



BOMET UNIVERSITY COLLEGE
(A Constituent College of Moi University)

**PROGRAMME AND BOOK OF
ABSTRACTS**

**THE 3RD BOMET UNIVERSITY COLLEGE
INTERNATIONAL CONFERENCE AND
1ST OPEN DAY AND INNOVATION
COMPETITION**

**THEME: RESEARCH, INNOVATION AND
OUTREACH: GREEN SOLUTIONS FOR
SUSTAINABLE GROWTH**

27TH AND 28TH MARCH, 2024

VENUE: BOMET UNIVERSITY COLLEGE

MODE: BLENDED

PREAMBLE

Bomet University College (BUC) was established as A Constituent College of Moi University through the Legal Notice No. 145 published in the Kenya Gazette Supplement No.114 of 27th July, 2017. The University College is expected not only to help the Government of Kenya increase access to University education but also to put greater emphasis on hands-on training for skills development and Academic Excellence. Bomet University College is now Kenya's sole University that has carved out a Niche as a "*Green Economy for Sustainability*" driver. As a result, the Academic Programs and the University's Motto, "*Green University for Sustainability*," both of which are housed at BUC, all reflect parts of the Green Concept for long-term development. Bomet University College is engaged in research in a wide range of fields, with a particular emphasis on the implementation of its Niche "*Green Economy for Sustainability*." The University has capacity in terms of staff and facilities. It has qualified staff employed across its four Schools: School of Business and Entrepreneurship, School of Arts and Social Sciences, School of Education and School of Pure and Applied Sciences. The University has a well-established Research Department that is charged with the responsibility of Coordinating Research activities, Consultancies, Innovations and Extension Services. Furthermore, besides the Research Policy that governs all activities relating to research, the University Management has a reporting structure that ensures smooth monitoring and evaluation and Quality Assurance during the conduct of research activities to ensure such activities are accomplished within the provided framework.

DAY ONE: WEDNESDAY, 27TH MARCH 2024

TIME	ACTIVITY & DESCRIPTION	RESPONSIBILITY
8.00- 8.30 AM	- Arrival and Registration of Guests and Participants (Venue Multi-Purpose Hall -MPH)	Dr. Florence Anyonje Ms. Micheline Echwa
	- Grand March by St. Mary's Girls Secondary School Band - Tree Planting session	Dr. Clement Nkaabu Ms. Josephine Agadah
8.30-9.00 AM	OFFICIAL OPENING CEREMONY	
	- Kenya National Anthem - East Africa Community Anthem	BUC Choir Ms. Winnie Mutai
	- Opening Prayer - Introduction of Participants	Chairman of 3 rd BUC Conference Committee Prof. Patrick Ojera
	- Entertainment i) BUC Modern Dance ii) Spoken word Team iii) BUC Karate Team	MC: Dr. Clement Nkaabu Dr. Lucy Ngundo
	- Opening Remarks and Order of Events by the Deputy Principal Academic and Student Affairs Prof. George O. Orwa	Chairman of 3 rd BUC Conference Committee Prof. Patrick Ojera
	- Presentation by Sponsors and Partners	MC: Dr. Clement Nkaabu Dr. Lucy Ngundo
	9.00-9.30 AM	HEALTH BREAK
EVENT ONE: INNOVATION COMPETITION Event Chair (Dr. Clement Nkaabu)		
9.30-1.00 PM	- High School Category A (SR 105)	Chair of Session :Dr. Anyonje Rapporteur: Mr. Nicholas Kipsang
	- High School Category B (SR 106)	Chair of Session: Dr. Salome Lulley Rapporteur: Dr. Philip Kasaine
	- TVET Category (SR 005)	Chair of Session :Dr. Eliud Wafula Rapporteur : Ms. Michelina Echwa
	- University Category (LT 105)	Chair of Session: Ms. Winnie Mutai Rapporteur: Mr. Kennedy Otundo

EVENT TWO: OPEN DAY		
Event Chairperson (Dr. Richard Rotich)		
8.00-5.00 PM	Exhibitions (Venue - Pavement and Courtyard)	Dr. Richard Rotich
2.00 PM	RECOGNITION OF BEST INNOVATORS AND THE OFFICIAL CLOSING CEREMONY VENUE: MULTIPURPOSE HALL	RESPONSIBILITY
	- Entertainment by BUC Choir	Chairman of 3 rd BUC Conference Committee Prof. Patrick Ojera
	- Review and Way Forward by the Deputy Principal Administration and Finance Prof. Loice C. Maru	Deputy Principal Academics and Student Affairs Prof. George O. Orwa
	- Remarks by the Principal, Bomet University College, Prof. Anne K. Nangulu. - Principal to introduce Guests, BUC Council and Chief Guest	Deputy Principal, Administration and Finance Prof. Loice C. Maru
	- Presentation by the Chief Executive Officer, Kenya National Innovation Agency Dr. Tonny K. Omwansa	Principal Prof. Anne Nangulu
	- Entertainment by the BUC Choir	Chairman of 3 rd BUC Conference Committee Prof. Patrick Ojera
	- Remarks by BUC Council Chairperson Prof. Simon Mitema	Principal Prof. Anne Nangulu
	- Speech by the Governor, Bomet County Prof. Hillary Barchok	Prof. Simon Mitema
	- Speech by the PS, State Department for University Education and Research, Ministry of Education Hon. Dr. Beatrice Muganda Inyangala	Prof. Simon Mitema
	- Speech by the Cabinet Secretary, Ministry of Education Hon. Ezekiel Machogu EGH	BUC Council Chairperson Prof. Simon Mitema
	- Recognition Ceremony and Official Closing of the 3 rd Bomet University College Conference and 1 st Open Day and Innovation Competition by the CS	Principal Prof. Anne Nangulu
	The National Anthem	
DEPARTURE		

DAY TWO: THURSDAY, 28TH MARCH 2024

TIME	ACTIVITY & DESCRIPTION Venue (Main Boardroom)	RESPONSIBILITY
8.00- 8.30 AM	- Arrival and Registration of Guests and Participants	Dr. Eliud Wafula Ms. Dinah Ayoma
<i>Conference Zoom Link for Virtual Participants</i>		
8.30-9.00 AM	OFFICIAL OPENING CEREMONY	
	- Kenya National Anthem and East Africa Community Anthem	BUC Choir (Main Boardroom)
	- Opening Prayer - Introduction of Participants	Chairman of 3 rd BUC Conference Committee Prof. Patrick Ojera
	- Opening Remarks and Order of Event by the Deputy Principal Academic and Student Affairs. Prof George O. Orwa	Chairman of 3 rd BUC Conference Committee Prof. Patrick Ojera
9.00-9.30 AM	HEALTH BREAK	Dr. Fredrick Wafula Ms. Josphine Agadah
EVENT THREE: ROUND TABLE DISCUSSIONS Session Chair (Dr. Eliud Wafula) Rapporteur (Ms. Dinah Ayoma)		
9.30-11.00 AM	- Breakout Room 1 (SBE &SASS)	Chair of Session: Dr. Mohammed Mraja Rapporteur: Mr. Bellah Cheruiyot/Ms. Gwendolyn Machira
9.30-11.00 AM	- Breakout Room 2 (SOE)	Chair of Session: Dr. John Momanyi Rapporteur: Ms. Jacinta Awuor
9.30-11.00 AM	- Breakout Room 3 (SPAS)	Chair of Session: Prof. Fredrick Kengara Rapporteur: Ms. Teclah Tuwei
11.00-11.30 PM	- Synthesizing of the Breakout Session Proceedings	Chairs of Session Dr. Mohammed Mraja Dr. John Momanyi Prof. Fredrick Kengara
11.30-11.45 PM	- Keynote Address by Dr. Pablo López Ramírez, PhD , General Director at CentroGeo	Dr. Johnmark Obura
11.45-12.00 PM	- Keynote Address by Dr. Tonny K. Omwansa , CEO, Kenya National Innovation Agency (KENIA)	Dr. Eliud Wafula

12.00-12.40 PM	- Panel Discussion moderated by Prof. Florence Indede	Dr. Eliud Wafula Rapporteur: Ms. Dinah Ayoma
12.40-1.00PM	OFFICIAL CLOSING CEREMONY	RESPONSIBILITY
	- Remarks by the Deputy Principal Administration and Finance, Prof. Loice C. Maru	Chairman of 3 rd BUC Conference Committee Prof. Patrick Ojera
	- Official Closing of the 3 rd Bomet University College Conference by the Principal, Prof. Anne K. Nangulu	Deputy Principal Administration and Finance Prof. Loice C. Maru

MESSAGE FROM THE CHAIRMAN OF COUNCIL



PROF. SIMON MITEMA

It is my pleasure to welcome you to the 3rd Bomet University International Conference, alongside the inaugural Open Day and Innovation Competition, taking place today, right here at Bomet University College. Today marks a significant milestone in our pursuit of academic excellence, innovation, and community engagement. Bomet University College (BUC) emerged from a vision to enhance access to quality higher education in this region. From its inception as a Moi University Campus to its current status as a Constituent College, BUC has evolved steadily. Our steadfast commitment to achieving full-fledged University status within the coming year reflects our dedication to serving not only our local community but also the broader national and international landscape. At the heart of our mission is the relentless pursuit of knowledge generation, preservation, and dissemination. BUC aspires to be a Premier Green University, focusing on research excellence in science, technology, and innovation for sustainability. We aim not only to impart knowledge but also to instill in our students, staff, and stakeholders values of accountability, commitment, integrity, patriotism, and respect. Today, as we convene to address pressing global challenges and opportunities, we reaffirm our dedication to the United Nations' Sustainable Development Goals, Kenya's Vision 2030, and the government's Bottom-Up Economic Transformation Agenda. This conference, open day, and innovation competition reflect our strategic goals to provide an environment conducive to quality scientific research and innovation, as well as community outreach and engagement for the advancement of humanity. As we embark on this journey of Exploration, Discovery, and Innovation, let us remember that the future of our University and society rests in our collective hands. Together, let us strive towards excellence, leveraging the power of Education and Research to transform Lives, Communities, and the World at large.

Thank you.

MESSAGE FROM THE PRINCIPAL



PROF. ANNE NANGULU

It is a great pleasure that I welcome you all to Bomet University College, a Constituent College of Moi University.

First and foremost, I wish to acknowledge the Ministry of Education, steered by the Cabinet Secretary, Hon. Ezekiel Machogu; Principal Secretary, State Department for University Education and Research, DR. Beatrice Inyangala and HE.Prof. Hillary Barchok, Governor, Bomet County. Your unwavering support has been instrumental in Bomet University College's growth. I also extend our appreciation to the Bomet University

College Council for their continued guidance.

Special thanks goes to the distinguished Key Note Speakers for gracing us with their presence, and to all participants joining us for the 3rd BUC International Conference.

The Theme of the Conference: "*Research, Innovation and Outreach: Green Solutions for Sustainable Growth*" is in line with the University College's Vision of being a "Premier Green University in fostering Research and Excellence in Science, Technology and Innovation for Sustainable Development". Similarly, BUC's Mission is to "Provide a conducive environment for discovery, preservation and dissemination of knowledge; to nurture critical inquiry, creativity and engagement for social transformation and advancement of humanity" speaks to the Commitment to achieving excellence in Science, Technology and Innovation for Sustainable Development.

