nearly impossible for many home learners to concentrate on their studies. And even when students are able to access good study environments with reliable internet connections, they struggle to engage with the basic systems used by their teachers.

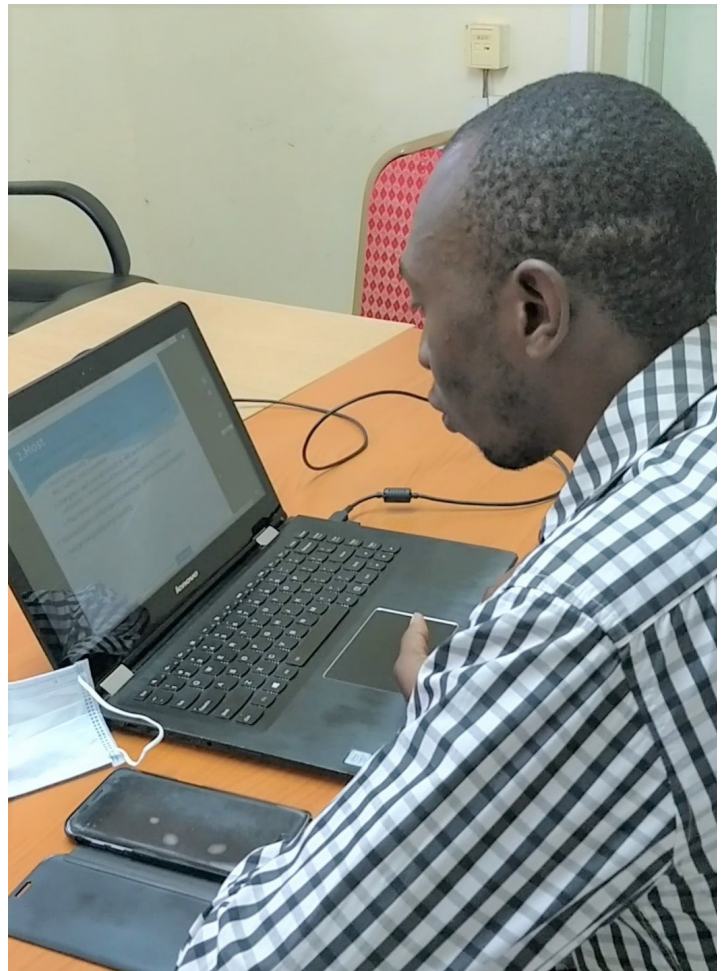
SOLUTIONS
The COVID-19 challenge can now become a great opportunity for universities to be creative and strive to continue providing quality education albeit in different ways. As well as adequate infrastructure, faculty and students need to have the ability and willingness to welcome e-learning into their higher education experience.

Institutions have an ethical responsibility to acknowledge the fact that not every student can

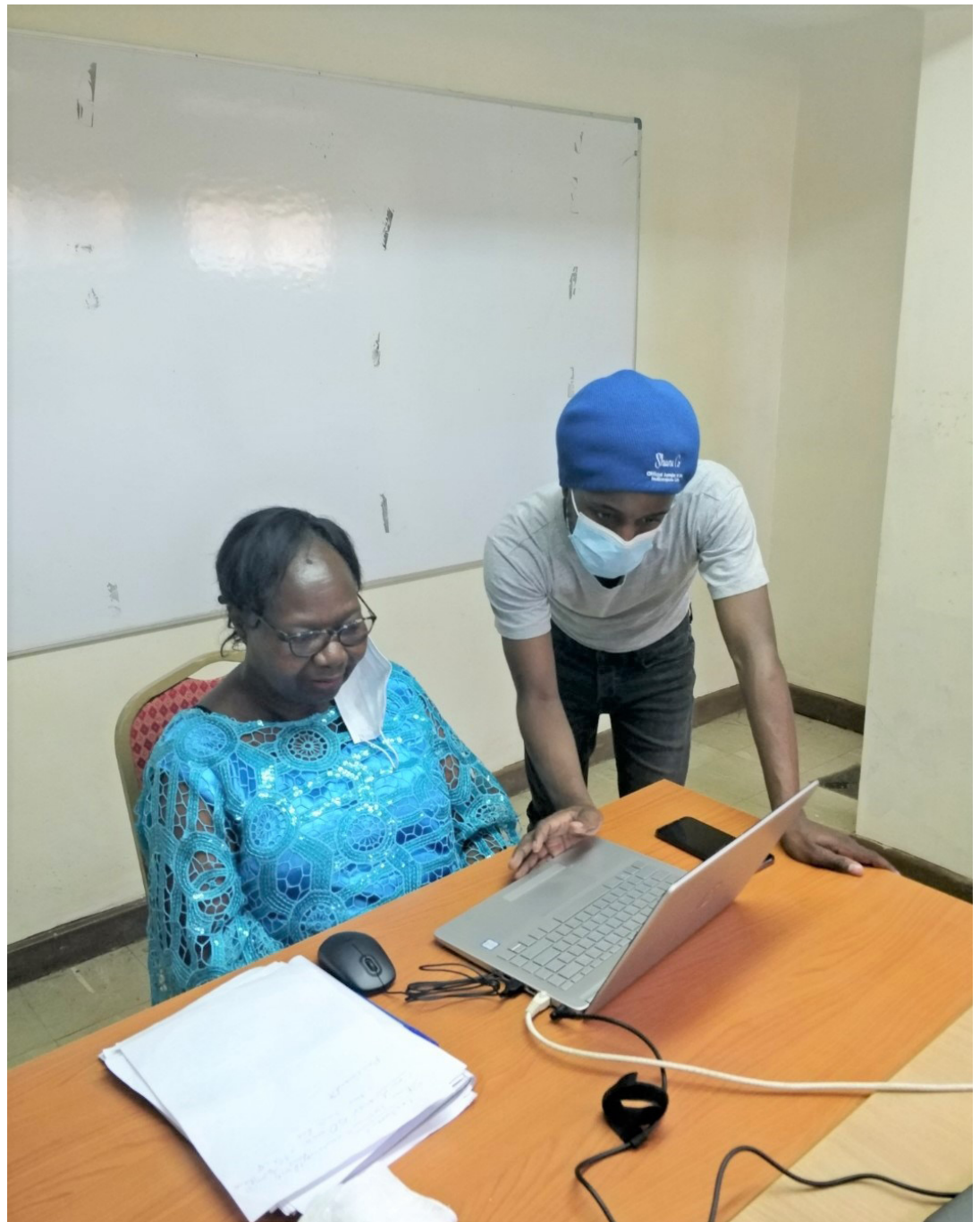
purchase the technologies necessary to support online learning nor already has the skills necessary to achieve the suggested learning outcomes through remote means. Furthermore, colleges must support first-time-in-college students who may not be equipped with the tools they need to succeed academically.

It is imperative that universities develop intentional strategies to ensure that students from low socio-economic backgrounds and students with disabilities can make progress on their academic pathways towards economic and social mobility. Institutions must study the needs of their student communities, observe best practices from other institutions and develop new means of equitable support to the students who call their colleges and universities home.

There should also be initial tools at the disposal of students who continue to be disproportionately



Administrators must do everything in their power to bridge the digital divide and promote equitable student success in our new era of education.



left out of the digital age. Faculty also need to be sensitized to the varied student experience created by conditions of differentiated access, and they need to be aware of pedagogical practices -- like asynchronous delivery and downloadable course content -- that can help to even the playing field. In this current reality of distance learning, it is critical that every college

student have access to technology and the internet. Income status should not be a barrier to distance learning. Local solutions are available. For some areas, academic and public libraries offer viable routes for getting online with sufficient hardware, software, and speed. Perhaps inter-institutional partnerships could strengthen these connections. State governments, businesses, and non-profits could expand their capacities. Along similar lines, higher education could urge or support local efforts to build out broadband, through initiatives such as co-ops or small busi-

nesses. This could be an opportunity for students to become business or social entrepreneurs potentially incubated by their campuses. Students may be inspired by educational broadband projects. Perhaps technology-specific solutions are available. If campuses are serious about equity, could they reshape their digital offerings (content, services) for different access levels? That is, a mobile-first design approach might better suit students who primarily use cell phones when they lack access to laptops and desktops.

Alternatively, a less-bandwidth-demanding media strategy, one centered on text rather than video, would be more accessible to audiences with slower bandwidth. Higher education institutions might reconsider mobile strategies, keeping in mind the underappreciated likelihood that not every student has a fully featured smartphone. Or they could make curricular materials accessible offline through local or portable storage.

Institutions can develop Free Technology Loan Programs for currently enrolled students. In this scenario, students could contact an institutional department to request technology upon registering for classes and receive a loaned tool for the duration of their active enrollment. At the con-



clusion of their academic coursework, the technology could be returned to the institution and made available for the next student in need of support.

Beyond technology and local partnerships, it may be time to consider political

options. The national government has offered various forms of digital divide mitigation over the past few years. College and university leaders could urge County governments to more fully fund local efforts such as agitating for urban Wi-Fi clouds.

Most ambitiously, higher education could collectively call for a broadband version of the Rural Electrification Program.

The Government and Business leaders must establish a public-private partnership with internet



Mr. George K
 Technical Support
 Directorate of E-Learning
 Maasai Mara University

service providers to guarantee free/reduced priced broadband connectivity. Sufficient reliable bandwidth for internet connections will upgrade the technology necessary for distance education classes. Invest in long-term broadband connectivity solutions that build out future proof networks. Higher education professionals can also address the skill divide by instituting educational programs intended to bring competency skills of searching the internet.

Library administrators should provide programming to its patrons to develop their skills level such as providing a workshop on how to search the Internet.

In today's world, the internet is the information tool of choice. Administrators must do everything in their power to bridge the digital divide and promote equitable student success in our new era of education.

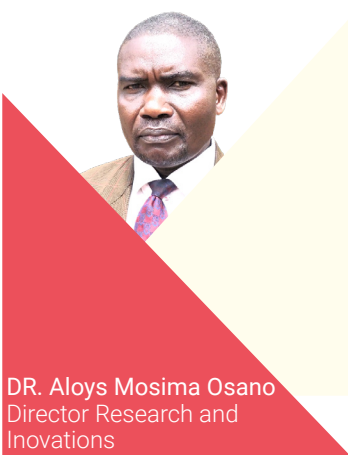
Institutions of higher education must be prepared to ensure the academic success of their students no matter their hardships. It is imperative for institutions to acknowledge and address the digital divide present within their own student bodies and aid in the fight for social and economic mobility by empowering students through technology. Academic and IT leaders have the ability – indeed, the obligation – to think carefully about the future.

Strategic plans are predicated on this type of extended vision as are college and university commitments to supporting generations of students for lifelong learning. If new and deeper digital divides loom ahead, threatening to split apart not only students but also communities, can higher education leaders in good conscience resist taking action now?



Research & Innovations

Research and Innovation in Kenyan Universities: The Scenario.



DR. Aloys Mosima Osano
Director Research and
Inovations

Traditionally, universities were supposed to be generators of new knowledge and ideas {inventions/innovations} through research activities. The new knowledge and ideas were supposed to fill the gaps that exist in society thus, finding solutions to existing challenges and problems in society. If this happens as it is anticipated, then we call it research and development is taking place in our institutions of learning.

The development component is basically developing the inventions and innovations into commercial and applicable prototypes.

Gaps and challenges in society is what triggers research activities. Therefore, the expected outputs of any research work forms the new knowledge and ideas of that activity. These are basically the innovations and inventions catapulted from any research work.

Society consumes the developed inventions or innovations as this are the solutions to those problems which faced them. Once the inventions/innovations or any other phenomena has been discovered, it is protected through a patenting system and then published.

The quality, integrity and impact of any research activities are measured on the

outputs and how they fit in responding to solving societal problems. Publishing the work at this stage only helps to expand the sphere and scope of its application on the main intended course of action. To this end, this discussion now brings me to the common phrase in universities "publish or perish". One may wonder, what are you publishing? Are you just publishing for the sake of it? Or just reporting an activity you were involved in? Or merely telling a story? A real researcher publishes tangible solutions (innovations) which have been patented (protected), thus publications end up becoming an end product. Hence, the new phrase in our universities should be, "Research, innovate, patent, and publish or perish". In so doing, communities, societies and the country, Kenya will develop magnificently.

What is happening currently is a proliferation of publications without any footprints in research activities, innovations and patents. It should be an illegality for anybody to publish non-footprinted publications. Actually as it stands now, universities have become teaching arena with majority of the academic staff not involved in

any research activities. With those involved in scanty research work only counting publications. This kind of trend requires urgent interventions to reverse it to the normal.

This may call for the Ministry of Education, in conjunction with key stakeholders, to come up with dynamic policies to revert the sector for the better. Without universities carrying out research geared towards the provision of affordable, accessible, user friendly and sustainable technologies which are solution focused, as a country we are dead meat.

