

UB NEWS

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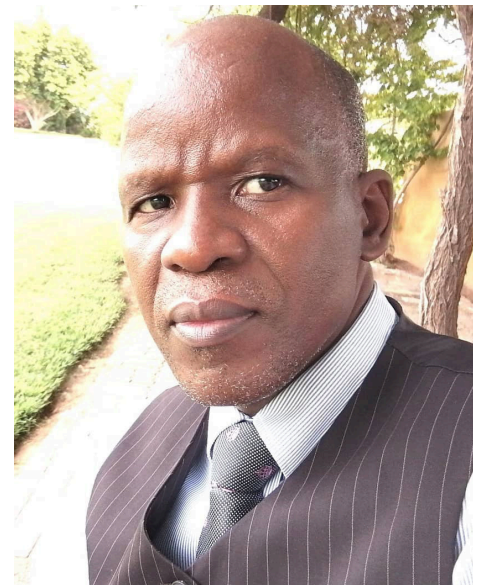
UNIVERSITY OF BOTSWANA ACADEMICS REVOLUTIONISE BOTSWANA'S HEALTH CARE



*Dr Shathani Nkhwa - Principal Investigator
Biomedical and Biomaterial Tissue Engineer Faculty of
medicine*



*Dr Thapelo Montshiwa - Co-investigator
Orthopaedic Surgeon*



*Dr Maikutlo Kebaetse - Co-investigator
Rehabilitation Scientist*

A 17-year old female student with Ollier's Disease (a rare skeletal disorder) has thus benefitted from a hip implant designed at the University Of Botswana Faculty of Medicine Regenerative Medicine Laboratory.

In line with its strategic goal of creating societal impact through cutting edge research and innovation, the University of Botswana

has embarked on an ambitious journey to revolutionize disease treatment through 3D printing technology to improve the health of Batswana. UB is taking advantage of the fact that in the developed world, 3D printing has proven to have potential for improving treatment of certain medical conditions.

According to Dr Shathani Nkhwa, principal

project investigator, the teenager had Ollier's Disease, a genetic condition characterised by noncancerous benign growths of cartilage that develops within the bones. The right side of her body was affected, resulting in shorter right upper and lower limbs.

Dr Nkhwa says that before surgery, the

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MEDICAL INNOVATIONS

student complained about impaired and limited walking, falls, low back pain, and self-image issues, which were due to a deformed (club foot and severe knocked knee) and much shorter right lower limb. As treatment for the deformity and short leg, she was offered corrective osteotomy and fixation with custom-made implant and surgical correction of the ankle.

"The perceived advantage of our novel approach was that it would allow detailed pre-operative planning and design when using 3D printed models and in turn assist in the manufacturing of the right implant," reckons Dr Nkhwa. She notes that the use of traditional surgical approach and conventional implants would be a challenge in terms of finding an appropriate-sized implant that fit well, given the patient's abnormal and unique anatomy.

Employing specialised design software, the patient's CT scan was used to construct a 3D anatomical model of the defective site. The anatomical model file was printed at Botswana Institute of Technology Research and Innovation (BITRI). A surgeon used this anatomical model file to plan the proposed surgical procedure, as well as a design of the type of the required implant for the operation. Final implant design requirements were sent to Central University of Technology (CUT) in South Africa for implant development. "Before final printing, we received and checked the implant file for perfect implant fit using the design software," explains Dr Nkhwa.

A few days post-surgery, the patient underwent comprehensive ankle and knee rehabilitation that lasted several months. The child was last

assessed in April 2021. She demonstrated a slight leg-length difference between the two sides, normal knee alignment when compared to the opposite side, absence of limb and back pain, negligible limping, and ability to walk without an assistive device and without fatigue. Above all, the child has returned to school and is integrated into the community.

"We have thus identified niche key areas that can help drive forward the development and advancement of precision medicine and customised medical device fabrication in Botswana," says Dr Nkhwa, adding "among the key areas of our interest are pre-surgical planning, medical device fabrication, and 3D printing for educational purposes".

According to Dr Nkhwa, patient specific 3D models derived from either CT or MRI scans

Parliamentary Committee Confident about UB's Potential to Drive Botswana Towards Knowledge Economy



Members of the Parliamentary Portfolio Committee on Education and Skills Development on a tour of the University of Botswana research and training facilities.

The Parliamentary Portfolio Committee on Education and Skills Development has expressed confidence that the University of Botswana has potential and capacity to help Botswana transform into a knowledge-based economy.