Furthermore, BUC's Niche lies in the realm of the "Green Economy for Sustainability." In this regard, BUC is committed to becoming a Premier *Green* University with a focus on Applied Science, Technology, and Innovation. To this end, BUC embraces the tenets of integrating Green Solutions as a way of life in the Society as a means to improve livelihoods, and also to Conserve the Environment for a Sustainable Ecosystem It is for this reason that we are here to partner with you in this Conference on Research, Innovation and Outreach: Green Solutions for Sustainable Growth with a view to transfer knowledge and consequently improve livelihoods.

On behalf of the entire BUC family, I express my sincere gratitude to everyone for participating in this momentous event. I look forward to engaging discussions and fruitful deliberation.

Thank you.

MESSAGE FROM THE DEPUTY PRINCIPAL (ACADEMIC & STUDENT AFFAIRS)



PROF. GEORGE OTIENO ORWA

I am pleased to extend a warm welcome to you for our upcoming 3rd International Conference, 1st Open Day, and Innovation Competition, scheduled for March 27th and 28th, 2024. This event, themed "*Research, Innovation, and Outreach: Green Solutions for Sustainable Growth*," reflects BUC's Vision of becoming a Premier green University, dedicated to fostering research and excellence in Science, Technology, and Innovation for sustainable development.

The hosting of the 3rd Bomet University College International Conference, 1st Open Day and Innovation Competition holds significant importance for Bomet University College as it aligns with our Core Mandate and demonstrates our commitment to our Vision, Mission, and Niche.

This year's Conference, Open Day and Innovation Competition will serve as a vibrant platform for the exchange of ideas and celebration of innovations within Bomet University College (BUC), Technical and Vocational Education and Training institutions (TVETs), and Secondary Schools in Bomet County, showcasing the regions potential in Science, Technology and Innovation. It will also be an opportunity for Participants to engage with researchers and experts, explore cutting-edge research focused on green solutions for sustainable development, and participate in the Open Day to learn more about BUC's Schools, Departments, and Academic Programmes.

This Event presents a valuable opportunity for students and members of faculty to expand their knowledge and perspectives on sustainability, network with peers and professionals from diverse fields, and contribute to the development of green solutions for a better future.

I would like extend my heartfelt gratitude to the dedicated planning Committee for their tireless efforts in organizing this exceptional Event. Their commitment, planning, and collaborative spirit have been instrumental in shaping this Event into a platform for groundbreaking ideas and impactful discussions.

Your participation will undoubtedly contribute to the success of this Event and reinforce Bomet University College's position as a Champion of Greening and Sustainability.

Thank you.

MESSAGE FROM THE DEPUTY PRINCIPAL, ADMINISTRATION AND FINANCE



PROF. LOICE CHEMNGETICH MARU, PhD
*Professor of Entrepreneurship and Sustainability
Management*

I am honored to welcome you to the 3rd Bomet University International Conference, 1st Open Day, and Innovation Competition, centered around the theme "***Research, Innovation, and Outreach: Green Solutions for Sustainable Growth.***" As the University College lives its Niche "*Green Economy for Sustainability,*" the Conference, Open Day and Innovation

Competition serve as a catalyst for stakeholders, Researchers and the Community to unite in fostering resilience within Academic, Learning, and Scientific Research, laying the groundwork for Sustainable Development.

Recent research underscores the critical role of support, community, leadership, and planning in both building and hindering capacity for green solutions in research, innovation and outreach. Focus on 'high-impact' greening incentives can address various barriers to capacity-building for research, innovation and outreach. While advancement in technology significant opportunities for capacity-building for green solutions in these areas, we must not overlook the importance of human interactions in the process. Thus, the imperative for research into institutional capacity in offering green solutions for sustainable growth becomes apparent.

In line with its Green Economy Niche, BUC incorporates sustainable practices into its infrastructure, utilizing natural resources like solar energy, natural lighting and rainwater harvested. The University College prioritizes green built designs (such as spacious corridors for natural ventilation/airation), and has established critical facilities such as the Research Centre and Start-Up Village to expand space for Teaching and Research, all geared towards achieving sustainable operations.

Further, BUC actively contributes to environmental conservation by planting tree and growing towards restoration of forest cover aligned to national and global greening initiatives. This noble greening activity has led to successful engagement with stakeholders.

Your participation in this conference underscores your commitment to "*Research, Innovation, and Outreach: Green Solutions for Sustainable Growth.*" It is our hope that by the conclusion of this Conference, we will have collectively advanced our understanding and practices in fostering resilience within academic (teaching and learning), scientific research, innovation and outreach for Sustainable Development.

Thank you.

GUEST SPEAKERS



**HON. EZEKIEL MACHOGU, EGH
CABINET SECRETARY,
MINISTRY OF EDUCATION**

Hon. Ezekiel Ombaki Machogu is the Cabinet Secretary, Ministry of Education. He holds a Bachelor of Arts Degree from the University of Nairobi. Hon. Machogu attended Nduru High School for his O-Level Certificate. Upon completion, in 1974, he proceeded to Agoro Sare High School for his A-Level Certificate. Hon. Machogu has had a successful career first as a District Officer, under the Office of the President (1976-1989), then appointed as a District Commissioner in (1989-2008). Between 2008 and 2016, he worked at the Public Service Commission as a Senior Deputy Secretary. In 2017, Hon. Ezekiel Machogu joined the Kenya National Assembly as a Member of Parliament for Nyaribari Masaba Constituency and served as a Member of the Committee on Regional Integration and the Services and Facilities Committee. In 2022, Hon. Machogu was appointed the Cabinet Secretary, Ministry of Education.



**HON. DR. BEATRICE MUGANDA INYANGALA
PRINCIPAL SECRETARY
HIGHER EDUCATION AND RESEARCH**

Dr. Beatrice Muganda Inyangala is currently the Principal Secretary, State Department for University Education and Research in the Ministry of Education. Dr. Inyangala is an established economist. She holds a B.Ed and M. Phil in Planning and Economics of Education from Moi University and a PhD from the University of Athens, Greece which she acquired at age 33. After acquiring the doctorate, Dr. Inyangala taught at Moi and Masinde Muliro universities. Dr Inyangala has served as the Director of Higher Education and Deputy Executive Director of Nairobi-based Partnership for African Social and Governance Research. Her areas of expertise are in public policy, gender inclusivity, quality assurance, teaching methodology, governance and fundraising. She has been on the forefront championing education reforms and demanding equality for women. She played a key role in developing vision 2030 (Education and Training strategy) and served as a regulator with the Commission of University Education.



PROF. HILLARY BARCHOK
GOVERNOR, BOMET COUNTY

Prof. Hillary Kipng'eno Barchok is the current Governor of Bomet County. He started his academic journey in Kapkilomwa Primary School in 1981 before proceeding to Kericho High School for secondary school education. He holds a Bachelor of Education (Science) degree from Egerton University, Njoro and a Master of Education (Science Education) from the same institution. Prof. Barchok is also an alumnus of Moi University where he obtained a Doctor of Philosophy (PhD) degree in Curriculum Development. He has several years' experience in academia having worked as a lecturer in Chuka University where he taught and supervised students in different fields of education. He is a curriculum development specialist who before joining politics, was serving as the dean of Faculty of Education and Resource Development (FERD) between 2012 and 2017. Before joining Chuka University as a lecturer, Prof. Barchok taught Chemistry and Mathematics in various secondary schools as a Teachers Service Commission (TSC) teacher.

KEYNOTE SPEAKERS



DR. TONNY K. OMWANSA
CHIEF EXECUTIVE OFFICER,
KENYA NATIONAL INNOVATION AGENCY

Dr. Tonny K. Omwansa is the current CEO of Kenya National Innovation Agency where he oversees the development and management of the National Innovation System. He is a member of ISACA, IEEE, the Board of Trustees of Kenya National Research Fund, and a Commissioner at the National Commission of Science, Technology, and Innovation. He is also an International Advisory Board Member at SLU - Swedish University of Agricultural Sciences. He has been involved in the technology and innovation ecosystem in Africa for the past 15 years, founding and running various entrepreneurship programs and accelerators, across different sectors including fintech and mobility. He has been a faculty member at Strathmore University and the University of Nairobi. Dr. Omwansa created the Kenya Innovation Week and Nairobi Innovation week, mobilizing over 50 partners from the public and private sector and academia to enhance the local innovation ecosystem. Dr. Omwansa is interested in the design, adoption, and impact of innovative low-cost, and appropriate technologies in developing countries. He conducted extensive research and consultancy projects for the past 15 years on technology, innovation, financial inclusion, and mobile transactions, for various clients ranging from government institutions, international donors to multinationals (Kenyan government, Mastercard Foundation, Microsoft, World Bank, USAID, Bill & Melinda Gates Foundation, GSMA, Rockefeller Foundation). He, therefore, produced numerous products, reports, and publications, including a book: “Money, Real Quick: Kenya’s Disruptive Mobile Money Innovation” in 2012.



PABLO LÓPEZ RAMÍREZ, PHD

Dr. Ramirez obtained a Bachelor Degree in Physics from the National University, an M.Sc. in Geomatics and a PhD in Geospatial Information Sciences from CentroGeo. He is currently General Director at CentroGeo. He has been a professor of Spatial Analysis, Geographic Information Systems and Geoinformatics at the institution's Graduate programs. Besides his work as professor, he has been a member of several research and development teams involved in the design and implementation of technological platforms for the assimilation and use of geographic Information within public institutions. His main research interests are the construction of geographic databases for the development of urban pollution inventories; the development of socio-technical tools for the construction of institutional data catalogs and Geographic Knowledge Discovery and Data Mining, currently working at the intersection of Spatial Analysis and Data Science. Within the field of urban pollution, he has worked with several research groups funded by the National Science Council (CONACYT) and in close collaboration with the Center for Atmospheric Sciences at the National University (CCA-UNAM). He developed a Geographic Information System integrating information and models for pollution inventories. He also developed micro-simulation urban transit models to assess the energetic efficiency of the transportation system under different design assumptions. In the field of Spatial Data Infrastructures (SDI) he has worked with local cadastral authorities in the development of socio-technical tools to catalog and publish the basic cadastral information in a way that can be used by different actors involved in urban planning and development. Within Geographic Knowledge Discovery and Data Mining, his main interest is in the articulation between data based techniques (Data Science) and Geographic Theory. He is currently working on the analysis of Social Media and its geographic characteristics, mainly in the development of event-detection algorithms and the integration of Geographic Documents to reveal geospatial patterns in social media conversations. Recently, he has been working in the integration of Geographic Data Mining algorithms in criminological research. In the field of vulnerability research, he is a member of the National Informatics Ecosystem for COVID-19 (ENI-COVID-19) of the National Research Council, where his main contribution has been the development of a Geographic Information System for assessing the vulnerability of the population to the pandemic. He has also contributed with different geospatial analysis aimed at the development of fine-grained spatial strategies to minimize the impact to communities.