Student's Achievements



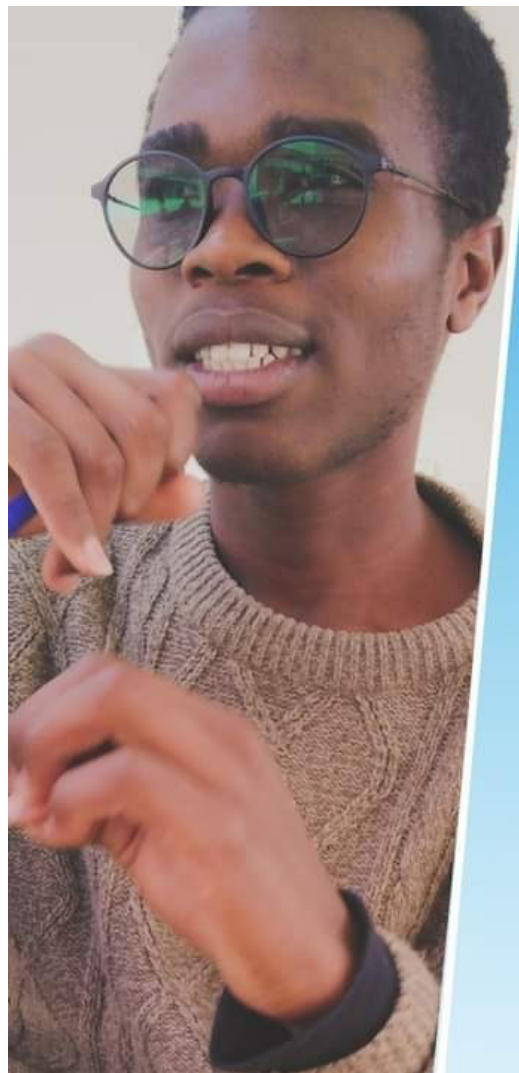
UN Mappers

MMU Student Wins UN Mappers Logo Contest

Collins Kipchirchir Limo, a student and a member of the Youth Mappers Club at Maasai Mara University pursuing a Bachelor degree in Urban and Regional Planning participated in a global UN Mappers Logo contest in September, 2020.

We are so proud that he was declared the winner after submitting a logo that was well-crafted, engaging and inspiring. Collins worked with the UNGSC Design Squad to improve his original idea and create a professional and outstanding Logo. The Logo will be used online and in print, on official documents and on merchandise of the UN Mappers community.

In AIESEC MARA (AIESEC - Association Internationale des Étudiants en Sciences Économiques et Commerciales) he is the Vice President in charge of Branding, Marketing & Content Experience. He was responsible for brand awareness, organizing marketing events and ensuring that students apply for AIESEC products and attend the events



self, so I have something to strive towards. I'm not comfortable with settling, and I'm always looking for an opportunity to do better and achieve greatness."
-LIMO COLLINS

"I am very ambitious and driven, always feeding my positive curiosity. I thrive on challenges and constantly set goals for my-



UN Mappers

“
I came up with a simple and elegant logo; the circle with a pinpoint within it to showcase world mapping and the communities in the world”

LIMO KIPCHIRCHIR COLLINS

Valuable Innovations

From Kitchen Wastes to Clean Fuel Using Folk (African Traditional) Science



Mr. Bakari Chaka
Sr. Technologist
Director of Research & Innovation

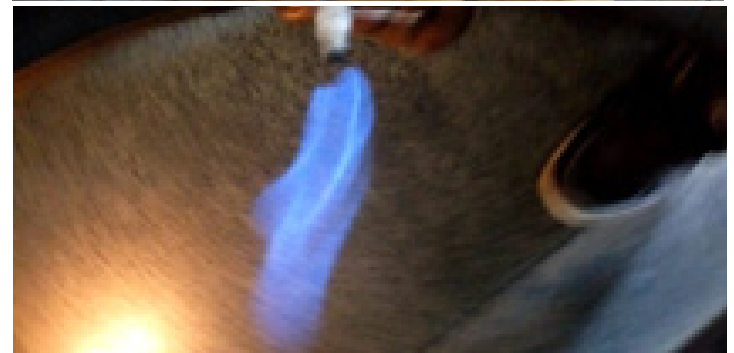
Every day, we generate a lot of biomass wastes in the form of uncooked vegetable peels and food leftovers. Approximately 20 kg of this biomass is generated from the University students' mess on a daily basis. These wastes have significant potential for production of clean energy.

The energy is harnessed by enclosing the biomass in a sealed container and leaving it to ferment for a few days. Addition of animal dung (abundant in the University) aids in introducing essential bacteria that break down the wastes to generate biogas energy.

Folk (African traditional) science has not been fully exploited. Some of the African traditional communities used various herbs that hastened fermentation process in preparation of traditional alcohol (e.g muratina), porridge and milk. Some of these herbs include *T. brownii* or *mutundu* (amongst the Aembu) and *Acanthaceae* spp. (amongst the Maasai). The beautiful side of it is that we do not have to worry about the amount of

biomass to use. Use of the traditional herbs ensures that a little volume of kitchen waste can be catalyzed to yield adequate energy for domestic fuel appliances. The process can also be achieved in small biogas digesters making it quite cheap.

A study was conducted to assess the impact of these two herbs in increasing biogas production from kitchen wastes. The study found out that the two traditional herbs significantly increased biogas quantity and calorific value. The study concluded that we can convert our kitchen wastes into clean energy using cheap equipment and simple traditional science. This would reduce the dependence on fossil fuels. Traditional herbs with great scientific potential can also be innovated, incubated and commercialized.



Mr. Edward Karaya
Manager Equity Bank, Narok

Trees donation and planting at Maasai Mara University





Botanical Garden

African Medicinal Botanical Garden and Coordination of University Niche Areas

Jedidah Nankaya

Chair, Botanical Garden and University Niche Areas

The University is strategically situated between Maasai Mara Game Reserve - the 7th wonder of the world famous for the wildebeest migration and home to unique wildlife species -and the Mau Forest complex, one of Kenya's greatest water towers.

Due to the University's unique location, it has identified Environmental Resource Management and Conservation as its overall niche. This is focused towards attainment of the University's Vision and Mission. The overall niche has the following sub niches;

- i) Tourism and Hospitality Management
- ii) Water Resource, Environmental Management and Technology
- iii) Cultural Heritage and Social Development
- iv) Food Security and Health

The University hosts the Africa Medicinal Botanical Garden which was established in partnership with the Wuhan Botanical Garden (WBG) of the Chinese Academy of Sciences and in collaboration with Sino-Africa Joint Research Centre (SAJOREC). The African Medicinal Botanical Garden is a favorite place for botanists, ethnobotanists, plant

ecologists, biochemists, microbiologists among other researchers.

The Garden is booming with over 400 diverse medicinal species and serves as one of the ex-situ conservation sites in Kenya. To increase diversity and support scientific research, we are adding new plant families and genera from diverse areas that have ethnobotanical significance. As our planting becomes even more valuable, plans are underway to establish a herbarium where our dried and labeled plant specimens can be stored. In addition, a digitized database is in progress for easier access.

Maasai Mara University has set up high end laboratories with topnotch equipment to support research and innovation. The Garden provides community service by donating medicinal seedlings to be planted in schools and homes. This has positively impacted the surrounding community in terms of environmental conservation.

Looking to the future while the challenges of 2020 have asked us to modify our operations, we are excited with the expansion plans which will create a world-class bo-

tanical garden. Our botanical garden is undergoing significant changes on a daily basis. I hope you can visit often and experience the transformation.

I draw great encouragement from the Department's great team who have supported each other through this adversity. I look forward to what we can do in 2021 and beyond.

Library & Resources

A boost to MMU Library Services

Maasai Mara University Library has won a grant of print information resources valued at Kshs 1, 034, 365.00 offered by the Michael Blundell Trust.

According to the Acting University Librarian, Ms. Nancy Kimile, the information materials donated come handy at a time when the Academic Library is striving to augment its capacity to satisfy information needs of its clientele. She added that the books are going to fill an information gap that exists in various spheres of knowledge such as Nursing, Nutri-

tion, French, Computer Science, English course books among other general areas.

We cannot forget to recognize the Chairman of Rattansi Educational Trust, Dr. Vijoo H.M. Rattansi, who saw the success of the donation from the onset to the materialization of the move. In fact, initially approved information materials were worth Kshs 500,000 but exceptional generosity doubled the offer to Kshs. 1, 034, 365.00,' Ms. Kimile said.

She also hinted that the donation will culminate to a

second phase as the same organization had earlier on donated books worth Kshs 500,000 to Maasai Mara University Library. Ms. Kimile also stressed that the University has its arms wide open for partnerships and collaborations that will be integral in boosting information services at the University Library.

Maasai Mara University is a relatively young and vibrant institution of higher learning exhibiting exponential growth despite being tested by limited financial and infrastructural resources.



Repositioning Libraries in the New Normal

The advent of COVID-19 pandemic led to the indefinite closure of all institutions of learning in Kenya. The physical libraries were also closed as a measure towards overcoming the spread of the virus. The emergence of ICT has challenged the traditional teaching and learning which has further been accelerated by the COVID-19 pandemic. The effect of COVID-19 has leapfrogged academic institutions into revision of their curricula to include online or blended learning.

The new academic scenario has made it necessary for libraries to reinvent and become more proactive to provide the pre-requisite support to teaching, learning and research. Most academic libraries have integrated ICT in their housekeeping function of classification/cataloguing, circulation, Online Public Access Catalogue (OPAC), reference services, serials control and management. However, they are now faced with a paradigm shift where there is less emphasis on the physical library but on the virtual space which leads to 'digital', 'electronic' or a library without walls. This presents a challenging and dynamic technological environment demanding the extensive and effective utilization of ICT in order to survive and meet the

changing complex and diverse information needs of their clientele. This means ICT has tremendous impact on library operations, resources, services, staff, and users.

The new scenario requires academic libraries to leverage on technology to create new and innovative collections to support the emerging educational environment. Libraries need to enhance and develop e-collections, digitize existing print resources, embrace Open Education Resources (OER), engage in resource sharing agreements and consortiums, self service models, virtual alternatives and social media in order to take library services where the clientele are.

Towards this end, the library website, as the primary path to interaction for patrons, should evolve to embrace more user friendly, responsive with more customizable features for efficiency and effectiveness in service delivery. Focusing on the new technological environment, the library is challenged to equip their patrons with skills and knowledge which are prerequisites to effectively find online information in a given context.





Maasai Mara University

eng'eno e puaan (Knowledge for prosperity)

New Year Calendar 2021



ISO Certified Institute

January 2021

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February 2021

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7
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15	16	17	18	19	20	21
22	23	24	25	26	27	28

March 2021

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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15	16	16	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April 2021

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May 2021

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
31						2
3	4	5	6	7	8	9
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17	18	19	20	21	22	23
24	25	26	27	28	29	30

June 2021

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July 2021

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26	27	28	29	30	31	

ISO 9001: 2015 Certified

August 2021

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
30	31					1
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September 2021

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27	28	29	30			

ISO 9001: 2015 Certified

October 2021

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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November 2021

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

December 2021

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
		1	2	3	4	5
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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

1st Jan (New Year's Day), 2nd April (Good Friday), 5th April (Easter Monday), 1st May (Labour Day), 14th May (Eid al-Fitr), 1st June (Madaraka Day), 10th Oct (Hunuma Day), 11th Oct ("Hunduma Day" observed), 20th Oct (Mashujaa Day), 12th Dec (Jamhuri Day), 13th Dec ("Jamhuri Day" Observed), 25th Dec (Christmas Day), 26th Dec (Boxing Day)

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www.mmarau.ac.ke

Scholars Urged to **unite & publish** materials that **promote learning** and **enhance** a good reading culture

The Maasai Mara University Acting Vice-Chancellor, Professor Kitche Magak, has called on University scholars to unite and partner in publishing ventures most especially in churning out publications that promote improvement of literacy levels in Africa. Speaking in a ceremony where he donated 15 copies of a book he published, he challenged academicians to create publishing groups; a channel which will enable them publish a lot of research materials with ease.

The book 'Millennial Voices: East African Poetry' is a collection of African poems written by various scholars from across the African continent. "Publishing is not a solitary assignment. If you really want to publish and enjoy scholarship you need to do in partnership with others. People who like to publish on their own do not go very far. So, publishing is really hard if you are going alone but if you go with it as a dedicated group, you will get more publications than you need," Prof. Magak said. He reminded the scholars that there was no shortcut to career progression in the academic arena but to proactively prioritize venturing into publishing. "This adage in scholarship

that, "publish or perish" is real!

There are people who have been in the University system for a long time and are very brilliant scholars but because they don't publish they don't move any step," he emphasized. Creativity and innovation in academia is what Prof. Magak campaigned for, in order for libraries and schools to have enough information resources that promote learning and a thirst for reading hence improving quality of education.



Water Pans as a Water Harvesting Adaptation Strategy in Narok County



MS. Mercy Kirumba
Lecturer, Department of
Biological Sciences.
kirumba@mmarau.ac.ke

The Mara River Basin (MRB) in Kenya's Rift Valley is currently undergoing rapid social, economic and ecological changes driven by rapidly changing demographic, climate and land use activities. Changing land use activities such as conversion of previously wildlife dispersal habitats into agricultural farm fields are likely to alter ecological dynamics of animals, soil, water and vegetation in this landscape with concomitant changes on long term sustainability of this fragile arid and semi-arid (ASAL) landscape. The land use, climate and demographic changes are likely to have a profound impact on the Basin's water resources.

A number of shallow water pans, both natural and constructed, small and large, public and private are found within the ASAL Narok County. These pans provide diverse socio-economic services to local communities including source of drinking and domestic water, wildlife watering points and small scale irrigation. The water pans are, therefore, important for water security and represent low technology environmental-smart adaptation to climate variability in this region.