Chairperson of the committee, Hon. Wynter Mmolotsi, made the sentiments on behalf of the committee at the University of Botswana on July 28, 2021. The University hosted the Parliamentary Committee for a familiarization tour of its research and training facilities. The delegation comprised Members of Parliament,

have become increasingly useful tools for healthcare professionals as reference tools for pre-surgical planning. 3D printed anatomical models help doctors save time preparing for conducting surgery as they allow for intra-operative visualisation and device sizing or pre-fitting medical devices both for routine and highly complex procedures.

With the 3D anatomical models, this also enables the doctor to explain better and demonstrate to the patient or medical students the extent of the medical problem, challenges that may be faced, as well as probable solutions; these steps are especially important in highly complex cases, such as in cases of tumor excision. In the end, this leads to reduced operating room costs, improved patient safety,

shorter recovery time, and reduced patient's anxiety. Furthermore, the patient's enhanced understanding of the problem and process, may boost their confidence in the doctor and the proposed solution.

"Instead of using one-size-fits-all generic implants, we can offer surgeons an option to make available to patients unique treatments for complex cases," says Dr Nkhwa.

Dr Nkhwa is a biomedical and biomaterial tissue engineer in the Faculty of Medicine. Co-investigators are rehabilitation scientist, Dr Maikutlo Kebaetse and orthopaedic surgeon, Dr Thapelo Montshiwa, who is now in private practice. Lloyds Register Foundation, a UK-based charity organisation that supports research, innovation, and education to make

Hon. Kainagura Hikuama of Ngami, Hon Oabile Regoeng of Molepolole North and Hon Sam J. Brooks of Kgalagadi South.

Following the tour, Hon Mmolotsi applauded the University for discovering its potential and undertaking to assist the country to transform into a knowledge-based economy.

He said given the devastating impact of COVID-19 and consequently the urgency to transform Botswana into a knowledge-based economy, the University of Botswana should play a strategic role to help revitalize the economic.

Hon. Mmolotsi said their visit to the University of Botswana was an eye-opener. He said the Parliamentary Committee learnt a lot and was impressed by what they saw. As such, they felt confident that UB graduates were market ready and possessed the entrepreneurial edge to drive Botswana's transformation agenda towards a knowledge economy.

Earlier on, Vice Chancellor, Professor David Norris, had informed the MPs that UB was going through a transitional period towards becoming a research-intensive institution of higher learning.

Professor Norris said as a national asset, UB was obliged to play a pivotal role in Botswana's transformational agenda from a resource-based to a knowledge-based economy. Underpinning such transformation, observed Professor Norris, was the need for UB to turn its research into tangible products and services that could be commercialized to

the world a safer place, has funded their project to the tune of P376 781 (£25 000).

Meanwhile, with the advent of COVID-19 and its likely impact on healthcare system which may further lead to severe biomedical supply shortages, the Faculty of Medicine has also developed alternatives to standard care nasal swabs, respirator oxygen tube adoptors/connectors and venturi devices (diluter). The 3D printed swabs are designed for oronasal Covid sample collection and are currently being further developed to enable better sample collection from the nose of the African demographic. The medical devices were 3D printed with biocompatible material. Once testing and further development have been completed, the medical devices will now be ready for the market.

generate revenue for the country.

Professor Norris observed that some multi-national companies were hatched in universities, and have made significant contributions towards development of their countries through research that yielded solution to societal problems.

He added that in the long run, such companies managed to generate millions for their respective countries. "As an Institution we have the ability and capability to do the same for this country. The major thing is to reinvent ourselves as a university, become a university that fosters competitiveness and is research based," said the Vice Chancellor.

Giving a vote of thanks, Acting Deputy Vice Chancellor for Academic Affairs, Professor Happy Siphambe, enumerated a number stakeholder engagements the University of Botswana was involved in to help in community development.

Professor Siphambe said through the Faculty of Social Sciences Department of Law offered free legal services to members of society who could not afford legal fees. Besides the legal clinic, UB also has a psychology clinic, which offers individuals psychosocial support and other services, observed Professor Siphambe.

Meanwhile, during the tour of the visit the MPs were taken to the Faculty of Medicine where they were shown a number of laboratories. They were also briefed on the training of medical students and shown the equipment they use for practical lessons. Dean of the Faculty, Professor Oathokwa Nkomazana said students also gained experience through attachment in various clinics and hospitals.

The MPs were further taken on a tour of Block 247 housing the Family and Consumer Science Workshop and were informed that the facility had the potential to add value to the country's economy especially in the textile sector.