MODERATOR



PROF. FLORENCE NGESA INDEDE

Prof. Florence Ngesa Indede is an Associate Professor of Kiswahili Studies - Maseno University. Holds a PhD degree in Kiswahili Studies from Maseno University, which benefited from a DAAD scholarship studies at Bayreuth University - Germany; Has a Masters Degree in Kiswahili Studies and a Bachelor of Education degree from The University of Nairobi- Kenya. The Chairperson of Technical and Vocational Education and Training Authority (TVETA). Chairperson Department of Kiswahili and Other African Languages (KOAL) - Maseno University. From 2009- 2019 Vice and later Chairperson Kenya

DAAD Scholars Association (KDSA). Her research interests include pragmatics and discourse analysis in Kiswahili and literary texts, quality assurance, research and knowledge management in higher education. Prof. Indede is an active participant in Dialogue for Innovative Higher Education Strategies (DIES) programs since 2003 when she underwent University Staff Development (UNISTAFF) training in Germany, and the International Deans Course (IDC) (2013/2014) in Germany and Africa. Together in a team of four, won the DIES National Multiplication Training (NMT) grant 2017-2018 to train deans and directors on quality leadership and management in higher education in Kenya. Together with two colleagues won the 2023-2024 NMT to train faculty on Internationalization at Home. 2023 - 2025: TVETA team Leader Consortium Project: Greece, Germany, Spain, Kenya, Namibia and Gambia: TourEdu4All: A holistic Model to Open Tourism VET for Vulnerable Groups: –Capacity building in the field of Vocational Education and Training (VET): Erasmus+ EU Grants. In 2021, in a team of six members comprising of Maseno University, The University of Nairobi and Africa Nazarene University, won the Lacuna Funds (hosted by Meridian Institute) Datasets for Language in Sub-Saharan Africa to carry out research on KenCorpus: Kenyan Languages Corpus: Prof. Indede is the coordinator collaborative activities between Maseno University- Kenya and Linnaeus University-Sweden since 2012. From 2011-2019 in a team of four, initiated and implemented Building Stronger University (BSU) Project which drew partners from Maseno University-Kenya, Gulu University (Uganda), Tribhuvan University- Nepal and Denmark Universities: Aarhus, Aalborg University and Roskilde. The BSU and later MAGAART project were funded by DANIDA. The Chairperson MAGAART publication Committee and Chief Editor Globe Special Issue 2018: A Journal of Language, Culture and Communication. Prof. Indede is a member of Maseno University Scientific and Ethics Review Committee (MUSERC). Has successfully organized and participated in local, national and international seminars, workshops and conferences. Has initiated several networks; 2008 - 2015: Regional East Africa Alumni Network (REAL). 2012- Coordinator Bayreuth International Alumni Network Eastern and Southern Africa (BIANESA). From 2016: Coordinator: Bayreuth International Alumni Network Eastern Africa (BIANEA). Has taught, supervised and graduated several undergraduate, Masters and nine PhD candidates. Prof. Indede has had immense contribution in the community. She is a member of the Board of Trustees for Butula Center for Education Research and Development (BUCERED) and the Chairperson Management Committee of BUCERED. She was the Chairperson Kima Integrated Community Initiative Program (NGO) from 2005 -2016. She has also served on several school Boards of Management.

INNOVATION COMPETITION JUDGES



MR. FRANCIS MUKHWANA OKWARA

INNOVATION OFFICER

KENYA NATIONAL INNOVATION AGENCY

Mr. Francis Okwara, an Innovation Officer at the Kenya National Innovation Agency, is dedicated to advancing the country's innovation landscape. Holding a bachelor's degree in Education and Information Technology from Maseno University, he boasts a rich professional background spanning education, communication, and innovation. Within the Kenya National Innovation Agency, Mr. Okwara has been instrumental in various initiatives aimed at fostering innovation across the nation. He has played a pivotal role in supporting innovation academies to keep institutions and individuals informed about emerging trends in innovations. Moreover, he has facilitated collaborative innovation challenges with key stakeholders, underscoring his commitment to nurturing a vibrant innovation ecosystem. Notably, Mr. Okwara served as the exhibition manager for the "Kenya Innovation Week - Commonwealth Edition" and the 3rd East Africa Science, Technology and Innovation Conference. His expertise has also been recognized previously through his successive appointments as a judge for the Kenya Science and Engineering Fair. As a former teacher, he earned accolades for mentoring students to national-level science congress projects, notably achieving recognition in 2011 for guiding a project titled "Synthesis of Avocado Oil." Beyond his professional endeavors, Mr. Okwara demonstrates a keen interest in leadership, having served as a student leader at Maseno University and contributing to various societal leadership roles. His commitment to community advancement is exemplified by his position on the board of management of Emukhuyu Secondary School. Currently, Mr. Okwara is focused on leveraging his expertise to drive impactful contributions to Kenya's innovation ecosystem. He is particularly passionate about collaborating with stakeholders to empower young innovators and propel them along their innovation journeys.



MR. NYADOI ELSIE ODHIAMBO

Mr. Nyadoi Elsie Odhiambo is a Senior Data Scientist at Safaricom Plc in the Big Data and Analytics Department with 3+ years of experience in analytical modelling, developing machine learning models to solve complex business problems. He Holds a Master of Science in Finance (Quantitative Finance) and a Bachelor of Science Degree in Applied Statistics, both from Maseno University. His research interests are in Mathematical Finance where he has published articles in international

journals, Large Language Models, Machine learning for Finance and Blockchain. He is also member Kenya National Statistical Society (KNSS). He has previously won an award at the AI Expert 2023 for the most innovative and impactful technical innovation in Financial services products using a Multitask model.



MR. EMMANUEL NGENO

Mr. Emmanuel Ngeno has a Bachelor's Degree in Civil Engineering from Technical University of Mombasa. He also possess a Diploma in Technical Trainer Education from The Kenya School of TVET. Additionally Mr. Ngeno has a Certificate in Senior Management Course from Kenya School of Government. He is a registered Graduate Engineer by The Engineers Board of Kenya and an accredited Verifiers/Assessor/Tool Developer by TVET-CDACC. Currently he is employed by The Ministry of Education - State Department for Technical, Vocational Education and

Training (TVET) and Posted at Sotik Technical Training Institute.



MS. PERIS MUMBI MAHUGU

Peris Mumbi Mahugu is a Kenyan, who is dedicated, ambitious and believes in hard work. She is a holder of a Bachelor's degree of Science in Hotel and Hospitality Management and a Diploma in Technical Education and currently pursuing a master's degree in Hospitality Management. Peris is a passionate educator with a keen interest of empowering trainees through innovative training

methodologies to equip them with relevant cutting edge technical skills in order to meet the industry demands. She is currently working as a registrar at SOT TTI and a trainer in Hospitality and Institution Management. She also serves in various capacities as a Science Technology and Innovation champion, CBET champion, Internal Quality Assurance officer and chairperson resolution of public complaints and compliments committee. She is also an accredited and external examiner with KNEC, TVET CDACC and NITA. As a registrar, she brings a wealth of experience in academic administration, as well as deep understanding of the needs and expectations of students, departments and staff. She is committed to providing high quality academic services and resources that support students' success and enable them to achieve their goals.



MR. MARIAKA N. METHUSELAH

Mariaka N. Methuselah is an enthusiastic Biology and Geography teacher at Koiwa Boys' High School who's eager to contribute to team success through hard work, attention to details and excellent organizational skills. He has a vast understanding of research, innovation and teaching in STEM. He's currently the patron of Kiowa Young Scientists which is actively participating in Kenya science and engineering fair and Young Scientists Kenya 2024 competitions .He's recently participated as a Judge up to the regional level hoping to be co-opted into the National Arena. His greatest achievement in research and innovation is working with PASCO an international research company that provides high quality solution for hands-on learning in STEM classrooms in one of the institutions in the ASALs Kenya.

CONFERENCE COMMITTEE

- | | |
|---------------------------|--|
| 1. Prof. Patrick B. Ojera | Chairperson |
| 2. Dr. Clement Nkaabu | Member, Career Services/Outreach to Schools during the Innovation Week |
| 3. Dr. Fredrick Wafula | Member, Organizing the Virtual Programme |
| 4. Dr. Eliud Nalianya | Member, Lecturer School of Pure and Applied Sciences |
| 5. Dr. Richard Rotich | Member, Lecturer School of Business And Entrepreneurship |
| 6. Dr. Salome Lulley | Member, Lecturer School of Education |
| 7. Dr. Florence Anyonje | Member, Lecturer School of Arts and Social Sciences |
| 8. Ms. Winnie Mutai | Member, Representative Library Services |
| 9. Mr. Elisha Kirui | Member, Outreach on Heal Matters During Open Day |
| 10. Ms. Villance Mwasigwa | Member, Procurement Services |
| 11. Mr. Kennedy Marsh | Member Finance Services |
| 12. Ms. Ann Muthiani | Member, Public Relations and Branding |
| 13. Josephine Agadah | Member, Finance Services |
| 14. Mr. Mathew Ngeno | Member, In Charge ICT |
| 15. Dr. Johnmark Obura | In Charge, Secretariat |
| 16. Ms. Michelina Ewoi | Secretariat |
| 17. Ms. Dinah Ayoma | Secretariat |
| 18. Mr. Philip Kasaine | Secretariat |

ROUND TABLE PRESENTERS



PROF. ORORI KENGARA

Prof. Orori Kengara is an Associate Professor of Analytical Chemistry in the School of Pure and Applied Sciences of Bomet University College. He holds a Doctor of Natural Science (Dr.rer.nat.) degree in Chemistry, Geochemistry and Environmental Health Protection Engineering from the Technical University of Munich in Germany, a Master of Science (M.Sc) degree in Chemistry from Maseno University in Kenya, and a Bachelor of Science (B.Sc) degree in Chemistry and Mathematics/Computer science from Moi University in Kenya. He did his doctoral research at the National Research Center for Environmental Health, and was domiciled at the Institute of Soil Ecology, where he focused on fate processes of persistent xenobiotics in soil. He also worked in the Institutes of Ecological Chemistry and Ground Water Ecology, and is therefore well versed with both aerobic and anaerobic systems and processes. He did his post-doctoral research at the Chinese Academy of Sciences, Institute of Soil Science, in the Department of Environmental Soil Chemistry. His research interests lie in studying the fate processes and enhancing the degradation of persistent organic pollutants (POPs) in soil through bioremediation and steering ecological conditions; monitoring for inorganic and organic contaminants in the environment; soil processes, including greenhouse gas emissions; biomass transformation to biochar - and its different applications; and renewable energy- such as biodiesel production from non-edible sources. Prof. Kengara is well versed with many instruments and techniques including radioisotope tracing (^{14}C) using Liquid Scintillation Counting, GC (ECD/ FID), GC-MS, HPLC, Ion Chromatography, UV-Vis & FT-IR spectroscopy, Fluorescence analysis, Stable Isotope analysis (^{13}C and ^{15}N) and Total Organic Carbon analysis. He has over 20 years' experience in university in the university system having started off as a graduate assistant and moved up to Senior Lecturer at Maseno University. He was wide and extensive in the teaching, training and supervision of undergraduate and postgraduate students. Prof. Kengara has attracted research grants, made oral presentations in seminars, workshops and international conferences, and has over 40 publications in high-impact peer-reviewed journals. He is a member of the Royal Society of Chemistry and the Kenya Chemical Society – where he currently serves as the chair of the Western Chapter

Greening more for less for more: Towards a sustainable future for Africa

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Abstract

Humanity is facing a myriad of crises including global economic down turn, high unemployment rates and dwindling resources, as well as environmental contamination, degradation and global warming - which is in large part responsible for climate change. In particular, the dwindling of the non-renewable fossil fuel resources has led to spiraling petroleum fuel prices, which have resulted in high transportation and industrial production costs, thereby having deleterious effects on the economies of many nations. The socio-economic impact has been telling with a spike in the cost of living leading to a reduction in net disposable incomes among households, thereby negatively affecting the quality of life for many people. The African continent has been particularly hit by the plethora of problems associated with the linear economy (LE), and transition to a circular economy (CE) presents a potential solution for the continent. Apart from being potentially more sustainable in the long run, in addition to mitigating environmental pollution and degradation, embracing CE also presents a multi-trillion-dollar market opportunity for all sectors. In industries and businesses, for example, utilizing CE could be key to reducing operation costs, increasing resilience and delivering on future competitiveness. However, whereas significant advances have been achieved in some areas of CE in recent years, it is important to interrogate potential deleterious effects of any applied CE approach so as to avoid the LE pitfalls. This paper highlights the effects of the LE and presents the circular economy as a potential viable alternative. It further presents the steps that Africa has taken towards greening, the immense untapped potential, as well as the measures that would lead to leveraging of her resources and realization of the continent's potential. Finally, it interrogates the sustainability of the solutions conferred by the CE, and whether we can get more for less by greening more.