The ephemeral water bodies remain the only significant aquatic ecosystems in this arid landscape. However,

studies on the biotic structure and dynamics of these ecosystems remain scanty. As part of my PhD research funded by the Kenya government National Research Fund (NRF) and supervised by Professors Romulus Abila (Department of Geography and Environmental Studies) and Nathan Oyaro (Department of Chemistry), we have investigated levels and types of livelihoods dependency on water pans, ownership, governance structures and systems relating to the water pans and the community's awareness and perception towards water quality to provide socio – economic background to the research.

Data collected and analysed so far indicate that:

- The water pans in semi-arid Narok County contribute significantly to water security but economic water scarcity exists i.e water may be available but some people must walk long distances to collect the water.
- The water pans were constructed by diverse organizations ranging from government, NGOs, faith organizations and other development organizations and are both private or community owned, iii. Communally managed water present provide an opportunity for human – human conflict over resource access.
- The community owned water pans appear to exhibit poorer wa-

ter quality hence there is need for awareness creation regarding pan access and maintenance. This information can be used as a basis of developing an integrated community-based management programme and a policy to ensure sustainable utilization and management of these important ASALs' water resources especially as a post COVID-19 livelihood adaptation strategy.

Climate & Environment

Characterization of the Environmental Effects of Climate Change



I must admit that it has been an exciting moment studying my postgraduate degree leading to MSc. in Environmental Studies at Maasai Mara University.

My postgraduate Thesis entitled "Characterization of the Environmental Effects of Climate Change and Variability using Geo-Information

Technology on the biophysical and socio-economic systems at the Mau Forest Complex, Narok County, Kenya" explored how geo-information technology (Remote Sensing and GIS) can be used to characterize the impacts of climate change and variability (CCV) on the biophysical and socio-economic systems in the area.

The study characterized the land cover/use changes, assessed the spatio-temporal variability in the state of climate (precipitation and temperature), and assessed the impacts of the characterized land cover/use changes and spatio-temporal climate variability on the biophysical and socio-economic systems. The study also as-





sessed how vulnerable the people and the forests are to the impacts of climate change and variability and the coping strategies (adaptation and mitigation) to the impacts.

The Mau Forest Complex (MFC) is the largest remnant closed canopy Afromontane forest in East Africa and a critical catchment area for many river basins including the famous Mara River Basin and Ewaso Nyiro South River Basin; source of water to the woodland and savanna forests of the Maasai Mara National Reserve and the adjacent conservancies and ranches supporting a great array of wildlife and biodiversity; and the agro-ecological zones known for wheat, beans and maize production. The socio-economic wellbeing of the county greatly depend on these resources for their livelihood support. The study was undertaken based on the premise that such remnant Afromontane forests are highly susceptible to climatic vari-

ations and unsustainable anthropogenic activities triggered by such variations and extreme weather events (natural disasters). These extreme weather events can be directly or indirectly linked to the environmental impacts of climate change and variability.

In this study, I used climate variables (temperature and precipitation), satellite imagery and household survey data to infer results on the impacts of climate change and variability in MFC.

The results indicated increasing precipitation variability and declining overall precipitation trend and an increasing overall trend in mean annual temperature. The observed variability in extreme temperature events indicated warming tendencies. Satellite imagery classification results showed that dense forest cover had reduced by 20% (25,053ha) with an increase in agricultural land. Generalized normalized difference

vegetation index (NDVI) thematic maps revealed a reduction in vegetation vigour. Household survey revealed that the socio-economic systems are vulnerable to the impacts of CCV as evidenced by existence of extreme climate related events such as flash floods, droughts, land/mudslides and extreme temperatures leading to environmental degradation, deforestation, agricultural land expansion and other unsustainable land uses. The resulting impacts to the biophysical and socio-economic systems in the area were linked to decline in crops yield, increased crops failure, land use conflicts, high prices and shortage of farm produce, food insecurity, diseases and even deaths.

The Narok County Government and the national government must devote their resources in educating and informing the communities about all CCV's aspects in all sectors through tailor made educational programmes,

awareness and sensitization campaigns, incentive environmental conservation programmes, strengthening adaptive capacity and mitigation strategies, formulation and implementation of adequate adaptation and mitigation policies and investing in climate smart technologies and resilient projects.

Enchorro Eng'eno

Maasai Mara University



Wastes for waste remediation



Mr. Suter Evens
Maasai Mara University

It is always a dream of every humankind to live in an environment with clean water, air and one which is free from any form of environmental pollution. To be specific, these are the most basic requirements for the modern society. However, the continuous deterioration of air and water quality as a result of increased air and water pollution arouses prevalent concerns to the public worldwide. Scholars strive so hard trying to meet the demands of humankind but they mostly find it to be too costly, inefficient and unsustainable.



Bagasse waste and effluents

Having this in mind, it can be said that the best way to make our environment conducive is to ensure that each and every one plays a role in ensuring that his/her ecosystem is very habitable to all forms of life. In this way, recycling or re-using the wastes that we generate from our daily activities will be the novelist way of safeguarding our environment.

Sugarcane is the world's largest crop by production quantity with approximately 1.9 billion tonnes produced yearly. In Kenya, sugarcane is mainly grown in the former Western and Nyanza provinces.



Modification of Bagasse

The country has eleven operational sugar factories namely, Chemelil Sugar Factory; Kibos Sugar and Allied Factories; Muhoroni Sugar Factory; Mumias Sugar Factory; Nzoia Sugar Factory; Soin Sugar Factory; South Nyanza Sugar Factory; Sukari Industries Limited; Transmara Sugar Factory; West Kenya Sugar Factory and Butali Sugar Factory.

This bagasse is an important agricultural waste that can be easily found in the sugar factories as a by-product. The sugar industries generate a huge quantity of bagasse during the manufacture of sugar from the cane. This phenomenon results in environmental distress also triggering numerous environmental extortions instigating damage to the land and its surroundings. The bagasse wastes do cause tremendous environmental pollution in the areas located with sugar industries since they are scattered all over making the scenery of these areas to look ugly and in tandem producing bad odors when it ferments making the environment unconducive to reside on. More so, these wastes cost the industries on storage

space and disposal costs. In this context, the use of these sugar cane bagasse biomass present in those regions in environmental remediation is highly welcomed.

The wastes can be modified through environmentally friendly chemical modifications to attain noble features that will increase its efficiency. Here, modified sugarcane bagasse can be applied in the removal from metallic ions from polluted water through adsorption.



Adsorption process

Through this way, human beings and all living organisms will reap the benefits of both clean water and an environment that is free from pathogens causing diseases. This will impact positively to a sustainable solution in environmental remediation while promoting the Big Four Agenda.

Food & Health

Tea and Coffee in the Maasai wilderness



Bakari Chaka
Snr Technologist
Director of Research & Innovation

For many years, tea and coffee have been the key sources of revenue to the country. However, over the past few years, the two agricultural sectors in Kenya have been on a downward trajectory.

The two sectors have drawn conflicts at all levels right from the national boards to the village SACCOs. Consequently, the quantity, quality and prices of these commodities have fallen drastically. This necessitates for alternative options to these precious household and national commodities.

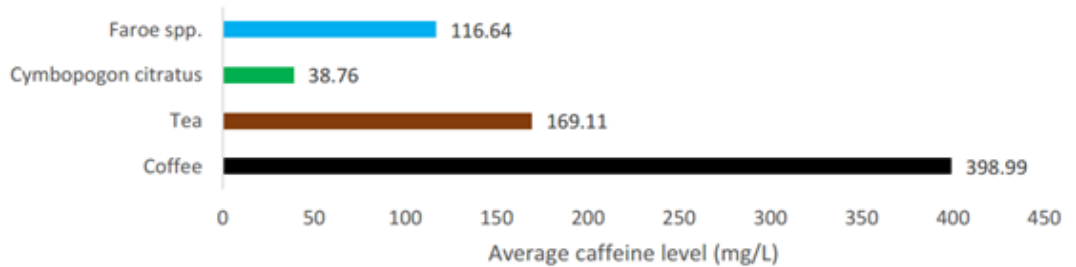
The ancient Maasai people used the bark extracts of 'Olesesiai' (Faroe spp.) as a beverage with much comfort and satisfaction, long before tea and coffee were introduced to Kenya by the missionaries.

A study was undertaken to examine the potential of these indigenous plant extracts for their beverage potential vis-à-vis commercial processed black coffee and tea leaves. The results were fantastic! Olesesiai barks were found to have all the necessary chemicals (caffeine, catechins, anti-oxidants, amino acids and carbohydrates) that constitute a commercial beverage. Additionally, the caffeine levels in these barks were significant enough for industrial exploitation.

In conclusion, there is an alternative source of beverage in Maasai land that can be harnessed and commercialized for more wealth generation and public health improvement.



Ground Olesesiai barks



Caffeine levels of Olesesiai against commercial beverages

Watching over the health of our open-air markets



Ms. Vaniah Karimi
Maasai Mara University

Since we all desire to live in a healthy environment, then caring for our environment both in the places we live and the places we work, should be our main priority. Taking responsibilities of our actions by being responsible citizens will help us in ensuring that we achieve environmental sustainability.

The growth of open-air markets has been on the rise over the past few years, making these open-air markets a place of public health interest.

Millions of people prefer purchasing commodities, edible and non-edible, from these open-air markets due to their affordability compared to other different markets. In as much as it is everyone's desire to visit a clean and healthy market, it is not the case for most of these markets in our country. These markets have been shown to have both positive and negative impacts on the quality of life as whole in the natural environment. This is due to the presence of hazards in these markets that pose a threat to the public health

and the environment as well. Among the different challenges, risks and hazards that are present in open air markets include: poor sanitation with inadequate sanitation facilities, poor waste disposal, water shortage and poor drainage, among others. These factors later end up causing environmental degradation and when the health of the environment is at stake, then the health of the flora and fauna in these environments is also put at risk. These challenges are brought about by a couple of factors such as negligence, poor planning and lack of community involvement and participation.

In conclusion, open air markets in most of our towns are not conducive to work in

or to visit in certain seasons especially the rainy season. These working conditions need to be improved as well as increase public education sensitization and awareness to the people involved with these open-air markets. There is no formula to environmental conservation, it only begins with you and me.



Inappropriate waste disposal in a market in Narok town

Student's Leadership

The MMUSA Leadership

Jack Welch once said, "Before you are a leader, success is all about growing yourself. When you become a leader, success is all about growing others."

I totally agree with this judicious saying. A leader is someone who has a focus of purpose. One who has the interest of the people at heart and will go to any extent to make sure that the people who he represents are comfortable, happy and satisfied.

One might argue that it is impossible to satisfy everyone, or even make everyone happy and comfortable. That is true to some extent. In my opinion, if you are keen to deliver 90% of what you had promised before being elected or appointed as a leader, that is enough to make the people comfortable, happy and satisfied. If a leader goes an extra mile to deliver beyond what he had promised, that is also a great deal for the people.

My attention is drawn to the Maasai Mara University Student Association (MMUSA) leadership. I must admit that MMUSA has had a share of strong leaders that were burning with acute desires to take the institution to great levels. Leaders who were characterized by defiant spirit of comradeship. Such leaders were true to themselves and true to the student's body. Challeng-

es arose but they still stood tall and unshakeable. They built strong foundations and elevated the status quo of the students. Every student felt proud to belong to the great institution of Maasai Mara University. They demonstrated that leadership was not a title but rather it is the actions, ideas and the need to bring people together for a common course.

In the same line, I wish to elucidate that the recent leadership in Maasai Mara University has not done pretty much to bring people together. It has almost failed in listening to the students, and most importantly, it has remained silent where it ought to talk. No initiatives have been brought forth to deal with critical issues.

There is need to come up with decisive plans and strategies. There is need to involve everyone in the process of development, because as the former President of Tanzania once said, "Development is people..."

It is always a matter of concern when needy students are unable to pay their fees. A concern when some students go hungry occasionally not because they want to but because they do not have means. There also comes a time when students want to share their ideas on how to

transform the institution to suite everyone's needs, but they do not know where to begin from.

All these issues can be prevented and solved if only the leadership develops an exquisite interest in providing solutions.

Some of the problems like fee issue for needy students require that leaders think outside the box to solve. If the bursaries for students and HELB is not enough to suffice the fee arrears, why don't there be initiatives or programs like a MARATHON competition with an aim of helping needy students to pay their fees. In this kind of initiative, students should be able to pay a minimum of even a hundred shillings to gain entry to the Marathon. We have a field that means we need not to go out. We just need to utilize what we have to get what we don't have. No one needs to win in the marathon competition, when we make the event a success and we manage to make everyone stay in school and do their examinations without the worry of a school fees arrears we shall all have won. We all become winners by virtue of helping others.

This will not be possible if the leaders will not take it as their responsibility. If they do not lower themselves and go to the people to make inquiries.

Let them provide platforms where students can channel their thoughts without fear of intimidation. Let MMUSA leadership be defined by extra-ordinary urge and passion to lead rather than control. The ability to involve and unite rather than disintegrate.

When all this is done, we shall have set the bar so high that the sky will no longer be our limit. This will be emulated by generation of MMUSA leadership to come and it will mark the beginning of the process of a creative imagination towards a better Maasai Mara University.