Another potential money-spinner for the knowledge economy was the Media Studies studio where the MPs were shown state of the art facilities comprising a television studio, online radio station as well as training and production equipment.

At the Faculty of Engineering and Technology the MPs were introduced to the ingenuity and high quality products that students create using various technologies to impact society.

US Ambassador Thanks UB for Supporting Fulbright Scholars

US Ambassador to Botswana, Mr Craig Cloud, has thanked the University of Botswana for the support it gives Fulbright scholars during their research studies in Botswana. Mr Cloud thanked the University during a tour of the Faculty of Medicine Rehabilitation and Robotics Laboratory in Gaborone.

He said the Fulbright scholarship was an important programme because it was a tool through which academics exchanged ideas. As such Mr Cloud observed that the programme helped in the cross fertilisation of ideas around the world.

He spoke passionately about academic collaboration between learning institutions in Botswana and the United States of America and expressed the desire to see more professors from Botswana teaching in the US.

Regarding the rehabilitation and robotics laboratory, Mr Cloud said it was critical for the development of an integrated approach to health service delivery especially for management of non-communicable disease (NCD). The aim of the project is to use technology and robots to increase access to rehabilitation services after stroke and HIV-related stroke besides understanding neural and motor re-learning after HIV and stroke.

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Ambassador Craig Cloud receiving a token of appreciation from Acting Deputy Vice Chancellor for Academic Affairs, Professor Happy Siphambe.

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US AMBASSADOR THANKS UB

Mr Cloud said the approach was critical to reduction of increasing death and disability due to NCDs. "I hope to see more projects of this nature among all institutions in the country including increased collaboration to enhance problem-solving of social ills," he said.

According to the project overview, it has been discovered that People living with HIV (PLHIV) in low and middle income countries (LMICs) such as Botswana are now able to survive longer and as a result, they have increasing risks of death and disability due to non-communicable diseases (NCDs), including cardiovascular diseases such as stroke.

Stroke is the leading cause of death and long-term disability worldwide. Consequently, PLHIV will now have a double burden of long-term disability and HIV management. There is a growing concern that increasing rates of stroke and other NCDs among PLHIV will erode health gains achieved in the last decade. Few countries have examined the ability of LMICs such as Botswana to support the rehabilitative care for HIV plus NCDs including stroke and no studies have attempted to understand the neural and motor relearning process after HIV-related stroke.



Ambassador Craig Cloud being briefed on students' research projects at the Faculty of Medicine.

Fulbright Scholar and lead investigator from the University Pennsylvania, Dr Mishelli Johnson said given the above, UB found it imperative to develop and use technology, specifically robotics and therapy games, to increase access to rehabilitation services after stroke including the HIV-related type.

Dr Johnson said some UB students had created a series of assessment therapy games aimed at motivating users to engage in therapeutic activities using robots.

The project is funded by National Institutes of Health, Center for Aids Research at University of Pennsylvania, Botswana Upenn Partnership, University of Pennsylvania: Department of Physical Medicine and Rehabilitation, Department of Bioengineering, Department of Mechanical Engineering and Applied Mechanics, the Rehabilitation Robotics lab - GRASP Lab as well as University of Botswana: Department of Biomedical Sciences, Department of Mechanical Engineering, Department of Cognitive Sciences, and the E-Health Unit.

UB Collaborates with International Partners to Help 27 Health Facilities with Mobile Diagnostic Support Tool

The University of Botswana's eHealth Research Unit in collaboration with international partners has implemented a

mobile diagnostic support tool (VisualDx) across 27 health facilities in Botswana.

Implementation is premised on a project that is intended to serve as an early feasibility study of VisualDx, a well thought and validated decision support system. The project is titled Early Stage Feasibility Study of a Mobile Clinical Decision Support Tool in Botswana.

A woman with red braids and glasses is smiling while holding a smartphone. The phone screen displays the VisualDx interface, which shows a grid of medical images and text. Overlaid on the image is a dark blue banner with the text "VISIT VISUALDX.COM" in white. Below the banner, the text reads "A provider at this clinic is using VisualDx to enhance patient care." in white and blue font.

VISIT VISUALDX.COM

A provider at this clinic is using **VisualDx** to enhance patient care.

UB eHealth Research Unit Coordinator, Mr Kagiso Ndlovu, says the study aims to assess VisualDx acceptability and demand in Botswana's primary care delivery context, as a tool that may have potential to help address the challenges faced by the Ministry of Health and Wellness (MOHw) as it strives toward the goals outlined in Vision 2036.