DR. ELIUD NALIANYA WAFULA

Dr. Wafula is a Natural Scientist specializing in Microbiology, Molecular Biology, Biotechnology, Food Safety, Functional Foods, and Value Addition of Indigenous Food systems. He is a lecturer in the School of Pure and Applied Sciences, Department of Public Health, Bomet University College. He holds a Ph.D. in Natural Sciences (Microbiology, Molecular Biology, Biotechnology and Food Safety) from the University of Hamburg, Germany, a Master of Science degree in Genetics, and a Bachelor's degree in Medical Microbiology from the Jomo Kenyatta University of Agriculture and Technology (JKUAT), Kenya. Dr. Wafula has taught several courses at the undergraduate, graduate, and postgraduate levels as well as successfully supervised 2 master's students to completion. He has authored and published over 24 papers in very well-respected scientific journals as well as attended various national and international conferences. His research interests include the use of indigenous innovative technologies for solving food safety and nutrition issues for underutilized indigenous food resources, environmental pollution control, smart agricultural production, climate change mitigation and adaptation and production of functional foods through novel approaches. He is a member of the Kenya Society of Microbiology and the American Society for Microbiology.

The Role of African Fermented Indigenous Vegetables in Maternal and Child Nutrition

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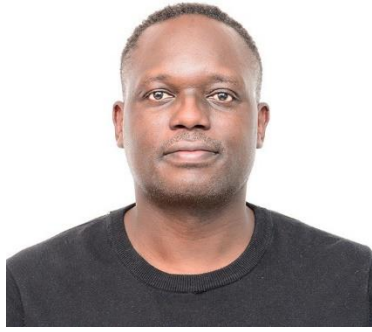
ABSTRACT

Hunger and malnutrition continue to affect Africa, more serious children and reproductive women seem to be at higher risk than the remaining population. However, Africa has indigenous foods and food technologies that can help alleviate hunger. The importance of indigenous vegetables is undeniable, only that they are season-linked and

considered for the poor despite their high nutritional contents. To reduce post-harvest losses of indigenous vegetables while increasing bioavailability of nutrients, microbial safety and reducing anti-nutrients, fermentation is a promising technology.

Fermentation is practiced at households or for commercial purposes and it is more efficient since it requires less energy and sophistication which are not available in Africa. Being able to ferment indigenous vegetables will bring about food security, nutrition and safety which are mainly the responsibility of women and to fail it means malnutrition and hunger to women and children. Fermentation of indigenous vegetables is also a promise of income to women, for they are mainly the ones involved in agricultural activities. These benefits will significantly have a positive impact on implementation of the second SDG and African Union agenda 2063.

Keywords: Indigenous vegetables, fermentation, malnutrition, maternal nutrition

DR. ADOLPHUS WAGALA

Adolphus Wagala a Senior Lecturer in the Department of Mathematics and Computer Science of the School of Pure and Applied Sciences (SPAS) of Bomet University College. He holds a PhD (Probability & Statistics) from The Mathematics Research Center, AC, Guanajuato, Gto. Mexico, also known by the acronym CIMAT, AC in Spanish. He earned a Bachelor's and Master degrees in Mathematics and Statistics respectively from Egerton University, Njoro, Kenya. He was a visiting Scientist at the Walter & Eliza Hall Institute of Medical Research (WEHI) and the University of Melbourne, Melbourne, Australia. He was also one of the recipients of the 2022 IMU-Simons Africa Fellowship. His research interests are diverse ranging from theoretical methodological developments to applied statistics, statistical machine learning and data science. Dr. Wagala is currently a research fellow at the Department of Data Science DFCI/Harvard University, Boston USA where he is developing a Bayesian Boolean Matrix Decomposition Algorithm that would be used in studying the latent patterns in data science and machine learning problems involving binary types of data. When studying the Boolean Algebra, he insists that $1+1=1$ and not 2. Furthermore, he has more than a decade's experience in University teaching, students' mentorship/supervision and research that have resulted in several publications in refereed and peer reviewed journals. He was also a consultant on Advisory and Data Analytics for the World Bank Group in 2023.

A Graphical Network Analysis of the Nairobi Securities Exchange

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Abstract

In this study a network for the Nairobi Securities Exchange (NSE) is built based on the correlation between different stocks returns. The objective is a kind of inverse problem: given a bunch of historical stock prices, we produce a network of associations. The topological properties of the constructed graph network are studied to reveal the kind of interactions that exist between various stocks. The revealed interactions can be used as an innovative basis for evidence based decision making with regards to portfolio management.

Keywords: Stock Correlation Network, Share price fluctuations, Complex network theory



DR. DAVID KIMUTAI MELLY

Dr. David Kimutai Melly is a lecturer in the School of Pure and Applied Sciences, Department of Biological Sciences, Bomet University College. He holds a Ph.D. in Botany-Plant Taxonomy from the University of Chinese Academy of Sciences, Wuhan Botanical Garden, China, a Master of Science degree in Botany from the University of Chinese Academy of Sciences and a Bachelor's degree in Range Management from the University of Nairobi. He is the Smithsonian Mpala Postdoctoral Fellow 2021-2022. His research interests include Plant Taxonomy and Molecular Phylogenetic studies for Biodiversity Conservation and solving taxonomic challenges. He has authored and published papers in very well-respected scientific journals as well as attended and presented in several national and international conferences. He teaches General Botany courses, Principles of Crop production, Natural Resource Management courses among others. Dr. Melly is a member of the Forestry Society of Kenya and the Society for Conservation Biology.

Total vascular plants and conservation checklist of the plants of Mpala Research Centre

Author: Dr. David Kimutai Melly

ABSTRACT

This study will fill in the gaps in the taxonomic inventory of all vascular plants in the ForestGEO 120-ha savanna plot where all trees and shrubs have been measured, identified, and permanently marked down to 1 cm diameter at knee height (dkh) using the general walk over survey method. It focuses on the collection and identification of all herbaceous and free-standing shrubs with dkh <1cm on the basis of which a checklist of all vascular plants that occur in the Mpala was compiled. Supplemental botanical collections were also used for plants found outside the ForestGEO plot Mpala Ranch and in combination with the literature, online databases, herbarium collections at the National Museum of Kenya, and floristic field surveys, we will publish a checklist of vascular plants of the entire Mpala and ultimately used to produce a field guide for plants of Mpala.

The study resulted in collection of 623 plant species spread 73 families with Poaceae, Fabaceae and Asteraceae being the dominant families with over 30 species each. Four species found were vulnerable under the IUCN Red list while one was categorized as endangered. The comprehensive checklist will be essential for managers, community associations, conservationists, students, and research scientists in Kenya and globally for implementing critical decisions for the conservation and long-term monitoring of this vital biodiversity resource.



DR. ELIZABETH CHIRCHIR

Dr. Chirchir is a lecturer in the School of Pure and Applied Science Department, Bomet University College. She holds a PhD in Environmental Biology, from University of Eldoret (UOE), a Master of Science degree in Zoology (Aquatic Ecology) from UOE, and a bachelor's degree in Agricultural Education and Extension from Egerton University, Kenya.

She is interested in Research on innovative greening technologies for conservation of the biosphere and using blue economy to improve human wellbeing.

She has authored and published papers in local and international journals among them African Journal of Education and Science and Technology. She is also an active in conferences, workshops, and seminars, the most recent being 'Greening Africa into Prosperity' event sponsored by the DAAD.

Climate Change Fueling Conflicts and Banditry in Northern Kenya: Can Blue Economy Concept be a remedy?

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Abstract

Climate change poses unprecedented challenges worldwide, impacting ecosystems, livelihoods and exacerbating existing vulnerabilities. Northern Kenya, characterized by its arid and semi-arid areas, has witnessed a discernible increase in conflicts and banditry, partly attributed to climate-induced resource scarcity. The ongoing longstanding tensions between herders and landowners have led to increasingly organized and violent attacks, heightening intercommunal tensions. This study examined the nexus between climate change and the surge in conflicts and banditry in Northern Kenya, emphasizing the need for innovative and sustainable solutions. Content analysis of publications between 2004 and 2024 was conducted to assess how climate change is exacerbating ongoing banditry in Northern Kenya. The results revealed a correlation between the increasing prevalence of persistent banditry in Northern Kenya and intensity of climate-related factors, including drought, heat stress, diseases and hunger affecting humans and livestock. This escalation is further intensified by experiences of marginalization, ethnic rivalries, inadequate policing and influx of illicit arms from neighboring countries. As a potential remedy, the Blue Economy concept offers a holistic approach that emphasizes the sustainable utilization of aquatic resources, offering opportunities for economic diversification, employment generation and ecosystem preservation. Implementation of this concept in Northern Kenya involves adopting sustainable water management practices, including rainwater harvesting and watershed management, which can be leveraged for aquaculture. This shift can decrease reliance on livestock and small-scale

rainfed agriculture, thereby reducing vulnerabilities. The donors, National and local governments should be encouraged to invest in infrastructure development, cold storage facilities, transportation networks and processing plants, to support the growth of Blue Economy activities. Provision of training programs and educational initiatives to local communities is necessary for sustainable resource management within the Blue Economy framework.

Keywords: Climate change, vulnerabilities, banditry, conflicts, pastoralist communities, ASAL, Northern Kenya, Blue economy



DR. JAMES O. OWINO

Dr. James O. Owino is a Geography Lecturer in the School of Arts and Social Sciences Department of Geography, Environment and Development Studies, Bomet University College. He holds a PhD in Environmental Studies (Human Ecology) from University of Eldoret-Kenya, a Master's of Science Degree in Environmental Studies (Human Ecology) and a Bachelor of Science Degree (Forestry) from Moi University-Kenya. Further he holds a Post-Graduate Diploma in Education from Kenyatta University-Kenya, a Certificate in Environmental Impact Assessment and Audit from Moi University-Kenya. He is a lead expert with National Environment Management Authority (NEMA) and a member of Environmental institute of Kenya and Nature Kenya. Dr. Owino was a Pioneer Lecturer of a Master's Programme in Climate Change and Environmental Sustainability, a partnership between Amoud University, Somaliland and the United Nations Development Programme (UNDP) with funding from the Global Environmental Facility (GEF). He has taught Geography and Environment related courses at various Kenyan Universities including Kisii University, Laikipia University and University of Eldoret. Besides teaching experience, he has successfully supervised several Masters Students to completion. His research interest includes Climate Change, Natural Resource Management and Livelihood Diversification Strategies among Rural Communities. Dr. Owino has published articles in both local and international journals.