If it cannot begin in the mind then it can never begin in actual reality, for the most powerful nation in the universe is not America, not China neither is it Russia, but the most powerful nation in the world is... IMAGI-NATION.

Let us imagine of better things and they will come. I concur with what Maya Angelou who once said, "People will forget what you said, people will forget what you did, but people will never forget how you made them feel."

In as much as MMUSA leadership may hold >50% of the say in the school senate, they hold 100% of the student's hope. JOHN MAUTIA, Head of African Affairs, Kenya Universities Students Organization (KUSO)

Social Media & Technology

WhatsApp vs Telegram vs Signal: Comparison of Features and Privacy



Mr. George K
Technical Support
Directorate of E-Learning

Currently, WhatsApp is the largest messaging service in the world followed by Telegram and then Signal on active users. It is clear that WhatsApp is wildly popular and almost ubiquitous while Telegram is catching up and Signal seems to have just joined the million downloads race.

In this article, we rigorously analyze the security models of all three messaging services, their distinct features and ownership.

WhatsApp vs Telegram vs Signal:

1. Security

Before anything, I would like to begin with security as it is the most debatable and contentious topic among the three messaging services.

WhatsApp

One thing that WhatsApp definitely has going is its end-to-end encryption which is available on every single mode of communication that the app enables. What that means, is that you and the recipient are the only people who can read the messages you send, it's unable to decrypt the contents thus ensuring your security and privacy. On security features on the user-facing side of WhatsApp, it offers a built-in app lock feature. Moreover, you get support for two factor authentications (2FA) on the app, which is

great for security as well.

Telegram

Telegram supports E2E encryption but it's not enabled by default. The only way to use E2E encryption on Telegram is to use its secret chats feature. Telegram uses its own proprietary encryption protocol, MTProto



to, to encrypt your messages which is a closed-source protocol; security researchers can't verify it. On the user side, it offers a built-in app lock. Clearly, Telegram's security isn't as robust as WhatsApp or Signal.

Signal

Signal uses the open-source Signal Protocol to implement end-to-end encryption. In order to protect user privacy, Signal devised a new way to communicate between the sender and the recipient and it's called Sealed Sender, where no one will be able to know who is messaging whom, which is amazing.

In addition, you can lock Signal with passcode or biometrics. Then there is the Two-Factor Authentication(2FA) that blocks screenshots within the app and the recent screen. And recently Signal added a new feature to blur faces automatically before sending images. Not to mention, Signal by default encrypts all the local files with a passphrase and also allows you to create encrypted local backup. Signal stands head and shoulder above all and thus making it the most secure messaging app between the three.

2. Features

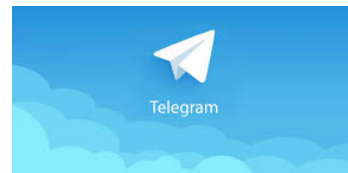
WhatsApp

WhatsApp offers almost every feature you might need. You get support for group chats and also broadcast messages. There's also support for voice

and video calls, both for individual users and groups. Apart from that, WhatsApp offers a distinct feature that is WhatsApp Status loved by users. In a way, this makes WhatsApp a social media platform, and not just a messaging service. You can share all sorts of files on WhatsApp and also share a live location with your contacts. It offers seamless backup and restore functionality through cloud services.

Telegram

It is incredibly overloaded with features. Similar to WhatsApp, you get the basics such as chats, group chats and channels. It brings support for groups with up to 200,000 members and offers multiple group-specific



features making group experiences a lot more fun. It offers unique features such as a self-destructing messages feature. The size limit for sharing files on Telegram is a whopping 1.5 GB. The app now supports both voice and video calls on Android and iOS devices.

Signal

While Signal beats Telegram and WhatsApp handily when it comes to security, it falls short on the features it offers. You have features such as disappearing messages similar to self-destructing messages of Telegram. For me, the best feature of Signal is "Note to Self", where you can jot down your thoughts and ideas. It offers a built-in option to hide your IP address and also enable incognito keyboard while typing.

3. Ownership

WhatsApp

WhatsApp is owned by Facebook. It has a new privacy policy where the

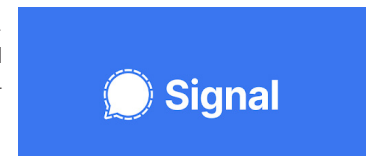
app will now share data with Facebook family of apps for better ad targeting, it's becoming a reality sooner giving Facebook even more incentive to monetize your WhatsApp data and since WhatsApp doesn't encrypt metadata, Facebook can readily use that to track your behavior.

Telegram

It was launched in 2013 by Nikolai Durov and his younger brother, Pavel Durov. Pavel Durov was dismissed as CEO of a Russian social-media site after he refused to hand over data of Ukrainian protesters to Russia's security agencies. Pavel Durov has taken a principled position against censorship and government interference.

Signal

It is owned by the nonprofit Signal Foundation which is run by cryptographer Moxie Marlinspike and Brian Acton. Moxie Marlinspike used to run Open Whisper Systems – the brainchild behind the Signal protocol. After he met Brian Acton in 2018, they formed a new alliance called Signal Foundation that wholly funds the development of Signal messenger. It's



noteworthy that Brian Acton was the co-founder of WhatsApp. Signal is run by donations and grants; in case you're wondering how it makes money.

The Verdict: WhatsApp vs Telegram vs Signal

To sum everything up, I'd suggest going with Telegram if you want more features than the average messenger. You can consider Signal if you're looking for the essential messaging and calling features along with a high-standard of security. However, WhatsApp is looking more dicey than ever now with the new policy update.

Enchorro Eng'eno



Student's Experience

Coping with Covid-19 pandemic as a student

In the wake of the COVID-19 pandemic, as a University, we had to adjust our teaching to be carried out online. We were also able to carry out our very first virtual orientation for first year students. We went ahead and held online classes for two common units for the same group of students. It was a bumpy ride but, fortunately, we were well prepared for the journey to make sure that the experience was a resounding success.

While there is no replacement for the interaction that comes from being physically on campus, the functionality of our e-learning environment supports notes, presentations and tutorials, as well as lectures. Through the virtual learning platform, students can continue to study wherever they are.

The experience was straight forward with students being able to access notes, assignments and quizzes via our Moodle-based e-learning platform and live class sessions via a link attached to the topic of the day. The link would send students to a video conferencing software that would allow the students to interact with the lecturers one on one through video or text chats.

The lecturers were able to

teach using tools including PowerPoint and video. The teaching materials are displayed on the virtual classroom with the lecturer explanation on the same screen at the same time.

The majority of the live classes were recorded so they could be re-watched if anything was missed in the live class. This way, students had the flexibility to go back over a topic – an advantage of remote lessons that traditional lessons does not provide.

When it came to assignments, the instructions were made very simple for the students to understand. The assignments took place in the form of 'take-home' assignments. These assignments had deadlines of up to five days so that the students would have enough time to discuss with each other, research and share ideas.

Naturally, new experiences come with their own challenges and adjustments.

The main challenge for students was the lack of internet bundles to access materials on the e-learning platform. Most students would attend only a few of the live classes and use the rest of the data to access the notes and submit

assignments. Another challenge was the fact that neither the faculty nor students were trained to use these technologies. Therefore, not many of them were comfortable using new technologies for learning. Being stuck at home with the entire family was a point of distraction for many students and also the lecturers.

The true sufferers of the Government order of school closings are the students in less fortunate situations and the students who are in schools that are not well-funded. This is because those students lack the devices and internet access to be able to participate in online classes, and the schools do not have the capacity to teach online. This leaves many students in a bad spot where they are unable to receive an education. Although internet service providers have been giving out free data packages, they are simply not capable of supporting video calls on programs such as Zoom.

Students who have no access to a device or internet connection will have a difficult time maintaining their education. Due to these factors, they will be in a very difficult spot educationally until the COVID-19 pandemic dies down in Kenya.

The uncertainty surrounding the COVID-19 pandemic has been another challenge in and of itself. There have been moments during this period where motivation and morale has been low. This is particularly due to the devastating implications and effects the virus has had on many thousands of people.

The presence of COVID-19 will directly and permanently change education in the future, seeing that we must be able to adapt to working and studying online for any kind of reasons and situations. We believe that the efforts we have put in coming up with ways to tackle this challenge will leave a positive legacy and should be continued to support class teachings for good.

Overall, our experience with online learning has been as positive as it could be. The support from the University has allowed it to be as smooth as possible with students being kept up to date at every stage. In the near future, online learning could be a key part of University learning and the units carried out online have proved that it has the capacity to be successful for many students and faculty.

Gender & Equality

IS GENDER ABOUT WOMEN AFFAIRS?



DR. Florence Kisirkoi
Director, Gender, Equity and Culture

Many people think that gender is about women affairs but that is not the correct position because the term gender is all inclusive of male and female; it includes even the intersex which is a legally recognized third gender in Kenya.

Society had marginalized the intersex so much that they identified themselves with either male or female, where some did not fit in completely and when found out, they were unfairly put to ridicule. Currently the female gender is usually targeted in gender activities because of historical injustices and marginalization subjected on them by different communities, globally in varied measures. The female gender is not targeted out of favour but in pursuit of fairness to this large group of people. Everybody has right to equal treatment before the law.

Gender refers to the socially constructed characteristics of women and men, girls and boys. It involves constructed behavioral, cultural, psychological traits but could be modified using common sense in pursuit of fairness. Gender characteristics are created by societies who define the socially 'acceptable' ways of behavior for male and female. Sex is the biological state of being male or female by vir-

tue of naturally having been born with male or female genitalia and it relates to biological body form. Sex determines natural roles and characteristics of male and female which are destined for each of them and should never be interfered with in a sane society. The emphasis here is fairness across the different gender groups and not interfering with the natural God given traits in male and female sex category as is the case with transgender.

Gender role is the kind of conduct learnt by a person as that which is 'appropriate' assigned to different gender by society which spells out how one is expected to act, speak, dress, groom, and conduct oneself. For example, in some societies girls and women are generally expected to dress in typically feminine ways and be polite, soft, accommodating, and nurturing, do house chores and bring up babies, which is perfectly alright. Men and boys are expected to be masculine and rough. For example, they can climb trees, slaughter animals, are bread winners and engage in rough work such as working in construction sites. However, situations and societies change and the gender roles change too. Sometimes a situation may come and either gender has to play the role traditionally played by the other one; roles mix

up and the roles of different genders interchange or both gender play similar gender roles. At such times reasoning is required so that no gender is overwhelmed. Such is the situation in the 21st century. Gender roles can change over time if one purposes to.

Gender stereotyping refers to the practice of assigning to an individual, woman or man specific traditional roles, attributes, characteristics, only because of their sex as male or female. A teacher who practices gender stereotype will subject girls and boys to roles similar to those traditionally practiced in the community. Such a teacher may also use he to represent she as it was in the past, making the female diminished. Such a teacher may always tell girls to rub the board or serve boys and men forgetting that the female equally have class work to attend to. Book illustrations may present images of girls in traditionally assigned roles such as nurses, secretaries to a man company boss, and present men as managers and in other positions of responsibility and power served by women.

Currently, both gender play any of the roles and are economically empowered. Book content presenting boys and men taking science courses

Gender role is the kind of conduct learnt by a person as that which is 'appropriate' assigned to different gender by society which spells out how one is expected to act, speak, dress, groom, and conduct oneself.

es and girls taking soft arts courses contribute to gender stereotypes and impact on the aspirations of different gender in the society. Education could also contribute to gender issues.

Gender equality is treating all gender groups equally regardless of the diverse magnitude of varied needs. The female gender has been marginalized and treated unequally, and in some cases this has contributed to low self-esteem and under representation of female gender in many sectors, which still persists. If we treat both male and female equally, the female may not receive fairness due to the magnitude of their needs and history of marginalization. Gender equality generally refers to providing equal opportunities and the same levels of support for all gender groups which may be the right thing to do in a society where there is already gender equality but where gender equality is not yet achieved, it will lead to further gender inequality.

Gender Equity is Supporting individuals based on magnitude of their needs as specific gender. Therefore, gender equity offers varying levels of support depending on the needs to be addressed for different gender groups and objectives achieved with a view to achieving greater fairness. Sometime affirmative action is employed on some groups in pursuit of gender equity and finally attain gender equality hence practice fairness. Gender equity doesn't focus on women only but on all who are treated unequally; it is not 50:50 treatment between men and women or depriving men of their rights in favour of women. Equity is practiced

in order to achieve equality and then there after practice equality to the already equal groups.

Gender Mainstreaming Involves integrating a gender perspective into design, implementation, monitoring and evaluation of development of policies, plans, programs, projects and governing laws at all levels. It is a tactic as well as a strategy which is employed in all that is practiced in order to address varied needs of all gender in order to finally promote gender equality, address gender discrimination and serve all members of society for development by all. For effective gender mainstreaming the provider has to analyze every situation in order to identify any inequalities and develop plans, programs and guidelines to remove the inequalities and their causes. The goal is to ensure that women, men, girls and boys have equal access to and control over resources, opportunities and benefits at all levels. The ultimate aim of gender mainstreaming is to achieve gender sensitivity, equity and equality.