Opportunities and Innovations Available to Small Holder Farmer in Coping with Rainfall Variability in Bunyala Sub-County, Busia County, Kenya

Author: Dr. James Owino, Bomet University College, Kenya

ABSTRACT

Research has shown that small-holder farmers in developing countries are more vulnerable to rainfall variability due to their high reliance on rainfed agriculture and poor coping capacity. This has led to crop failure and livestock death affecting the livelihood and food security status of the farmers. This has led to the need to find solutions to enable farmers secure sustainable livelihoods. It is against this background that this study sought to examine the opportunities and Innovations open to Small holder Farmers to enable them cope better to rainfall variability in Bunyala Sub-county. Data collection tools used included, questionnaires, interviews, focus group discussions, field observation and photography was also used to examine the opportunities and Innovations open to Small Scale Farmers to enable them cope better. Bunyala Sub-County has about 15,245 households in six locations. Proportionate stratified sampling was used to select the required number of respondents. The stratification was based on the populations of six

locations. A total of 384 households were randomly selected and sampled from the selected locations together with 11 key informants. Qualitative data analysis techniques were used while the results were presented in tables, figures and charts. Findings of the study indicates that despite changes in livelihood activities to cope with the changing climatic conditions farmers still suffer loses and reduced income, there is however a ray of hope offered by the many opportunities and innovations farmers are undertaking. The study recommends that coping practices must be promoted while simultaneously strengthening long-term, sustainable institutional responses to help households adapt to rainfall variations. There is need to promote livelihood diversification initiatives that enhance improved income generation at the same time ensuring they have minimal negative impacts on the environment. The farmers should be encouraged to make use of innovations and opportunities available such as Access to credit, Access to information, Access to facilities and services and technology. They should be sensitized on the need to engage in sustainable adaptation strategies such as planting drought tolerant crops and use of agricultural technology. Small-scale farmers should focus on information gathering from agricultural and financial institutions to enhance social networks and improve on their financial capability. Local communities should be empowered through training and skills enhancement to improve small-scale agricultural productivity.



MS. MICHELINA ECHWA EWOI

Ms. Echwa Ewoi is a Research Assistant at Bomet University College. She holds a Bachelor of Arts Degree in Economics and Sociology and a Masters in Data Analytics. She is well versed with multidisciplinary research with a wide experience and specialization in data collection and analysis. She is equally skilled in SPSS, MATLAB and STATA. She also has exemplary skills and is talented in Music.

A Mixed Deep Recurrent Neural Network Model for Weather Prediction

Author: Michelina Ewoi Echwa

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ABSTRACT

Climate change has been a pertinent issue in the world, affecting various social and economic human activities such as transport and food security, therefore threatening life's existence on Earth. Weather prediction has been used as a bridge to mitigate the problem by anticipating the weather trends to streamline policies and mitigation strategies. However, unimaginable trends have always emerged within the weather pattern, calling for better prediction measures. This study aimed to investigate the Performance Enhancement of weather prediction through the Combination of LSTM and GRU Architectures to establish the optimal prediction by developing a mixed deep recurrent neural network model using lstm-gru for weather prediction. The study envisaged to investigate and identify attributes that can be used to predict the weather, develop LSTM - GRU deep recurrent neural network Model that uses the identified attributes to predict the weather and to evaluate the effectiveness of the developed model. The study evaluated the individual strengths and weaknesses of LSTM and GRU models for weather prediction, determined the optimal combination of LSTM and GRU units for weather prediction, and investigated the impact of the hybrid LSTM-GRU approach on RMSE, and evaluated and validated the hybrid model. To achieve these objectives, the study used the factor analysis method to find out the weather attributes that can be used to predict weather, used jupyter notebook to train the model and evaluated the model using the Root mean squared error measure. The study established the most significant attributes of that can be used for weather prediction. Additionally, the study developed the optimal hybrid model for weather prediction with two successive layers of lstm and gru starting with lstm followed by gru with high parameter loading on gru. Model evaluation revealed high accuracy with an RMSE value of 0.103.

Keywords: Deep Recurrent Neural Network, GRU-LSTM, RNN, Weather Prediction



SHARON KASITI MUTEHELI

Sharon is a registered nurse currently working with Malaica as a nurse Midwife. She has a passion for reproductive health and has supported hundreds of mothers in their pregnancy journey both in the hospitals and in the digital space. She is also volunteering as a program manager for cervical and breast cancer prevention program in Juani project, Siaya. Currently she is also pursuing a Master's in public health (Health promotion and International health) at Maseno University.

Embracing technology in providing maternal child and neonatal health. A case of Malaica pregnancy program in Kenya

Author: Sharon Kasiti Muteheli

Abstract

Technology is being embraced by most sectors to improve their service delivery. This includes education, business, agriculture and health. Maternal mortality ratio in Kenya is at 355 per 100,000 live births. This is way above the global MMR of 223 per 100 000 live births. Gaps and delays in maternal health care are the greatest contributors to this. One such innovation in health is the Malaica pregnancy program. This is an online program based on WhatsApp mobile application. The program aims to provide comprehensive and personalized care for pregnant mothers. This contributes to the government of Kenya agenda of reducing maternal and neonatal mortality and in turn contribute to SDG3: to ensure good health and wellbeing for all at all stages of life. When a mother joins the program, they are paired to a nurse midwife who ensures the mother receives quality evidence-based care. The mother is also placed in a WhatsApp support group with other mums in the same trimester. They get to receive daily messages with updates on what to expect at their stage of pregnancy or appointment reminders. In addition, Malaica hosts Flash Chats on WhatsApp, led by experts on various pregnancy and parenting topics. This has made the pregnancy and postpartum experience of most of them convenient. This paper therefore aims to highlight how Malaica as an innovation is using technology to improve maternal health; find out impact that malaica has achieved in maternal health care and also how use of technology by Malaica contributes green health care. It is hoped this innovation will improve maternal and child outcomes. In addition it will also contribute to green health care.



PROF. PATRICK B. OJERA

A Certified Public Accountant of Kenya (CPA (K)), Professor Ojera joined Bomet University College as an Associate Professor of Finance and Accounting in October 2020. He boasts extensive experience in both top industry leadership and academic administration, with a strong focus on financial, strategic, and general management. Professor Patrick Boniface Ojera brings a wealth of industry experience to his teaching of accounting, finance, auditing, taxation, and management. Professor Ojera is passionate about developing future generations of ethical financial and general management professionals. Professor Ojera is not only a dedicated educator but also a prolific researcher. He has co-authored a University-level accounting textbook and has over 60 publications in esteemed, peer-reviewed journals. In recognition of his achievements, Professor Ojera was awarded the prestigious 2019 Emerald Literati Award for Outstanding Author Contribution for his book chapter, "Indigenous Financial Management Practices in Africa: A Guide for Educators and Practitioners." Published in *Advanced Series in Management* (Volume 20, pp. 71-96), this work demonstrates Professor Ojera's commitment to advancing knowledge in the field. Furthermore, his dedication to fostering the next generation of scholars is evident by his supervision of over 60 postgraduate students to completion.

Creative Accounting Education for Public Financial Management-The Critical and Creative Perspective of Students

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Kenya (corresponding author)*

*Co-Author: Wayong'o W. John, Department of Curriculum Instruction and Education
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ABSTRACT

The need to understand the role of accounting in its social and organizational context, particularly in public sector financial management in Kenya has come to the fore in recent times. This is in view of reports in the public domain on corruption. This scenario has highlighted a possible deficiency in the university accounting curriculum given that a sizeable proportion of undergraduate students, the future public affairs managers, take accounting as a non-major.

This study examines how to enhance creativity and innovation of university accounting students in relation to a class assessment task.

Guided by the perspectives of diffusion of innovation theory and transformative

learning theory, this study will analyse creative experience of first year, second semester non- accounting major students to respond to assigned tasks.

This task requires students to explore the ethical facet of reported cases of corruption in Public Sector Financial Management and express their individual understanding of these phenomena. The assessment tasks will be developed through a joint cooperative effort of the lecturers of accounting and learning, teaching and curriculum specialist from Bomet University College. In view of the exploratory nature of this assessment task, it will be based on written presentation by ten groups drawn from an enrolment of 150 students.

The findings are expected to reveal that the creative experience of students in such a creative approach to assessment releases possibilities for a transformative educational experience.

Whereas this study focuses on accountancy students, the presented type of assessment has prospective application for other academic disciplines. The practical implication of the study is a need to foster a culture on creativity and innovation in future public financial managers for national sustainability. The social implications will be that study will promote creativity and innovation mind-set among managers of Kenyan public sector. It also provides an opportunity for a transformative educational experience in accounting education.

Keywords: creativity and innovation, accounting education, critical thinking, transformative education, public financial management



DR. JOHN WEKESA WANJALA

Dr. John Wekesa Wanjala is currently a lecturer at Bomet University College in the School of Business Department of Management Science. He holds bachelor of business administration (human resource option), master of business administration (human resource option) both from Kenya Methodist University and PhD in Human Resource Management from Jomo-Kenyatta University of Agriculture and Technology. He also possess Higher National Diploma in Human Resource Management from KNEC and ordinary Diploma in Human Resource Management from Mombasa Polytechnic. He is a full member of the institute of human resource management which is a professional body for human resource practitioners. He has over 20 published papers in peer review journals.

Disaster Preparedness in Learning Institutions: Case of Technical University of Mombasa and TVET Institutions in Nairobi

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ABSTRACT

There is a growing knowledge of disasters preparedness in learning institutions in the world (Ray- Bennett, (2010). Many academic institutions are damaged in Pakistan (Akhmat, G., et al., 2014). The study adopted Qualitative Research design, sampling was purposive in Technical University of Mombasa and TVET institutions in Nairobi County to collect both Primary and secondary data. The study focused on learning institutions disasters history, control measure and management. Observation and questionnaire were used to collect primary data while Secondary data from Government reports were critically analyzed. The SPSS software was used for the analysis and presented in percentages. It was established that Disaster preparedness was not adequate in Technical University of Mombasa and TVET institutions in Nairobi County. It was revealed that institutions that had implemented disaster preparedness plan including escape routes was 40% at technical university of Mombasa while TVET institutions in Nairobi were 30%, fire extinguishers was 50% at Technical University of Mombasa while at TVET institutions in Nairobi were at 40%, accommodation for the affected students at Technical University of Mombasa was 0% which was also at 0% at TVET institutions in Nairobi, medical care for the injured at technical university of Mombasa was 0%, same to TVET institutions in Nairobi, reunion of the affected students with their families at Technical University of Mombasa was 0%, same to TVET institutions in Nairobi, training of the students on defense mechanisms at technical university of Mombasa was 30% while 40% at TVET institutions in Nairobi, response mechanisms during an attack with terrorists at technical university of Mombasa was 45% while at TVET institutions in Nairobi was

55%, measures to detect any terrorism and disaster indicators and security personnel was 40.0% at Technical University of Mombasa while at TVET institutions in Nairobi was 60. Lightning is the leading cause of disaster (Cooper, (1995). Kenya as a developing country is vulnerable to various natural and man-made disasters that cause overwhelming effect on people, environment and economy (Birkmann, J. et al., 2013). Communication barrier, drug abuse, media and societal influence cause disasters in academic institutions, Gicharu, C. W. (2015). the necessity for disaster preparedness are Guide maps, evacuation routes, assembly region, first aid facilities and extended care center, provisions for accountability of people, organized students handover to parents or guardians with short-term accommodation, if need be with evacuation alarm information clearly communicated, allocation of resources for emergency and steady running of the system, institutions with special needs shall be given special attention and should be distributed to every staff member, one copy filed and another sent to local law enforcement and also on all notice boards and a state of high alert should be in place.