Gender issues in Education are concerns affecting all gender in education that should be addressed to combat gender insensitivity, inequity, inequality and blindness which is lack of gender awareness stemming from tradition or lack of a gender representation in decision making. All gender in education issues need to be looked into with a gender lens to see them more clearly and make them more visible. Gender issues include sexual harassment, gender insensitive language, underrepresentation of one gender in school leadership,

unequal power position of images in textbooks, gender representation of teachers in conducting activities and representation in institution's management.

Maasai Mara university is situated in a community where gender issues are heavily prevalent and the female gender is heavily marginalized. Gender issues among the Maasai community which the university could address include: early marriage, teenage pregnancy, school dropout and the notorious Female Genital mutilation. The university could play a great role in combating them in addition to coming up with innovative activities to empower the marginalized women and the poor.

Gender sensitization is calling upon everybody, regardless of gender: male, female intersex to hold a discussion, examine and reflect on personal attitudes, beliefs and question the realities of what we thought we knew about socially assigned roles to different gender. We question views that we hold about our own gender and that of others and change to sensitive feelings of empathy towards the others gender, understand the needs of the other gender and work on our own behavior. The expected outcome of gender sensitization should be developed gender sensitivity demonstrated by individuals being fair to everybody regardless of gender orientation and ability difference.

Maasai Mara University is situated in a community where gender issues are heavily prevalent and the female gender is heavily marginalized.

Tourism & Hospitality

Tourism and Hospitality 4.0 in the era of COVID-19

The UNWTO data reveals the devastating impact that the corona virus (COVID-19) pandemic has had on global hospitality and tourism. In fact, the statistics reveal that up to 120 million hospitality and tourism jobs are at risk, with the economic damage likely to exceed \$1 trillion in 2020/2021 alone.

There is emphasis on the application of technology as a tool to build resilience and to help the hospitality and tourism industry recover from the pandemic. More specifically, the application of the Fourth Industrial Revolution (FIR) also known as Industry 4.0 technologies has been rooted as a major solution for the hospitality and tourism sector's resilience on the impacts of COVID-19. Consequently, the inherent potentials of the FIR technologies for tourism and hospitality industry cannot

be underrated. The Industry 4.0 is characterized by the emergence of technological breakthroughs in artificial intelligence, automation and robotics, connectivity with mobile devices, and access to data and knowledge.

The key technological components of the FIR that are thought to have significant influence on the hospitality and tourism industry include: cyber-physical systems (CPS), Internet of Things (IOT), Cloud Computing, Big Data, and Artificial Intelligence (AI). The Artificial Intelligence and drones have been used to monitor public areas to assess whether social distancing was being represented or not.

Smart quarantine and tracing are already used in many countries to halt the spread of COVID-19. In Hong Kong for instance, quarantine

tracking bracelets are being administered to all new arriving travelers. In China, the tracing technology is inserted into the popular payment apps Alipay and WeChat Pay. The color coding is used in those app to determine the person's health status and potential risks.

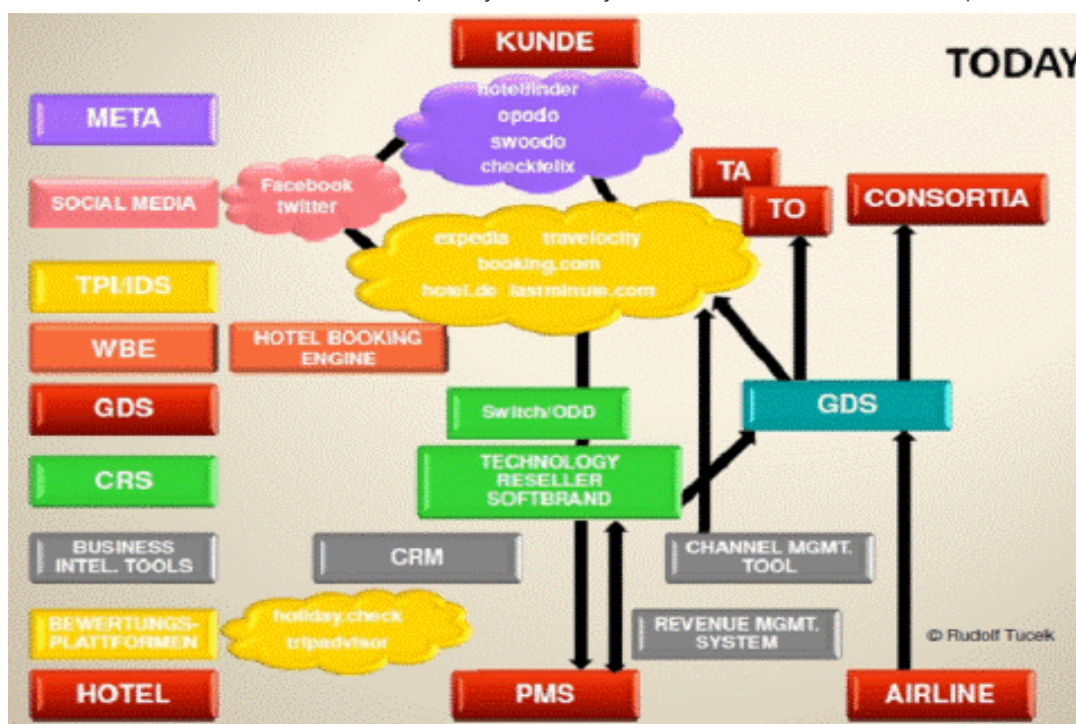
Globally, the cloud-based platform, such as Zoom, Google Hangouts, and Webex, have been used to make it easier for workers to work from home and students to complete their studies online. Robots, drones, and self-driving cars have also been used to deliver meals and medicine to infected patients as well as medical supplies to health facilities.

Mobile money and visa cards allowed people and vendors to go cashless. In turn, scientists are using the nanotechnologies and advanced materials to preparing and testing possible future vaccine as well as preparing new forms of personal protective equipment.

These technologies are playing currently a critical role in rapid diagnostic, therapeutics. It is imperative that we employ the FIR technologies to rebuild the hospitality and tourism sector in order for it to regain its position as a provider of decent jobs, stable incomes and the protection of our cultural and natural heritage.



Erick V.O. Fwaya, PhD
Sr. Lecturer,
Dean of School of Tourism
& Hospitality Management



Current Trends in Research

NANOTECHNOLOGY THE CURRENT TREND IN RESEARCH



DR. Wesley Omwoyo
Lecturer in the Department
of Biological Sciences.

Nanotechnology has been an emerging technology that not only holds promise for society, but also is capable of revolutionizing our approaches to common problems. Nanotechnology is not a completely new field; however, it is only recently that discoveries in this field have advanced so far as to warrant examination of their impact upon the world around us.

The value of nanomaterials in many technology areas is very high because of their versatile properties. As a result, research in nanotechnology has steadily increased in the recent past. Industrial investment in this area is also growing steadily especially in pharmaceutical industries, agricultural products and environmental remediation among others.

Maasai Mara University has a working Memorandum of Understanding with Vaal University of Technology, Vanderbijlpark, South Africa.

Today some nanomaterials are available in the market. It is evident that the future of nanotechnology is boundless and every discipline can incorporate it to enhance the research output and better the resultant product. Douglas Mulhall once said, Some of the items that exist today were a topic of science fiction a decade ago and have the potential to transform our society very quickly.

Maasai Mara University

has embraced nanotechnology research for some years now. Nanotechnology research requires some specialized equipment to actualize the research. This necessitated the search for collaborations with other well established Universities across the globe. Currently Maasai Mara University has a working Memorandum of Understanding with Vaal University of Technology, Vanderbijlpark, South Africa. Through the MoU, several funded research projects have been initiated and are up and running with several students from the two institutions attached to the said projects.

Several peer reviewed article have since been published in high impact factor, Scopus indexed journals and many more are on the way.

The researchers from the two institutions are currently engaged in the following funded projects:

i) Environmental remediation: Using nanomaterials to synthesize adsorbents for removal of endocrine disrupting compounds from aqueous media.

ii) Nanomedicine: Nanoencapsulation of conventional drugs into suitable nanocarriers for a controlled release profile, targeted delivery and increasing res-

ident time of the active compounds in the target site. The ultimate goal is to maximize patient compliance, minimize side effects, reduce dose and dosage frequency and technically delay the onset of resistance.

iii) Nanotechnology in traditional medicine/alternative medicine: Medicinal plants have been proved to offer a reliable alternative to conventional medicine. Nanotechnology enhances bioavailability of such concoctions and offers delivery vehicle to the site of action.

iv) Nanotechnology in agriculture: The current research involves nanoencapsulation of biopesticides from plant materials into storage bags to prevent grains from being attacked by pesticides over a prolonged period of time.

v) Nanotechnology in textiles: We have identified plants with the ability to repel insects, especially mosquitoes and through electrospinning technique, the active compounds are incorporated in a fabric to make an insect repellent fabric. This will enhance the fight against malaria and lymphatic filariasis.

The following students from the two collaborating institutions have benefited from the collaboration as they are attached to the joint projects:



Prof. Makwena J. Moloto, PhD

1. Mr. Evans Suter: Graduated in 2020 with a Master of Science in Chemistry from Maasai Mara University having been sponsored through the collaboration between the two Institutions. This student was attached to a project dealing with nano adsorbents for water purification. He became the first graduate student in the School of Pure, Applied and Health Sciences since the inception of Maasai Mara University. He has since been offered a fully funded scholarship to pursue a PhD in Chemistry in Vaal University of Technology, South Africa under joint supervision.

2. Mr. John Mining: He is a Chemistry lecturer in Maasai Mara University and currently on a PhD scholarship at Vaal University of Technology courtesy of the MoU. His research involves incorporating biopesticide and silver nanoparticles into a grain carrier bag for prevention against bean weevil attack. The research is jointly supervised by researchers from the two institutions.

3. Linda Messopirr: She is a laboratory technician and a registered PhD (Chemistry) candidate at Maasai Mara University. Her Doctoral research work entails, synthesis of cellulosic nanomaterials and incorporation of magnetic iron oxide nanoparticles for removal of selected heavy metals from aqueous medium. Her research work is funded by the National Research Fund, Kenya and partly by National Research Foundation, South Africa through the collaboration. She is the pioneer Doctoral candidate from the School of Pure, Applied and Health Sciences.

4. Grace Aberer: She is a part-time lecturer and a Doctoral candidate in the Department of Mathematics and Physical Science. She is also attached to the collaborative activities of the two institutions. He Doctoral research study deals the fabrication of a mosquito repellent fabric using natural repellents. The research is partially funded by the National Research Foundation, South Africa.

5. Benardatte Wairimu: She is also a part-time lecturer and a Doctoral candidate in the Department of Mathematics and Physical Science. Attached to the collaborative research works, he work entails development of a triple combination nanomedicine drug delivery system for Artemether Lumefantrine-paracetamol (AL-P) for actively targeting the Plasmodium falciparum parasite.

Overallly, the collaboration between Maasai Mara University and Vaal University of Technology, South Africa especially in the area of nanotechnology has been a success. This started with Dr. Omwoyo Wesley Nyaigoti being hosted there for a two-year Postdoctoral Research Fellowship where he was also appointed as the Research Coordinator of Nanotechnology, Catalysis, Adsorption and Physical Chemistry (NCAP) group. Thereafter, the aforementioned students have had a chance to sharpen their research skills apart from the professional training. On the other hand, eighteen (18) researchers from Vaal University of Technology, South Africa attended and made oral presentations in the

2019 Maasai Mara University annual conference. On several other occasions, the University has hosted Prof. Makwena Moloto who is the lead researcher from Vaal University of Technology. The Professor of Chemistry has mentored both our post-graduate and undergraduate students during his visits.

Lastly, as Chemistry researchers, we expect to initial more working collaborations with other leading institutions to better the quality of our research and open more opportunities for our students.

Researchers in the MMU-VUT collaborative research

- Dr. W. Nyaigoti Omwoyo, PhD, MRSC, FNGS – Lead Researcher, Maasai Mara University
- Prof. Makwena Moloto, PhD, MRSC – Lead Researcher Vaal University of Technology
- Prof. Nathan Oyaro, PhD, AMRSC – Researcher, Maasai Mara University
- Dr. Dominic Menge, PhD – Researcher, Maasai Mara University
- Dr. Thokozani Xaba, PhD - Researcher, Vaal University of Technology
- Dr. Elvera Viljoen, PhD - Researcher, Vaal University of Technology

From Marine Limestone Cement to Terrestrial Limestone Cement



Mr. Geoffrey Mwendwa
M.Sc. Candidate, Maasai
Mara University

A terrestrial type of cement raw material of cement known as kunkur has been found in Konza, Athi River area

Limestone ores exist in both marine and terrestrial regions of the earth. However, terrestrial limestone has remained unfamiliar until in the recent past when the search for alternative raw materials of cement to counteract the depleting ores of marine limestone intensified. This depletion is due to the past and ongoing infrastructural developments, causing high demand for cement.

In Kenya, the government has initiated the modern-world infrastructural development projects which are directly related to Kenya's Vision 2030. They include but are not limited to smart-cities (e.g Konza Technopolis, and Tetu City) and The Big Four Agenda (e.g housing). The impact of these projects is expected to raise the living standards of Kenyans to significant levels by the year 2030.

The main material required for the implementation of these projects is cement. The raw materials availability plays a critical role in the building and construction industries by ensuring an adequate and continuous supply that maintains the production of cement. The ores for limestone, which is the main raw material

of cement are facing depletion, thus necessitating the study of materials that could potentially serve as alternatives. A terrestrial type of cement raw material of cement known as kunkur has been found in Konza, Athi River area and investigated for its potential in the manufacture of cement. It is currently being exploited by East African Portland Cement Company Ltd. (EAPCC), Athi River for manufacture Portland cement.

Inspired by the value of terrestrial limestone, we have investigated the cement potential of a duricrust found in Matisaa area, Kitui County.

The results obtained show that Matisaa duricrust has potential for utilization in the manufacture of cement. The simulation of its raw meal ingredients for clinker (an intermediary raw material of cement) shows promising characteristics as well.

Kenya has been importing clinker from other countries like Tanzania. The clinker imports have been approximated to 2 million tonnes every year, costing the country over 10 billion Kenya shillings annually. Exploiting the potential of the cement raw materials

locally available could spur the growth of the cement industry in Kenya, create more jobs for Kenyans, relieve Kenya from clinker imports, reduce cement cost, and create an enabling environment for Kenyans to build decent houses, thus resonating with Kenya's development blueprint.

Academic Programmes

Applications are invited from suitably qualified candidates for admission into the following programmes offered at the Maasai Mara University.

School of Education

Ph.D Programmes

- Ph.D in Educational Administration
- Ph.D in Educational Curriculum and Media Studies
- Ph.D in Educational Psychology
- Ph.D in Educational Guidance and Counseling
- Ph.D in Educational Curriculum Studies

Masters Degree Programmes

- Master of Education (Guidance & Counseling)
- Master of Education (Educational Administration)
- Master of Education (Early Childhood Development)
- Master of Education (Philosophy of Education)
- Master of Education (Special Needs Education)
- Master of Education (Educational Psychology)
- Master of Education (Curriculum Instruction & Media)
- Master of Education (Sociology of Education)
- Master of Education (History of Education)
- Master of Education (Curriculum Studies)
- Master of Education (Comparative Education)
- Master of Education (Executive) in Leadership and Policy Studies

Undergraduate Degree Programmes

- Bachelor of Education (Arts)
- Bachelor of Education (Science)
- Bachelor of Education (Early Childhood Development Education)
- Bachelor of Education (Arts) with Special Needs Education
- Bachelor of Education (Science) with Special Needs Education
- Bachelor of Education (Arts) with Guidance and Counseling
- Bachelor of Education (Science) with Guidance and Counseling

Diploma Programmes

- Diploma in Education (Primary Option)
- Diploma in Early Childhood Development Education
- Diploma in Education (Arts)
- Diploma in Education (Science)

School of Pure, Applied & Health Science

Ph.D Programmes

- Ph.D in Chemistry
- Ph.D in Pure Mathematics
- Ph.D in Physics
- Ph.D in Applied Mathematics
- Ph.D in Applied Statistics

Masters Degree Programmes

- Master of Science in Chemistry
- Master of Science in Pure Mathematics
- Master of Science in Physics
- Master of Science in Applied Statistics
- Master of Science in Applied Mathematics
- Master of Science in Information Science
- Master of Science in Computer Science
- Master of Science in Applied Entomology

Undergraduate Degree Programmes

- Bachelor of Science in Computer Science
 - Bachelor of Science in Information Science
 - Bachelor of Science in Applied Statistics with Computing
 - Bachelor of Science in Botany
 - Bachelor of Science in Chemistry
 - Bachelor of Science in Zoology
 - Bachelor of Science in Physics
 - Bachelor of Science in Mathematics
 - Bachelor of Science in Microbiology
- Undergraduate Degree Programme
Bachelor of Science in Nursing

Diploma and Certificate Programmes

- Diploma in Nutrition and Dietetics

School of Arts, Humanities, Social Sciences & Creative Industries

Ph.D Programmes

- Ph.D in Kiswahili
- Ph.D in Linguistics

Masters Degree Programmes

- Master of Arts in Kiswahili
- Master of Arts in Public Policy & Administration
- Master of Arts in Religious Studies
- Master of Arts in Linguistics
- Master of Arts in Philosophy
- Master of Art Social Work

Undergraduate Degree Programmes

- Bachelor of Arts in Community Development
- Bachelor of Arts in Political Science and Public Administration
- Bachelor of Arts in Criminology and Penology
- Bachelor of Arts in Sociology
- Bachelor of Arts in Religion
- Bachelor of Arts in History
- Bachelor of Arts in Social Work
- Bachelor of Arts in Language and Communication
- Bachelor of Arts in Kiswahili and Journalism
- Bachelor of Arts in Communication and Journalism
- Bachelor of Arts in Communication and Public Relations.
- Bachelor of Arts in Literature, Theatre and Film
- Bachelor of Arts in Philosophy

Diploma Programmes

- Diploma in Public Administration
- Diploma in Criminology
- Diploma in Social Work
- Diploma in Community Development

Certificate Programmes

- Certificate in Social Work
- Certificate in Community Development
- Certificate in Community Work with Children and Youth in collaboration with the Africa Psychosocial Support Initiative (APSSI)

School of Business and Economics

Ph.D Programmes

- Ph.D in Business Administration

Masters Degree Programmes

- Master of Science in Human Resource Management
- Master of Business Administration
- Master of Science in Economics and Statistics
- Master of Science in Financial Economics
- Master of Science in Economic Policy Analysis and Management
- Master of Science in Agricultural Economics and Resources Management

Undergraduate Degree Programmes

- Bachelor of Commerce
- Bachelor of Science in Economics
- Bachelor of Science in Agricultural Economics & Resource Management
- Bachelor of Agribusiness Management
- Bachelor of Science in Human Resource Management
- Bachelor of Science in Financial Economics
- Bachelor of Science in Economics and Statistics
- Bachelor of Science in Entrepreneurship
- Bachelor of Science in Project Planning and Management

Diploma Programmes

- Diploma in Business Management
- Diploma in Human Resource Management

Certificate Programmes

- Certificate in Business Management
- Certificate in Human Resource Management

PRIVATELY SPONSORED STUDENTS PROGRAMMES (PSSP)

School of Natural Resources, Tourism and Hospitality

Ph.D Programmes

- Ph.D in Land Resource Management
- Ph.D in Environmental Planning and Management
- Ph.D in Environmental Studies

Masters Degree Programmes

- Master of Science in Environmental Studies
- Master of Arts in Geography
- Master of Environmental Planning and Management
- Master of Science in Land Resource Management

Undergraduate Degree Programmes

- Bachelor of Science in Wildlife Management
- Bachelor of Science in Forestry Ecosystems Management
- Bachelor of Science in Animal Health & Production
- Bachelor of Arts in Geography
- Bachelor of Environmental studies (Biology and Health)
- Bachelor of Environmental studies (Earth Sciences)
- Bachelor of Urban and Regional Planning
- Bachelor of Environmental Management
- Undergraduate Degree Programmes
- Bachelor of Tourism Management
- Bachelor of Science in Parks Recreation and Leisure Management
- Bachelor of Hotel and Hospitality Management

Diploma Programmes

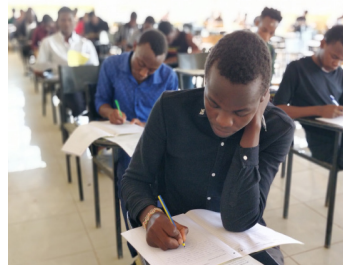
- Diploma in Wildlife & Tourism Management.
- Diploma in Animal Health and Production

Certificate Programmes

- Certificate in Wildlife & Tourism Management

WHY STUDY AT MAASAI MARA UNIVERSITY

- Wide array of accredited programmes
- Qualified faculty staff
- Serene and secure learning environment
- Proximity to the Maasai Mara reserve and the Mau complex
- Internet fiber connectivity facilitating teaching and research
- Top students are engaged as Graduate Assistants
- Vibrant cosmopolitan community
- Opportunities for scholarships



MINIMUM ENTRY

- PhD programmes: A Masters degree in the relevant field from a recognized University.
- Masters programmes: 2nd Class Honours (Upper Division) from a recognized university OR 2nd Class Honours (Lower Division), with two years' post qualification relevant work experience.
- Undergraduate programmes: Mean Grade of C+ in KCSE or a C/C- with a relevant Diploma
- Diploma programmes: KCSE Mean Grade of C/C- and above or a Mean Grade of D+ with a Certificate from a recognized institution.
- Diploma in Education (Arts /Science): KCSE Mean Grade of C+ and a C+ in two teaching subjects.
- Diploma in Education (Primary Option): Mean Grade of C+ or a Mean Grade of C (plain) with a P1 certificate.
- Certificate programmes: KCSE Mean Grade of D+ and above.

INTAKES

- Full time and Evening modes of study : January, May and September
- School based/Part time -Programmes in School of Education: April, August and December



How to apply

Official application forms are available at the Admissions office or can be downloaded from our website www.mmarau.ac.ke. Duly completed application forms should be accompanied by a non-refundable application fee of Kshs. 500/= for Certificate and Diploma programmes, Kshs. 1000/= for Undergraduate programmes and Kshs. 2000/= for postgraduate programmes. Payments should be deposited into any of the following University accounts: Co-operative Bank Ltd, Narok Branch (01129337192600) or Equity Bank, Narok branch (0360292999764).

Magazine Editorial

BACKGROUND UNIVERSITY GOVERNANCE

The University is governed by the Council, responsible for approving policies and budgets, resource mobilization and general oversight of the management of the University in line with statutory and regulatory provisions. The current Council members who are highly experienced professionals drawn from various fields, under the leadership of Dr. Kennedy Ole Kerei, an esteemed scholar. Maasai Mara University is run by a management team headed by the Vice-Chancellor whose focus is to steer the University towards achieving world class status. The University strives not only to produce well trained graduates for the local and global market but also contribute to knowledge advancement through quality teaching, research and innovation. The University offers a wide range of market driven programmes run by competent faculty. The University continues to expand its facilities to meet the growing demands, notable is the ongoing construction of a lecturer hall complex and plans are underway to construct a modern library. To enhance service delivery, the University has adopted a Quality Management System based on ISO 9001: 2015. The Academic and Student Affairs Division is headed by the Deputy Vice-Chancellor Prof. Bulitia Godrick Mathews. The Division has put in place the necessary structures to ensure that the academic programmes are run professionally and that students are provided with a conducive environment to enhance their learning experiences.

BACKGROUND

Maasai Mara University is a Kenyan Government owned University situated within Narok County, 1 km from Narok town. The University was chartered in 2013 to operate as a fully fledged institution having started in 2007 as a Constituent College of Moi University. The University currently has a student population of over 10,000 students. The University is strategically situated between Maasai Mara Game reserve - the 7th wonder of the world, famous for the wildebeest migration and home to unique wildlife species and the Mau Forest complex, one of Kenya's greatest water towers. The University has positioned itself as a Centre of excellence in Natural Resources, Tourism, Hotel and Hospitality Management, Science and Technology, Agriculture taking full advantage of its location and the opportunities it presents. The University's strategic plan 2019-2024 is geared towards setting up a number of projects including: A processing plant for indigenous food and medicinal products, research and training laboratories; sanctuary and camp site in the Maasai Mara National Reserve, a zoo and zoological museum

ACADEMIC PROGRAMMES

University Academic Orientation

Maasai Mara University is the only Institution of learning serving historically marginalized regions in the South Rift including Kajiado and Narok Counties and the densely populated Counties of Bomet and Kericho. It currently offers a total of fifty two (52) Undergraduate, fifty (50) Postgraduate Nine (9) Diploma and six (6) Certificate programmes. The University is at the same time reviewing the Academic Programmes to align them with the University's overall niche. The University has continued to review and develop market driven programmes in response to existing and emerging concerns as well as train students who are able to create employment. The University's strategic location within the greater Mara-Mau Ecosystem places it in the forefront in addressing challenges within the region as well as contribute to the national development agenda. Some of the local challenges the University is addressing through its academic and research activities are indicated below:

a) Deforestation: The University is located next to the Mau forest complex, a key water catchment area with high level of deforestation arising from encroachment of the forest land. The University offers a Bachelor of Science in Forestry Ecosystems Management and is involved in research and outreach activities aimed at restoration of the Mau forest complex as well as engaging the local community on the negative effects of environmental degrading activities such as charcoal burning. The programme is to be re-engineered to Bachelor of Science in Agro-Forestry Management that will capture emerging trends in the Forestry sector such as on-farm forestry.

b) Water resource management: Narok County is faced with perennial flooding arising from its topography, causing massive destruction to property, disruptions to livelihoods and fatalities.