DR. JOHNMARK OBURA

Dr. Johnmark Obura is a Senior Lecturer in the School of Business and Entrepreneurship, Bomet University College, a constituent college of Moi University, Kenya. He Holds a PhD in Business Administration (Finance) from Maseno University, Master of Business Administration (Finance), Master of Science in Applied Statistics and Bachelor of Science in Mathematics and Computer Science; from Jomo Kenyatta University of Agriculture and Technology, Kenya.

His research interests are in Mathematical Finance, Quantitative Finance, Quantitative Analysis, Business Research and Business Information Systems. He is a member Kenya National Statistical Society (KNSS) and Kenya National Quality Institute (KNQI). He is currently the Head of Research, Innovation, Training and Extension at Bomet University College. He has previously served as a Chairman of Department of Management Science at Maseno University, Kenya. He has experience in e-learning content development and has supervised a number of postgraduate students. Dr. Obura has published in a number of articles in refereed international journals.

Economic Resilience and Determinants of Exchange Rates Volatility: An Empirical Review

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ABSTRACT

Economic resilience is a major way to reduce economic losses from shocks or disasters arising from economic, man-made or natural occurrences. Some of such occurrences in recent times include: the Covid-19 Global Pandemic that affected the operations of the whole world and forced nations to devise ways for Economic continuity, the wars between Russia-Ukraine War and the Israeli-Palestinians. The Pandemic for example just like the wars affected cross border trade and movement due to the restrictions that were imposed across the globe. During and after the Pandemic, most nations, institutions, and organizations were able to deflect, withstand, and rebound from the shocks in terms of the course of their ordinary activities or through ingenuity and perseverance in the face of a crisis. Moreover, this “resilience” is often implemented in a relatively costless manner, such as conserving resources in short supply, recouping lost production, or reallocating resources in response to market signals. Respective policy-makers rushed to assure their citizens of remedial actions to reduce the risk of future potential shocks. Where possible, they have emphasized preventative measures. But the reality is that all future pandemics cannot be prevented, in part because of the likelihood that these events will involve unexpected forms, magnitudes, or locations. One key economic variable used to measure the economic resilience is the foreign exchange rates between nations. Respective nations have developed policies to ensure that their currencies remain stable

during and after catastrophic shocks so that they can remain economically stable. One major challenge that such economies do face is the negative effects of dollarization and hence must ensure currency stability. This study was therefore designed to perform an empirical analysis of the determinant of foreign exchange rates volatility as measure of economic resilience. A meta-analysis conducted revealed that the key determinants are: Differentials in Inflation, Differentials in Interest Rates, Current Account Deficits, Public Debt and Terms of Trade. It also analyzes empirically, policy and technical considerations in making exchange rate regime choices and discusses the supporting policies that should accompany a given regime choice to make that choice sustainable. The study concluded that: the choice of the exchange rate arrangement is more than a technical issue; the exchange rate arrangement and the overall policy framework need to be consistent and that any advice on the choice of an exchange rate arrangement should be country specific. The study may inform policy formulation intended towards achieving country specific economic resilience.

Key Words: Resilience, Sustainability, Shocks



DR. TIBERIUS BARASA

Tiberius Barasa, (PhD) is a Researcher, Policy Analyst and a Lecturer of Political Science, Public Policy and Public Management. He is currently based at Bomet University, School of Arts and Social Sciences, Kenya in the Department of Arts, Governance and Communications. He also serves as the Coordinator of Postgraduate studies in the school. In addition, he is a board member of the University of Dar es Salaam Research Chair on Forced Displacement. His current research interests are in forced displacement, water governance and federalism in Africa. His recent publications are also in these areas.

Inclusion of the Refugees into Development Plans and National Policies in Kenya: Opportunities and Challenges¹

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Abstract

While the recent initiatives by the Government of Kenya, supported by the UNHCR, targeting both the refugees and the host local communities have been implemented since 2021, questions have emerged whether these initiatives are bearing fruit and whether the refugees have increased their access to crucial government services such as health, education and economic opportunities. This study sort to explore the opportunities and challenges of inclusion of refugees into development plans and national policies of the host country, Kenya. The study adopted an explorative and qualitative approach and was conducted within Nairobi city on the urban Sudanese refugees. From a list of 200 Sudanese refugees residing in Nairobi, 20 households were determined through systematic sampling and at least two adults who were in each household were then interviewed using an interview schedule and guiding questions. The data collected was processed and analysed thematically. The study findings indicate that almost all the respondents are not aware of governments' initiatives targeting the refugees' inclusion in development plans and national policies. Thus, implying that they have never been consulted on any of these initiatives. About half of the households receive public services provided by the government of Kenya as ordinary Kenyans, while the other half prefer to seek private services. Those who receive public services send their children to public schools, access health care services from public health care facilities and are running their small enterprises. Those who prefer to send their children to private schools and access private health care facilities are financially supported by their relatives and friends who

are working in Sudan and abroad. The main challenges the refugee households face include limited opportunities for employment, difficulty in getting the UNHCR identity card, lack of capital for business, difficulty in getting business permits and limited knowledge and skills for business activities. Therefore, they appeal to the UNHCR and the government of Kenya to assist in addressing their challenges.



MR. GIBYEGON R. HILLARY

Gibyegon Rotich Hillary is a currently first year Post graduate student at Bomet University (A Constituent College of Moi University) majoring in Master of Science in Project Planning and Management. Recently work at County Government of Bomet, department of Roads, Transport and Public Works, as a county Electrical Engineer and self-employed as IFC World Bank Group as an EDGE Expert. Intend to work in a sustainability consultancy industry after post graduate graduation to follow my passion of Sustainability Project management consultancy. In their spare time, they can be found through Email; gibyegonhillary@gmail.com and contact Mob. No. +254720592074 / +254736592074

Effects of Green Buildings on Project Management Sustainability Case of Bomet County Government, Kenya.

Author: Gibyegon Rotich Hillary SBE/MPM/002/22

Co Author: Dr. Clement Nkaabu & Dr. Geoffrey Biwott

Bomet University School of Business and Entrepreneurship

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Abstract

Green buildings are buildings that are designed and built in such a way that utilizes energy, water and embodied building materials efficiently and sustainably. Outside the aesthetic pleasures of such a building, several reasons necessitate such buildings. The world's population keeps growing together with the construction rate of buildings that need to reduce their environmental footprint in order to mitigate global warming. The study specific objectives will be to determine the effect of green building technologies, environmental quality, Sustainable Site Planning and Management (SM) and Innovation (IN) on project management sustainability among buildings in Bomet County Government, Kenya. The study will be informed by the green buildings index GBI and Peattie (2001) green buildings matrix theory. The study will employ an explanatory research design to hypothesize the relationships between variables and will sample 320 buildings in Bomet County Government, Kenya from a target population of 1945 buildings in the County Government. Simple random sampling technique will be used to select sampled buildings from the target population. A structured questionnaire will be used to collect data and descriptive and inferential analysis will be used to analyze data. Linear regression equation will be developed and used in testing the hypothesized effects. The study will provide new insights into the effects of green buildings on buildings in Bomet County Government, Kenya.

Keywords: *Green Buildings, Project Management, Sustainability.*



DR. HELLEN METTOH

Dr. Mettoh holds Doctor of Philosophy in Educational Psychology from the University of Eldoret, Master of Philosophy in Guidance and Counselling from Moi University, Higher Diploma in Counselling Studies from Kenya Association of Professional Counselors and Bachelor of Education Degree (Arts) from Egerton University. Dr. Mettoh has a wide range of mentorship and teaching experiences and currently a lecturer at Bomet University College handling educational psychology, guidance and counselling, special needs education units and research supervision. She has presented a wide range of papers in international conferences where the latest paper was on the university students' mental health in the wake of COVID- 19 pandemic: The Kenyan Context. She has also published widely in international peer reviewed journals. She is also a registered member of Kenya Association of Professional Counsellors. Her research interests include: Mental Health issues, Gender, Education, Development, Drugs and Substance Abuse, Human Sexuality, Globalization, Information Technology and COVID-19 among others.

Role Modeling as a Tool for Changing Lives. Times of a Retired Primary School Teacher: A Life History Perspective

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ABSTRACT

The focus of this research was on the times of the retired primary school teacher from childhood to the period of the study. The study engaged life history because this is one of the methodologies of qualitative research. The researcher adopted a qualitative research design since the data collected was not easily quantifiable. The researcher selected one female participant only since this was an in-depth study of the times of the retired primary school teacher. The researcher engaged in unstructured interviews, observations, documentation, study of artifacts, and audio recording and she kept a journal throughout the data collection period. The method that the researcher used to form a close relationship with the participant was 'friendship' as the closer the relationship was the more the participant was able to reveal her thoughts and feelings. The philosophical orientation of this qualitative study was relativist ontology and constructivist epistemology.

Trustworthiness of the study was achieved through “the member check” to check validity, while reliability was enhanced through cross-checking the transcripts for obvious mistakes and confirmations from the documentation. The pilot study was conducted with a female primary school teacher from one of the sub-counties in Uasin Gishu County who had also taught in the 1960s. Ethical considerations were observed throughout the study. Data were analyzed thematically and the results were presented as reported by the participant with the aid of thematic networks. According to the findings of the study, the global theme that emerged was the retired teacher’s experiences throughout her life. The organizing themes that emerged were based on the retired teacher’s experiences concerning their neighbors, family, school, and social life. From the results, the study concluded that mother Marco and her parents were role models to the retired primary school teacher. Colonial education impacted the retired teacher positively, the retired teacher was creative as she made cultural attires for folk songs, morality and integrity were part and parcel of the participant’s life, her friends contributed positively to her life, and her inclusion of the learner in teaching/learning process yielded positive results. Another conclusion is that the participant’s character and choice of friends favored her choice of career. Wars made her more assertive and resilient. A closely knitted positive circle buffers children from outside influence and the education system ought to change lives. The study recommended that teachers and parents ought to be warm, supportive, and role models to their children and learners, and engage in fair treatment to ensure they come out of the education system as successful people all-round as the stability of a family and role modeling have transfer effects. The inclusion of the learner in the teaching/learning process ought to be key in teaching. Another recommendation is that the selection of teachers ought to be embedded in personal biography. A close circle of positive significant others protects the children from external negative influence. The study also recommended that there is a need for people to choose friends wisely for them to contribute positively to their lives, and be assertive and resilient.

KEYWORDS: Retired Primary school Teacher, Home, Mau Mau Wars, School, Neighbors, Friends, Marriage, and Social Life.