The University is focused on supporting the County and national government in training personnel and undertaking research in flood management. To this end, the University is in the process of developing a Bachelor of Science in Flood Management programme to complement existing programmes in environmental management. This programme is not only geared towards managing floods but also is aimed at finding ways of harvesting rain water to address the water shortage in Narok and neighboring counties.

c) Agricultural practices: Narok County is predominantly an agricultural region known for livestock farming, large-scale wheat and barley production. However, the productivity especially in livestock management is affected by the cultural practices of the local community including the nomadic way of life that is not tenable in the current land tenure system. The local community can no longer freely move with the animals in search of pasture and therefore require a paradigm shift in animal husbandry. The University has developed a Bachelor of Science in Animal Health and production and a Diploma in the same to train professionals for the region and beyond and undertake research in this area. Already, MMU staff and students are engaged in research aimed at addressing the wheat rust problem that is a bane to farmers in the county.

d) Wildlife Conservation and Tourism Management: Wildlife is a key attraction in the Kenyan Tourism sector, a major foreign currency earner and contributor to the national GDP. Proper management of wildlife is therefore a key concern to Maasai Mara University given its proximity to the Maasai Mara game reserve. The University offers a Bachelor of Science in Wildlife programme and is in the process of realigning it with the current market demands by incorporating additional skills in animal care, para-veterinary qualifications, research tools e.g. ArcGIS and radio telemetry. MMU also plans to develop a Bachelor of Arts in Film, Animation and Photography aimed at supporting wildlife, tourism and other sectors. The University's programmes are also geared towards supporting the Governments' development plans and specifically the big 4 agenda. The University has developed a programme in Bachelor of Science in Leather Production and Processing and is collaborating with the County government and other partners.¹

to develop a tannery in order to take full advantage of the readily available raw materials. Similarly, the University is at an advanced stage to establish a factory on alternative medicines (Herbal medicine) to be supported by the Bachelor of Pharmacy which is under development under funding from DFID. The programme will improve on the indigenous knowledge and drug discovery in the region and the country. MMU is also re-engineering its Bachelor of Computer Science to incorporate artificial intelligence and robotics and Bachelor of Science in Entrepreneurship to Bachelor of Science in Entrepreneurship and innovation which are expected to support the manufacturing sector. MMU's programmes in Environmental management, Agricultural resource management are aimed at strengthening food security in Kenya through training and research. The proposed programmes in flood management will also play a critical role in enhancing food security in Narok and other regions. The Bachelor of Urban and Regional planning is among the programmes supporting one of the big 4 agenda on affordable housing, while the programmes in the School of Health and Applied sciences; Bachelor of Science in nursing, Bachelor of Science in Nutrition and Dietetics are enablers of the agenda on affordable healthcare.

RESEARCH AND INNOVATION

Since its foundation, Maasai Mara University has developed a clear academic profile with defined fields of excellence in research and innovation. The University's belief in a knowledge-driven economy informs its endeavours in undertaking meaningful research and innovation. In its quest to solve major challenges that face societies now and, in the future, the University embraces interdisciplinary and trans-disciplinary approach to research. Through its research activities, Maasai Mara University is able to generate evidence that informs strategic action and policymaking both at the county and national levels. The university's research focus is categorized thematically and aligned according to its sub-niche areas.

Natural Resources, Tourism, and Hospitality

- 1.Sustainable practices and community-based tourism;
- 2.Innovation and emerging technologies in hospitality and tourism;
- 3.Tourism policy, planning, development and management;
- 4.Hospitality management and marketing;
- 5.Leisure, recreation and wellbeing;
- 6.Events, festivals and tourism;
- 7.Dynamics in Human Resource;
- 8.Financial Reporting in SMEs;
- 9.Macro-Economic Policy;
- 10.Global supply Chain management; and
- 11.Creative innovation and fostering entrepreneurship.

Water Resource, Environmental Management and Technology

- i.Water Quality;
- ii.Environmental Sciences;
- iii.Geography and Spatial Planning;
- iv.Animal Health and Production;
- v.Wildlife Management;
- vi.Forest Utilization and Management;
- vii.Infrastructure Development and Technology Transfer;
- viii.Financing and sustainability of Non-Renewable Energy;
- ix.Water Contamination Management;
- x.Flood Management;
- xi.Information Systems and use of computer;
- xii.Management Information Systems;
- xiii.Dynamical systems;
- xiv.Differential Equation and Mathematical Modelling; and
- xv.Solar energy research.

Cultural Heritage and Social Development

- i.Culture and changing Environment;
- ii.Social work and Community Nursing;
- iii.Social Media platforms on use of different media system;
- iv.Intelligence and Security Studies;
- v.Policy Issues in Education;
- vi.Film and Games Design;
- vii.Language and Creative Writing;
- viii.Linguistics;
- ix.Foreign Languages;
- x.African Languages;
- xi.Film Studies;
- xii.Literary Studies;
- xiii.Communication;
- xiv.Social Development;
- xv.Philosophy and Religion;
- xvi.History and Governance;
- xvii.Education, Foundation & Psychology;
- xviii.Special Needs Education;
- xix.Teacher Education;
- xx.Curriculum Studies; and
- xxi.Culture, experience & heritage.

Food Security and Health

- i.Agriculture and Rural Development;
- ii.Crop protection;
- iii.Parasitology/entomology;
- iv.Microbiology;
- v.Nano-chemistry and Pharmaceutical studies;
- vi.Waste Biomass to Energy;
- vii.Algae and wheat rust;
- viii.Health Economics;
- ix.Sports, Health and exercise;
- x.Medical Ethics;
- xi.Genetically Modified and Organic Foods;
- xii.Medical Ethics and Journalism;
- xiii.Food Security among Nomadic Communities; and
- xiv.Agri-Business Management.

JUSTIFICATION FOR THE NEW SUB-NICHE AREAS

Tourism, Hospitality and Natural Resource Management Beach tourism, eco-tourism, sports tourism and cultural tourism are the building blocks of the tourism sector in Kenya. Tourism is a major income earner for the Kenyan economy. For example, in 2018, it contributed 8.8% to the country's Gross Domestic Product. Moreover, the sector offers approximately 1.1 million employment opportunities in both public and private sectors. Importantly, the potential role of tourism in the achievement of the social and economic pillars of Vision 2030 and the realization of the Big Four Agenda is a reality we cannot wish away. Narok County, home to the Maasai Mara Game Reserve, which is renowned for its participation in eco-tourism and cultural tourism, has a significant role to play in the establishment of a thriving tourism sector in Kenya. The university's strategic location makes it ideal to offer well designed programmes that will prepare professionals who can make a positive contribution to the growth of the tourism industry nationally and internationally. The proximity of the institution to the Mara Game Reserve allows students to experience a blend of theoretical and practical learning. Additionally, research initiatives under this

sub-niche are designed to provide practical solutions, documentation of folk ecology for posterity and concerns of rampant human-animal conflict folk-ecology. Water Resource, Environmental and Technology Management Resources are the backbone of strong economies. In using resources and transforming them, capital stocks are built up, which add to the wealth of present and future generations. In order to have healthy communities, we need an environment that is non-toxic, clean air and safe water. The Mau complex is one of the major water catchment areas in Kenya and the East African Region. Programmes designed under this sub-niche are tailored towards producing human capital that can adequately manage and conserve natural resources. In addition, these programmes are aimed at making significant contributions that will inform the attainment of sustainable development as envisioned in the Big Four Agenda and in the Social, Political and Economic pillars of the Kenya Vision 2030. Notably, programmes in this sub-niche give the university a competitive advantage and consequently, the institution has experienced a rise in enrolment rates. The university has identified areas that need to be establishment and operationalized including the MMU Botanical Garden, which will conserve indigenous plant species and act as a scenic area for leisure and environmental aesthetics, research in alternative/ethno-medicine, training of ethno-medicine practitioners and an Institute of new and renewable energy. Cultural Heritage and Social Development Cultural heritage is essential in defining a people's identity and preserving their integrity both as individuals and a collective.. Further, it provides a sense of continuity in a fast and changing world

for future generations. To facilitate this, the university has developed programmes under this sub-niche that are aimed at promoting our rich cultural heritage. Also, the programmes equip learners to engage meaningfully in socio-economic activities geared towards the elimination of social problems, alleviating illiteracy and reducing poverty levels in the society.

This sub-niche blends well with the rich Maasai cultural heritage that the local community has sustained extremely. The Maasai cultural heritage has become national brand that defines Kenya's cultural identity internationally. This brand has been exploited in the tourism industry local and national economic development. The university has embraced this culture in the design of its brand communicated through its logo, attire and artistic infrastructural designs, which give the university visibility and an enhanced competitive edge.

This sub-niche is strategically in line with the University's Act 2012, which was enacted and mandates the institution to ensure universal access to higher education. Being the only university in Narok County, Maasai Mara University makes higher education accessible to students from the local community and neighbouring counties, some of which are categorised as historically marginalised regions.

Food Security and Health
Kenya is primarily an agricultural country with the economy depending on this sector that contributes approximately 25% to the GDP. However, the agricultural sector has suffered in the face of climate change and this is evidenced in the increased food crises, commodity price fluctuations, depletion of natural resources and trade related issues. In response to this, the University has come up with detailed programmes that will contribute to the development of strategies to counter these challenges. The programmes will also encourage sustainability in increased agricultural productivity and disseminate information on management of food insecurity.

The University developed the health programmes based on a needs assessment that revealed the need to address concerns including maternal/neonatal mortality as a result of many women in remote areas of Kenya giving birth without being attended to by qualified medical personnel. Consequently, the university identified this as an area with a high

potential for medical research, medical tourism and opportunities to sensitise the local community against harmful cultural practices such as female genital mutilation (FGM). The programmes aim at addressing the shortage of skilled midwifery labour and professional nurses in Kenya to provide leadership in practice, education and research. Notably, the programmes in this sub-niche area are salient to the nation's attainment of universal healthcare.

STRONG POINT OF MAASAI MARA UNIVERSITY

Maasai Mara University has been able to make great strides as a result of the following attributes:

1. **Cohesive and Top-Notch Professionals in Management.** Maasai Mara University prides in its members of the University Council and the University Senate who are drawn from varied fields of knowledge and rich experience in running Institutions of Higher Learning. Both the Council and the Senate are working harmoniously in accordance with the 2010 Constitution of Kenya.

2. **Quality and Authentic Academic Programmes:** The University offers a wide range of Academic programmes accredited by the Commission of University Education and the relevant regulatory bodies. The curricula is tailored to train students in the technical areas and also equip them with entrepreneurial, ICT and analytical skills among others, to prepare them to offer solutions in the 21st century. The curricula are reviewed continually in response to the changing demands.

3. **Highly Skilled and Qualified Staff:** Maasai Mara University has highly trained faculty who meet the local and international standards. The staff are recruited competitively in line with the guidelines set by the Commission of University Education. The staff are involved in research activities both locally and internationally.

4. **Conducive Environment.** The University is situated in a serene, safe and secure environment with the necessary learning and recreational facilities. New and international students are provided with accommodation within the campus.

5. **Good Internet Connectivity.** The University has access to the Fiber Optic providing steady and reliable internet connectivity for teaching, research and communication.

6. **Strategic Location:** The University's competitive advantage lies in its strategic location between the Maasai Mara reserve and the Mau Forest Complex. These resources support the University's goal to nurture professionals and researches in environmental conservation. In addition, the University is involved directly in the restoration of the Mau forest in partnership with the local communities. Maasai Mara University also has the advantage of being the only Government owned University within the expansive and cosmopolitan Narok and Kajiado counties. The two counties are located in an agricultural based region known for wheat, barley and livestock production. These intertwined with the rich Maasai culture makes the University an ideal place for programmes in Agriculture, Culture, Tourism, Wildlife and Natural Resources.

7. **Conference Centre.** The University hosts a number of regional and national conferences, meetings, sporting and other activities owing to its location and facilities.

8. **Good Infrastructural Network:** The institution benefits from a good road network linking it to main towns within the country and beyond The University can also be accessed through air and is set to benefit from the ongoing construction of the Standard Gauge Railway (SGR) which will pass through the county.

9. **Student Mentorship and Empowerment.**

Professionalism, excellence, creativity and innovativeness, are the core values that are rooted in the lives of students, enhancing the attractiveness of our graduates in the job market. The students engage in various co-curricular activities such as sports, drama and music where they excel in local competitions. Our students have also secured scholarships locally and internationally. The University absorbs top students as Graduate Assistants, to motivate students and to grow its faculty.

10. **Diversity:** The cosmopolitan nature of the University and surrounding environment exposes students to diverse cultures and interests contributing to the exiting experiences and enhances tolerance and co-existence among students and staff.

11. **Proactive Students.** The University prides in diligent and students who work smartly to outshine other learners in innovations, research and sports. Hence, each year they earn awards in countless fields of life. The recent one is where Lorna Waweru Wanjiru, a student stood tests to clinch the First-Runners Up position in this year's 2019 National Capital Markets University Challenge.

12. **Embracing Modern Teaching and Learning Techniques.** Maasai Mara University has thirst to equip students with hands on training and experience through modern educational infrastructure.



Therefore, it does not hesitate to welcome advancements in technology and training tools. Currently, it has incorporated modern Science labs and lecture rooms and furniture. The Varsity yearns to fully shift to electronic teaching and learning methods e.g. the use of the portable finger touch interactive whiteboard where one uses his finger to write on the board rather than using whiteboard pens.

13. The Spectacular Botanical Garden. The University is humbled to have patented a magnificent Botanical Garden with more than 300 species of medicinal plants. The garden's architectural design symbolizes the human body system where medicinal plant species are planted with respect with human body part it treats. This is realized through a unique innovation in Kenya where waste water is biologically treated using water hyacinth hence authentic for garden irrigation.

A herbal medicine factory is yet to be established to utilize raw materials from the garden.

14. Hotbed of Talents. Both students and staff embody diverse talents in performing arts where they always bag trophies with whooping scores during the yearly Kenya National Universities and Colleges Drama and Theatre Festivals as well as the Kenya National Universities and Colleges Music Festivals. This has also attracted revered entertainers and artistes to host regional entertainment gigs in the University.



15. Research, Innovation and Policy Development. The Varsity also thrives in the Knowledge Society fostering the Knowledge driven economy hence engaging in meaningful research, innovation and extension. Through the notable research breakthroughs, projects and collaborations Maasai Mara University is able to solve problems in the society. Government policies and procedures also emanate from research.

Despite the big strides made by the University towards achieving its vision, it is still requires substantial funding to expand its existing physical and human resources and research activities.

RESEARCH ACTIVITIES

University staff and students are engaged in various research activities under the following research themes:

School of Arts and Social Studies

- 1.Linguistics
- 2.Foreign Languages
- 3.African Languages
- 4.Film Studies
- 5.Literary Studies
- 6.Communication
- 7.Social Development
- 8.Philosophy and Religion
- 9.History and Governance

School of Pure, Applied and Health Sciences

- 1.Crop protection
- 2.Parastology/entomology
- 3.Water quality
- 4.Microbiology
- 5.Information Systems and use of computer
- 6.Management Information Systems
- 7.Artificial Intelligence
- 8.Nanochemistry and Pharmaceutical studies
- 9.Waste Biomass to Energy
- 10.Dynamical systems
- 11.Differential Equation and Mathematical Modelling
- 12.Pure Mathematics
- 13.Solar energy research
- 14.Algae and wheat rust

School of Natural Resources, Tourism, and Hospitality

- 1.Sustainable practices and community-based tourism;
- 2.Innovation and emerging technologies in hospitality and tourism;
- 3.Tourism policy, planning, and development and management;
- 4.Culture, experience and heritage
- 5.Hospitality management and marketing;
- 6.Leisure, recreation and wellbeing
- 7.Events, Festivals and tourism

- 8.Environmental Sciences
- 9.Geography and Spatial Planning
- 10.Animal Health and Production
- 11.Wildlife Management
- 12.Forest Utilization and Management

School of Business and Economics

- 1.Infrastructure Development and Technology Transfer
- 2.Dynamics in Human Resource
- 3.Financial Reporting in SMEs
- 4.Financing and sustainability of Non-Renewable Energy
- 5.Social Media platforms on use of different media system
- 6.Agriculture and Rural Development
- 7.Macro-Economic Policy
- 8.Agri-Business Management

School of Education

- 1.Education, Foundation & Psychology
- 2.Special Needs Education
- 3.Teacher Education
- 4.Curriculum Studies
- 5.Policy Issues in Education

PARTNERSHIPS

Maasai Mara University has collaborated and partnered with a number of both local and international institutions to enhance her financial base, Student enrolment, Research activities and Technology transfer. Some of the institutions are listed below;

I.The Government of Kenya through:

- The Ministry of Education,
- The United Nations Educational, Scientific and Cultural Organization (UNESCO),
- The National Treasury,
- The Kenya Universities and Colleges Central Placement Services (KUCCPS),
- The Higher Education Loans Board (HELB),
- The Kenya National Examinations Council (KNEC),
- The Commission for University Education (CUE),
- The Kenya National Qualifications Authority (KNQA),
- The Kenya National Innovations Agency (KNIA),
- The National Commission for Science, Technology and Innovation (NACOSTI),
- The National Research Fund (NRF),

- The Kenya Agricultural Research Institute (KARI),
 - The Ministry of Health,
 - The Kenya Medical Research Institute (KEMRI),
 - The National Council for Persons with Disabilities (NCPWD),
 - The Ministry of Industry, Trade and Cooperatives,
 - The Kenya Industrial Estates (KIE),
 - The Ministry of Interior and Coordination of National Government,
 - The Ministry of Lands,
 - The National Construction Authority (NCA),
 - The Ministry of Information, Communication and Technology,
 - The Communication Authority of Kenya (CAK),
 - The Kenya Broadcasting Corporation (KBC),
 - KONZA Techno polis Development Authority,
 - The Capital Markets Authority,
 - The Ministry of Tourism and Wildlife,
 - The Kenya Wildlife Service (KWS),
 - The Tourism Regulatory Authority (TRA),
 - The Ministry of Environment and Forestry,
 - The Kenya Forest Service (KFS),
 - The Kenya Forestry Research Institute (KEFRI),
 - The National Environmental Authority (NEMA) and
 - Kenya Veterinary board (KVB).
- 2.The Narok County Government
 - 3.Kenyan academic institutions including; The University of Nairobi, Moi University, Maseno University, Egerton University and the Kenya School of Government (KSG),
 - 4.Reputable Financial Institutions such as; The Kenya Commercial Bank (KCB), National Bank of Kenya (NBK), Co-operative Bank and Equity Bank.
 - 5.Development agencies e.g. United States Agency for International Development (USAID)
 - 6.NGOs such as the World Wildlife Foundation and Farming Systems of Kenya
 - 7.Local conservancies and community owned agencies
 - 8.Wuhan Botanical Garden, Chinese Academy of Sciences
 - 9.Botanic Diamond Limited
 - 10.Clemson University, USA
 - 11.Regents University, London
 - 12.University of Limerick, Ireland
 - 13.University of Pretoria, South Africa

The University is open to engage with other partners in research, student/staff exchange programmes and development activities to achieve its vision and mission.

Youth Mappers

Maasai Mara University Youth Mappers (MMUYM)



Maasai Mara Geographic Information Alliance aka Maasai Mara University YouthMappers (MMUYM) is a specialty Club for students from different Departments at Maasai Mara University whose aim is to build a portfolio of geospatial skills and knowledge for their future careers.

The Club was officially approved in November 2019, where it was formally accepted as a YouthMappers Chapter with Dr. Mabwoga Samson, Lecturer in the Department of Environmental Studies, Geography and Agriculture as the patron. It is now a member listed under the YouthMappers network (<https://www.youthmappers.org/chapter-listing>).

The Club aims to serve as a platform to grow future generation of qualified and competent GIS professionals, participate in special-

ized training and education, create and share spatial data for free for future decision making.

The regular activities of the club include online mapping and editing events dubbed as Mapathons, Peer GIS education, organizing outdoor fun activities, seminars and talk as well as conducting and participating in research activities with the Youthmappers organization and USAID missions.

Since its inception, the Club has participated in several Mapathons and has been involved in the digitization of the Narok County map, an activity that aimed to make Narok County appear on the digital maps.

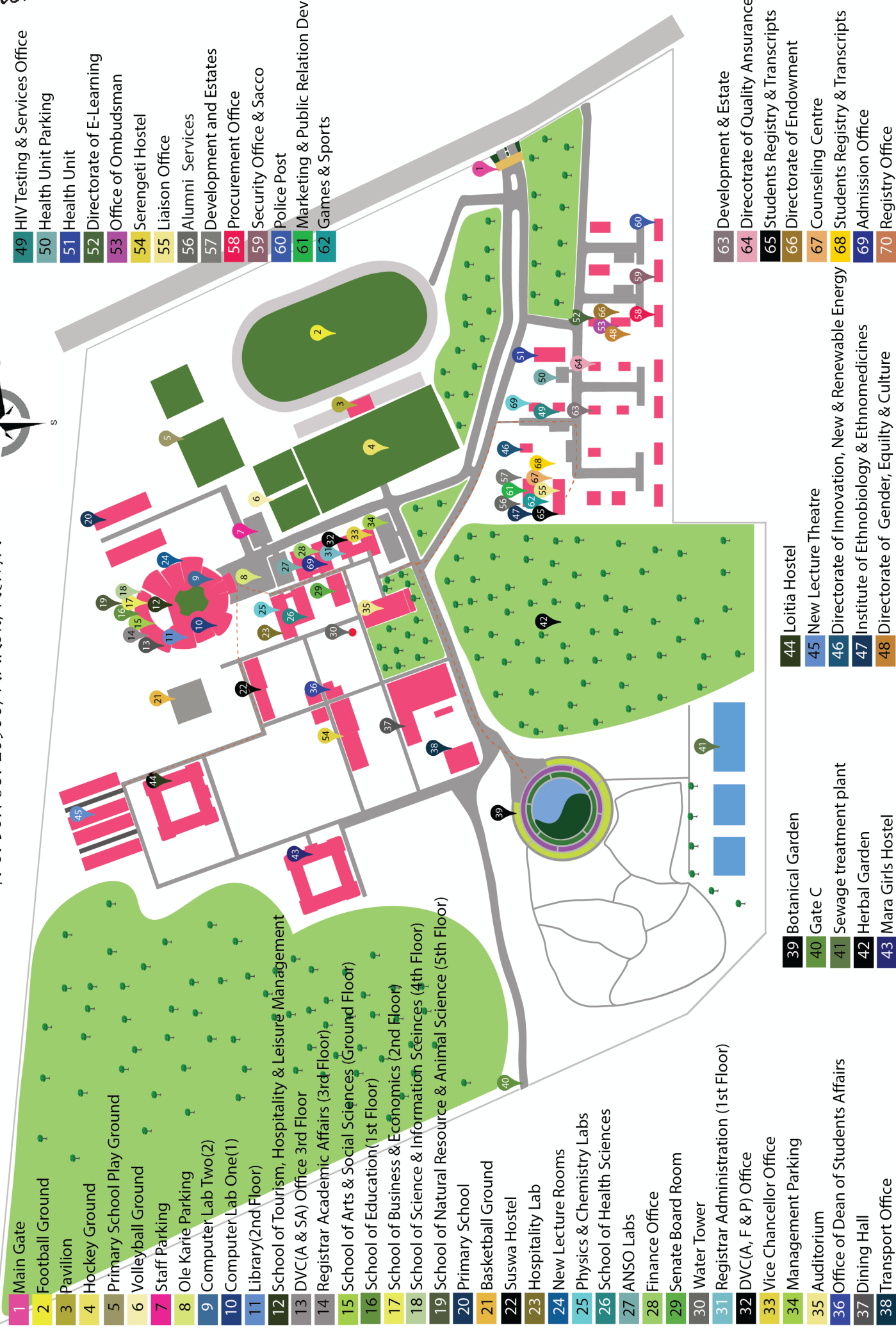
The Club members were also involved in the data collection for the grant project titled 'The Economics of Ecosystems and Biodiversi-

ty' funded by the federal government of Germany. Moreover, it has also sourced external tutors for GIS and research capacity building among its members.

Currently, the Club has applied for YouthMappers field program grant 2021/2022 amounting to USD 2500 as a way to enrich field data collection techniques, research methods and spatial data processing using open source GIS softwares. The Club is proud to be members of the digital world.

President, Maasai Mara University YouthMappers (MMUYM)
Joseph Ouma Otieno.

MAASAI MARA UNIVERSITY
P. O. BOX 861-20500, NAROK, KENYA



- 49 HIV Testing & Services Office
- 50 Health Unit Parking
- 51 Health Unit
- 52 Directorate of E-Learning
- 53 Office of Ombudsman
- 54 Serengeti Hostel
- 55 Liaison Office
- 56 Alumni Services
- 57 Development and Estates
- 58 Procurement Office
- 59 Security Office & Sacco
- 60 Police Post
- 61 Marketing & Public Relation Dev
- 62 Games & Sports

- 63 Development & Estate
- 64 Directorate of Quality Assurance
- 65 Students Registry & Transcripts
- 66 Directorate of Endowment
- 67 Counseling Centre
- 68 Students Registry & Transcripts
- 69 Admission Office
- 70 Registry Office

- 1 Main Gate
- 2 Football Ground
- 3 Pavilion
- 4 Hockey Ground
- 5 Primary School Play Ground
- 6 Volleyball Ground
- 7 Staff Parking
- 8 Ole Karie Parking
- 9 Computer Lab Two(2)
- 10 Computer Lab One(1)
- 11 Library(2nd Floor)
- 12 School of Tourism, Hospitality & Leisure Management
- 13 DVC(A & SA) Office 3rd Floor
- 14 Registrar Academic Affairs (3rd Floor)
- 15 School of Arts & Social Sciences (Ground Floor)
- 16 School of Education (1st Floor)
- 17 School of Business & Economics (2nd Floor)
- 18 School of Science & Information Sciences (4th Floor)
- 19 School of Natural Resource & Animal Science (5th Floor)
- 20 Primary School
- 21 Basketball Ground
- 22 Suswa Hostel
- 23 Hospitality Lab
- 24 New Lecture Rooms
- 25 Physics & Chemistry Labs
- 26 School of Health Sciences
- 27 ANSO Labs
- 28 Finance Office
- 29 Senate Board Room
- 30 Water Tower
- 31 Registrar Administration (1st Floor)
- 32 DVC(A, F & P) Office
- 33 Vice Chancellor Office
- 34 Management Parking
- 35 Auditorium
- 36 Office of Dean of Students Affairs
- 37 Dining Hall
- 38 Transport Office

- 39 Botanical Garden
- 40 Gate C
- 41 Sewage treatment plant
- 42 Herbal Garden
- 43 Mara Girls Hostel
- 44 Loitia Hostel
- 45 New Lecture Theatre
- 46 Directorate of Innovation, New & Renewable Energy
- 47 Institute of Ethnobiology & Ethnomedicines
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Magazine
Enchorro Eng'eno



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