DR. PETER MUCHEMI (PhD)

Dr. Peter Muchemi holds a Doctorate Degree in Counselling Psychology from Laikipia University. He is a lecturer in the Department of Educational Psychology & Foundations, School of Education, Bomet University College, training in counselling and psychology; and supervision of postgraduate students. As professional Counsellor with 15 years' experience, He has served as a practitioner in counselling psychology in the Government of Kenya

offering counselling services to persons employed by the government. Further, he has been involved in addressing Mental health challenges among community members, offering support system for persons struggling with and recovering from alcoholism and other forms of addictions. He has published widely in areas of counselling, psychology and education psychology in internationally refereed journals. He has previously served in leadership as a departmental head and a High school principal, and has a wide range of teaching experience at University, Diploma College and high school levels. He is engaged in innovation and community activities currently serving as the Vice Chair and Agricultural counsellor for Kiriita Self Help Group, an organization which involves itself in empowerment of farmers and in research on sugarbeet growing and sugar production. He is a Consultant in research, education, Counselling, Psychology and Guidance.

School Managers and Teachers Awareness of Mental Health Challenges among Students as a Hindrance in Overcoming Education hardships and challenges in Kenya

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ABSTRACT

According to WHO, a significant number of youths experience mental disorders including behavioural disorders, depression and anxiety which has increased suicide rates among them. The traditional view of mental conditions associates mental challenges with witchcraft, madness, indiscipline and social misfits. Most educators and school managers are stuck in the old model of perceiving learners with mental conditions as undisciplined, antisocial and poorly brought up. In view of this, learners experiencing mental challenges have experienced stigmatization in schools from their peers, teachers and school managers. Such learners have therefore suffered negative labelling, segregation, social deprivation, persistent removal from school, suspension and expulsion from learning institutions despite the fact that there exist international, regional and national laws and teacher professional codes governing children's rights.

The learners therefore regularly suffer physical punishment and psychological violence which augments the challenges associated with of mental conditions. This demonstrates that with modern stressors, sophistications and challenges like COVID-19, our ever-growing global youth population cannot be committed to a school workforce fraternity with little awareness, capacity and expertise in dealing with children and adolescent mental health challenges. This review focuses on experiences of students with mental health challenges in the school set up. Additionally, the paper, from a mental health practitioner's perspective, presents experiences of learners who suffered PTSD, depression, low self-esteem among other conditions while in school. This review paper makes recommendations on the need to address school managers and teacher awareness and capacity on management of mental health conditions among students. Hence, the need to invest more in training the school workforce on mental health challenges experienced by children and adolescent and their management for realization of education goals in Kenya.

Keywords: Capacity, Mental Health, Mental Health Awareness, School Manager, Students, Teacher, Education hardships and challenges



DR. WAWERU MURIITHI

Dr. Waweru Muriithi holds a Doctorate Degree in Counselling Psychology from Egerton University, a Masters in Guidance and Counselling and a Bachelor's Degree in Education (Arts) from The University of Nairobi. He is a lecturer in the Department of Educational Psychology & Foundations in Bomet University College. He is an experienced educator and has served as a teacher in secondary schools in Rift valley. He has practical competencies in conducting researches in education and psychosocial programmes. He sits in the board of Education and Social Sciences Research Association of Kenya (ESSRAK). He is a registered psychologist and researcher with several publications in internationally refereed journals. He has also co-authored a book on Research Methods.

The Place of Mental Wellness in Building Resilience in Institution of Higher Learning: Reflections

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ABSTRACT

The recognition that mental health is more than the absence of mental illness is increasingly being appreciated as with a shift towards a more holistic approach to mental health. These realizations are promoting a new kind of focus on mental health that identifies components of mental wellness that need to be encouraged in the dynamic and complex ecosystem that humans are finding themselves in the 21st century. This new way of understanding is increasingly being seen on the individual's capacity to think rationally and logically and the ability to cope with the transitions, stresses & traumas in ways that allow emotional stability and growth. A critical point of this realisation is the shift perception that a person was considered to have good mental health simply if they showed no signs or symptoms of a mental illness towards the embracing of a more holistic approach to mental health. This conceptual paper examines the meaning of mental health and wellness, characteristics of mental health, the burden of mental illness and the need for mental health awareness in promoting resilience in Institutions of higher learning. This is against a backdrop of increased mental and neurological disorders resulting in family and domestic strife, low remuneration, slow job progression and being over-engaged with work. Effects of burnout such as feelings of exhaustion either physical or emotional as well as insomnia, anger & depression, have been on an upward trend.

Key words: Mental Health, Wellness, Resilience



DR. PIUS SIMIYU CHILILIA

Dr. Simiyu Chililia Pius holds a Doctorate of Philosophy Degree in Curriculum and Instruction from Kibabii University, a Master of Education in Curriculum and Instruction from Masinde Muliro University of Science and Technology and Bachelors of Education Degree from Kenyatta University. Dr. Simiyu has vast academic experience of having taught as an assistant lecturer for over 7 years at Masinde Muliro University of Science and Technology, Kibabii University, Mount Kenya University and Daystar University. At Kibabii University Dr. Simiyu supervised several postgraduate students and mentored

many. He has done Scholarly Research and published several papers in Refereed International Journals, apart from paper presentations in conferences. His Research Interest has been centered on application of ICTs and Use of Technology in Enhancing Instruction in class. His PhD competitive Research at Kibabii University won Project Funding by the National Research Fund in the year 2017/2018. Dr. Simiyu currently is a lecturer, Department of Curriculum, Instruction and Technology in the School of Education, Bomet University College. He has been a High school teacher and Administrator for over 31 years mentoring the youth. He has been involved in several Outreach Programmes in HIV/ AIDS Awareness, Mentorship and Career sessions, Poverty Eradication and National Conservation Programmes. He has been the Kenya Scouts Association Chairman for Bungoma County, apart from sitting on several Boards in the Learning Institutions. He is a member of Sub-County Stakeholders Forum on Teenage Pregnancy and a member of the County Education Forum. Dr. Simiyu has been a Director and Consultant at Eagle Bird ECDE Training Institute for over 10 years and a KESSHA Academic Chairman at Sub-County Level.

Twenty First Century Pedagogical Approaches for Teacher Preparedness: A Review Paper

Author: Dr. Pius Chililia

ABSTRACT

Quality education equips a child with the needed knowledge, skills, attitudes, and values for the betterment of self and other members of society. This paper sought to explore, review and make recommendations for the use of innovative 21st century pedagogical approaches to curriculum teaching and training. Quality teaching and human resource training require the adequate provision of resources through a steady supply of finances. The outcome of this survey review is to enhance on improving the lecturers' pedagogical curriculum skills to uncover some of the underlying challenges facing university teaching staff and propose the way forward. Further suggestions and recommendations, even with help in resource provision, to facilitate lecturers in their

pedagogical undertaking in preparing learners to implement the Competency Based Curriculum (CBC) in Kenya. The outcome may provide some pedagogical insights in the dynamic curriculum. Suggestions put forward should be adopted to address the prevailing challenges to ensure the provision of quality higher education in teaching, training and preparing the teaching human resource.

Keywords: Twenty first Century, Pedagogical Approaches and Teacher Preparedness.



DR. VIRGINIAH WANGARE MUSHERU

Dr. Virginia Wangare Musheru is an educationist and an expert in Guidance and counselling. She holds a Ph.D. in Guidance and Counselling from Laikipia University and is an Educationist with a vast of experience in teaching and leadership in Kenya. Currently she is serving in a leadership position in high school and offers guidance, counselling and mentorship to young people at high school and university levels. She has experience in teaching at university students as a part time lecturer in areas of education, psychology, counselling, and research among other areas. Her interest is in researching and disseminating research information related to psychology

and education.

Family-Level Cultural Capital and Pupils' Preparedness for Upper Primary in Nakuru County, Kenya

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ABSTRACT

Pupils' mastery of lower primary curriculum has been a critical determinant of their academic achievement in upper primary and consequently their performance in the final examination at the primary cycle of education in the 844 curriculum. Pupils' cumulative performance in Kenya in the Kenya Certificate of Primary Education (KCPE) exit examination averaged at 250.4 marks out of the possible maximum of 500 marks from 2019 to 2023. Pupils' performance during the same period in Nakuru County where the study was conducted averaged at 244.6 marks. The noted low performance in the County could be linked to inadequate mastery of lower primary curriculum which forms the foundation for learning the relatively challenging curriculum in upper primary. This trend may have an implication on the students' performance as they transit from primary to junior school in the competence based curriculum (CBC). Although pupils' mastery of lower primary curriculum is dependent on many factors, the study addressed itself to family cultural capital for it was construed to be one of the critical home-level correlates of academic achievement in lower primary level. Using an *ex-post facto* research design, data were collected from 254 class three teachers in Nakuru County through a personally delivered questionnaire and analysed using simple regression statistic at 0.05 alpha level. The results revealed a significant linear relationship ($F= 3.491$; $df= 253$; $P< .05$) between family cultural capital and pupils' preparedness for upper primary. The study further showed that the beta value ($\beta= .111$) was positive and statistically significant ($t= 1.770$; $P< .05$). These findings indicated that the selected aspects of family cultural capital were not only impacting positively on pupils' preparedness for upper primary but the impact was also statistically significant. The adjusted R^2 value ($R^2= .472$) further revealed that

the selected aspects of family cultural capital accounted for 47% of total variation in pupils' preparedness for upper primary. The study offers useful insights on how families can build cultural capital in their children which they will build on as they progress through lower primary. This will go a long way in increasing their level of preparedness for upper primary, and consequently raise their academic achievement in the KCPE examination. Hence, borrowing from these findings, as the Country progresses in the implementation of CBC it is considerably important to consider the role of family-level cultural factor in learners' preparedness in transiting from Primary to Junior school.

Keywords: family cultural capital, lower primary pupils, preparedness, upper primary



DR. LUCY NGUNDO

Dr. Lucy Ngundo is an accomplished academic, specializing in Special Needs Education, particularly focusing on Emotional and Behavioural Difficulties. Currently serving as a Lecturer at Bomet University College, she holds key roles as Chair for the Disability Mainstreaming Committee, Coordinator for the Special Needs Education Program, and a member of the counseling department. With over a decade of experience, Dr. Ngundo has held notable positions such as Head of Department SNE program at Mount Kenya University, an examiner of postgraduate students, and an examiner and Lecturer at Tangaza University College. Her expertise lies in developing curricula for various educational programs, mentoring numerous undergraduate and graduate students, and facilitating interactive learning environments. She has also contributed to internationalization efforts through programs like the COIL Model by La Salle University. Dr. Ngundo has actively engaged in research in various key areas her dedication is reflected in her prolific publication records in reputable journals and chapters and conference presentations. Beyond academia, She has held consultancies and collaborations with organizations like ISRD4, ANDY, Able Africa, and KICD, and professional affiliations, including membership in AJERS showcasing her commitment to improving education and inclusivity.

Filtering Reality: The Impact of Patterns of Instagram's Use on Psycho-Social Well-Being of Undergraduate University Students

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Abstract

In the age of digital connectivity, Instagram has evolved into a dynamic social media platform, seamlessly blending visual content with interpersonal interactions. The research recognizes the far-reaching impact of Instagram across diverse domains such as education, health, business and e-commerce, entertainment and media, non-profit endeavors, and social causes, and the role of the platform as a visual-centric space for crafting and sharing realities. However, the phenomenon of "Filtering Reality" through Instagram's curation tools prompted a systematic exploration to address a gap specifically focusing on the impact of patterns of Instagram's use on psychosocial well-being among undergraduate students. The research questions were addressed through a systematic review of relevant literature, including how frequency, duration, and types of content engagement in specific patterns of Instagram use impact student's psycho-social well-being. The paper addressed ways the curated online personas resulting from distinct

patterns of Instagram use contribute to the formation or alteration of self-perception, social relationships, and emotional well-being. To provide a conceptual lens the study employed the Uses and Gratifications Theory (UGT) concerned with what individuals derive from using a medium and how they use it. The methodology adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) where a systematic search of Web of Science and Scopus identified 356 records, from which 85 manuscripts were selected after screening titles and abstracts, focusing on the relationship between Instagram use and mental health indicators. Snowballing was then conducted, yielding 20 additional articles, resulting in a total of 77 manuscripts included in the review, examining the association between Instagram usage patterns and mental health, as well as key psychosocial variables contributing to this association. The study holds significance for both academic and practical domains, offering insights that can inform interventions, policies, and educational strategies to promote a healthier online environment for students. Acknowledging the scope and limitations inherent in any research endeavor, the paper concludes by highlighting avenues for future research; exploration of positive effects, and cultural variations, and a longitudinal study in Instagram use particularly focusing on the undergraduate demographic.

Keywords: *Instagram, patterns, psychosocial well-being, undergraduate students*



DR. TONY OKWACH

Tony Okwach Omusonga holds a Doctor of Philosophy Degree in Curriculum Studies with previous experience of teaching at secondary school and over 10 years' experience of university teaching. He is currently a full-time Senior Lecturer at the Department of Curriculum, Instruction and Management, Bomet University College, Kenya. He teaches Curriculum Studies at undergraduate and postgraduate levels. His research interest is in the field of Curriculum, Instruction and Teacher Education. His research has centered on the search for relevance in the curriculum and application of instructional strategies and technology to enhance teaching and learning. He has authored articles, participated in international conferences and is linked to Academia.edu. Email: tomusonga@buc.ac.ke



DR. DANIEL K. CHESARO

Daniel K. Chesaro holds a Doctor of Philosophy Degree in Curriculum Studies, specializing in Curriculum Development. He is currently a full time lecturer in the School of Education, Department of Curriculum, Instruction and Management, Bomet University College, Kenya. He has published a number of papers in refereed journals. He has research interest in Education, Gender and Development and is linked to Academia.edu. Email: dchesaro@buc.ac.ke

Leveraging Technology to Improve Placement of Student-Teachers in Teaching Practice Schools at Bomet University College, Kenya

By

Author: Dr. Tony Okwach Omusonga, Department of Curriculum, Instruction and Management, Bomet University College.

Co-Author: Dr. Daniel K. Chesaro, Department of Curriculum, Instruction and Management, Bomet University College.

Abstract

Teaching practice is an important aspect of teacher education whereby the teacher trainee puts theoretically acquired knowledge, skills, values and attitudes into practice in a real classroom/school situation under guidance of experienced teachers. However, at Bomet University College, as is the case with most Kenyan universities offering teacher education programmes, placement of student-teachers into Teaching Practice schools is marred with a myriad of challenges. Besides consuming a lot of valuable staff time and scarce financial resources, the haphazard manner in which the placement is done renders the whole Teaching Practice exercise unpleasant and difficult for those involved in terms

of supervision and meeting the teacher-trainee's training needs. For example, sometimes the schools in which placement is done are far apart from each other implying the supervisor has to spend more time travelling rather than doing actual supervision, some lack relevant mentor teachers, and at other times those placed end up being rejected at the last hour when they report to the schools resulting in frustrations and agony for the student-teachers. Therefore, to overcome these challenges, this paper proposes the development and use of an app that links schools, teacher educators and teacher-trainees in order to achieve an efficient, effective and seamless placement of student-teachers in Teaching Practice schools at Bomet University College.

STUDENTS' PROJECTS

UNIVERSITY CATEGORY (BOMET UNIVERSITY COLLEGE)

S.NO	NAME(S)	SCHOOL	PROJECT TITLE
1.	Ivy Natasha Odhiambo, Kelvin Nyaga Mehta	SOE	Wastage Management
2.	Immaculate Asiko, Janet Masakhwe	SAS	Digital Smart Waste Bin
3.	Kipkemoi Philemon Koech	SAS	Digital Green City Technology
4.	Ochieng Erick	SOE	Installation Of Automated Carbon IV Oxide Piping In The Ceiling Boards
5.	Ochieng Erick	SOE	Imperial Tanker Lifesaver Machine (ITLM) - Emergency Rescue
6.	Victor Kolum	SAS	Reducing Road Accidents Through Installation Of Cameras And TVs
7.	Victor Kolum	SAS	Making Paper And Ceiling Boards Using Animal Waste, I.E Cow, Sheep And Goats
8.	Mary Achieng Odhiambo	SOE	Climate Change Distraction To Africa And The Whole World
9.	Francis Kimanzi, Muthengi Naomi Muthoni	SAS	Enhancing Birth Certificate Integrity To Address Socioeconomic Disparities:
10.	James Mutethia	SAS	Paint Making Using Cow Dung
11.	Dickens Aoko	SPAS	Improvised Electric Fan
12.	Dickens Aoko	SPAS	Generation Of Electricity From Footsteps
13.	Ivy Natasha Odhiambo	SOE	Green Academy: A Student Insight On Greening At Bomet University College
14.	Ochieng Erick, James Nyansinge Mwita	SOE	Sprout Inhibitory - For Food Security
15.	Kiptum Emmanuel	SAS	Nyumba Rahisi BUC Tiles

16.	Eagle Innovators (Group)		Digital Water Kiosk For Hustlers
17.	Dalton Kiprotich Korir	SOE	Integrating Nanotechnology and Phytoremediation for Enhanced Food Security through Water Management
18.	Albert Mangua Opiri	SAS	Pressures of High Mortality Rate on the Environment
19.	Francis Kimanzi, Muthengi Naomi Muthoni	SAS	Community-Based Automatic Flood Detection System
20.	Francis Kimanzi, Muthengi Naomi Muthoni	SAS	Enhancing Rainwater Stability Tank and Water Quality through V-Shaped Modifications: A Public Health Initiative
21.	Francis Kimanzi, Muthengi Naomi Muthoni	SAS	An Integrated Synergistic Aquaponics System for Sustainable Development in Kenya
22.	Victor Kolum, James Mutethia	SAS	Combating Global Warming With Sustainable Technology: Carbon Absorber
23.	Shalom Muriuki	SBE	Integrating Dancing With Technology
24.	Melly Kipketer Kelvin	SOE	Avocado Growing Project in Bomet University College
25.	Jimmy Wiggle	SPAS	Pyrolysis of Plastics to Oil

TVET CATEGORY

INSTITUTION	PROJECT TITLE	PRESENTERS	SUPERVISOR
SOTIK TECHNICAL TRAINING INSTITUTE	Load Sensing Unit	Domnic Kipngetich Maritim, Ambrose Mutai	Mr. Emmanuel Ngeno
	Automatic Gate System with Enhanced Security	Vincent Kipngetich, Cheruiyot Caleb	
	Rising Water Level Sensor	Ezra Kiplangat Kirui, Emmanuel Cheruiyot Mutai	
	Agriculture Home Made Chicken Feeder and Drinker	Shayne Chepngetich, Gilbert Langat	
	Beetroot Magic; The Perfect Remedy of Convalescence	Chebet Cavemia, Korir Allan	
KONOIN TECHNICAL TRAINING INSTITUTE	Modern Weathering Trough System	Doreen Cherono, Duncan Ngetich	Mr. Ngeny
	Simple Homemade Ventilator	Gilbert Cheruiyot, Preston Kipkoech	
	Grains Milling Machine for Poultry	Benard Kiprono, Jairus Mutai	
	Multipurpose Ergonomic Furniture	Collins Kiprotich, Vincent Kipkorir	
	Urban Hydroponics Farming	Chepkirui Faith, Slaus Madegwa	
SOT TECHNICAL TRAINING INSTITUTE	Assessing The Efficacy Of Greening Solutions In Promoting Sustainable Development: A Comparative Analysis Of Renewable Energy Policies	Philip Ngetich, Shadrack Korir	
	Carbon Footprint Of Digital Technologies: Assessing Environmental Effect And Mitigation Measures	Winnie Owoko	

HIGH/SECONDARY SCHOOL CATEGORY

S.NO	INSTITUTION	PROJECT TITLE	PRESENTERS	TEACHER
1.	AISAIK SECONDARY SCHOOL	E Jackz Chef Cutter	Aron Kiprono &Victor Langat	Mr. Domnic Cheruiyot
		How to Make a Simple Mower	Kelvin Langat & Emmanuel Rotich	
		Simple Electric Mortar Generator	Brian Cheruiyot & Enock Kipkoech	
		Making an Incubator	Emmanuel Kipkoech & Boniface Cheruiyot	
		Angelatabitha on Biology and Biotechnology	Angela Chelangat &Tabitha Gathoni	
2.	Koiwa Secondary	Water pump	Zadock kipkorir & Dennis Kipngetich Korir	Mr. Mariaka Methuselah
		Robotics	Noah Katam & Mark Rono	
		Admission Management System	Jefferson Kipyegon & Brian Kiptoo	
		Hydroflame	Mark Rono & Collins Kiptoo	
		Nexgen	Empet Joan & Chrispicious Melmex	
3.	St. Michael's Secondary	Desiccant Silica Gel	Brian Ruto & Amos Kiptoo	Mr. Korir Nehemiah
		Weather Modification Technique	Enock Ngetich & Obadiah Korir	
		Packing Management System	Brian Kirui & Walter Barak	
		Sleeping Effects on Academic and Mental Health	Sharon Chepkemoi & Brian Cheruiyot	
		Carbon Guardian	Caleb Kipkorir	

		Digital Time Counter System	Pauline Achieng & Jeremiah Otieno	
		Boda Boda Management System	Dennis Karime & Esly Ochieng	
4.	St. Mary's Girls	Electric Generator	Mamette R. Atieno & Diana Kantiro	Mr. Alex Mogusu
		Solar Energy	Virginia Chemutai & Faith Jepkorir Rop	
5.	Chebonei Girls Secondary School	Anepa Dialysis Machine	Annette Cheptoo and Peace Chepkirui	
		Emergency live saver Machine	Joy Omondi and Miriam Njeri	
		Model of the Digestive System	Tabitha Chelangat and Joy Cherotich	
		Rain Detection and Automatic Machine	Prudence Cherono and Cythia Cherono	

Mandate

The mandate of the University College is to provide university education through teaching, research and outreach.

Vision

To be a premier Green University in fostering research excellence in Science, Technology and Innovation for sustainability

Mission

To provide a conducive environment for discovery, preservation and dissemination of knowledge; to nurture critical inquiry, creativity and engagement for social transformation and advancement of humanity

Niche

Green Economy for Sustainable Development

University Motto

Green University for Sustainability

Core Values

Bomet University College is a community built upon the valued relationships among students, staff, faculty, alumni, government and other stakeholders. At the core of these relationships are BUC core values that lead to the realization of corporate culture and good governance. These are:

- i. **Integrity:** Consistency in service delivery through adherence to highest ethical standards.
- ii. **Patriotism:** To render selfless services and unwavering commitment to the University.
- iii. **Transparency and Accountability:** To maintain a culture of openness, fairness, equity, and assume and demonstrate responsibility over our individual and collective actions.
- iv. **Respect:** For diversity and the dignity of the individual, as well as attaching a premium to the contributions of each and every player regardless of one's status in the University.
- v. **Commitment:** To continuously improve on the quality of the services offered with the goal of assuring longevity and excellence of the University.