Mr. Ndlovu adds that the study was motivated by challenges facing the MOHw

UB SET TO INTENSIFY RESEARCH OUTPUT, LAUNCHES 16 POST-GRADUATE SCHOLARSHIPS



Minister Douglas Letsholathebe appreciating a gift from the Vice Chancellor, Professor David Norris.

The University of Botswana looks set to increase its post-graduate enrolment and thereby boost its research throughput following the launch of 16 scholarships aimed at attracting the best brains across the globe. The Minister of Tertiary Education, Research, Science and Technology, Dr Douglas Letsholathebe launched the scholarships on July 9, 2021.

In his address, Dr Letsholathebe commended the University for finding it fit to offer PhD scholarships to attract the best academic brains locally and across the globe. He said the initiative would certainly contribute positively to the growth of post-graduate enrolments. The scholarships are in line with the new University strategic goal of becoming a premier research-intensive institution of higher learning in Botswana and beyond.

"It also goes without saying that with this scholarship, the research output of the University will improve since I am reliably informed that those who shall be awarded the scholarships will also be required to publish before they complete their studies," said Dr Letsholathebe.

He added that initiative would further contribute immensely to human capital development while at the same time improving the University's rankings and competitiveness. Dr Letsholathebe said he was encouraged to see the University of Botswana living its new strategy, Creating a Future for The Knowledge Generation 2020-2029, hence repositioning

itself to offer quality education, research, innovation and engagement for sustainable national development in the Knowledge-based economy.

He noted that the scholarships were an indication of the University's quest for efficiency, effectiveness, productivity and value for money by striving to achieve more with less. "You have now given me a tough task, Vice Chancellor, to go and look into my books in the Ministry and see how we can support your initiative in as far as advancing research and innovation are concerned," stated the minister.

Giving an overview of the initiative, Dean of the School of Graduate Studies, Professor Agreement Jotia, said the scholarships would in way offset costs for higher education, which continued to escalate globally. Professor Jotia also observed that in line with its new strategy, offering post-graduate scholarships would enable the University to recruit highly qualified and competent graduates who would

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including shortage of physicians and specialists in remote areas. Furthermore, there is a lack of consistent adoption of technology-assisted services such as electronic health records (EHR) and diagnostic tools in Botswana. Consequently, VisualDx's value proposition, says Mr. Ndlovu, includes the potential to augment and upskill providers in under-resourced clinics and remote areas through the use of an evidence-backed, point of care, mobile clinical decision support resource that is now available for use even without internet connection (offline version).

Being a well thought and validated decision support system, VisualDx aids healthcare workers in their diagnosis and treatment of patients with skin manifestations of disease. The mobile application combines machine learning algorithms and vision science with a structured clinical knowledge base to allow non-specialist healthcare providers to enter patient-specific findings, build custom

differential diagnoses, and view images and treatment recommendations.

The product further allows for building a custom differential diagnosis based on chief complaints across all fields of medicine as well as disease searching (4,000+ diseases) to view clinical information including therapy options, best tests, and management pearls, all written by expert clinicians. It also hosts information on over 43 000 medication reactions and adverse drug events in addition to containing extensive content on travel-related illnesses and infectious diseases.

Besides allowing for image and information sharing with patients via printed or emailed handouts, VisualDx is also the world's largest curated medical image library, showing variation in disease by body location, stage of disease, skin type, and more.

Official website: <https://www.visualdx.com/>



Mr Kagiso Ndlovu

African Languages Department Awards 38 Language Proficiency Certificates

The University of Botswana on June 30, 2021 awarded 38 participants who recently completed training in three Africawili languages, Kiswahili, Ikalanga and Setswana, in the Department of African Languages and Literature.

Of the 38 participants, 14 received proficiency certificates in Ikalanga and 12 in Kiswahili and Setswana respectively. The courses are held twice a year for nine weeks with participants comprising different nationalities.

In line with its transformative strategy, Creating a Future for the knowledge Generation (2020-2029), the University of Botswana is committed towards safeguarding the extinction of African indigenous languages as well as preparing Batswana to be global citizens.

While Setswana, which is a national language and Ikalanga is e widely spoken in Botswana, Kiswahili is a Bantu language widely spoken in the Great Lakes region and other parts of eastern and south-eastern Africa including Kenya, Tanzania, Burundi, Rwanda, Democratic Republic of Congo (DRC) and parts of Malawi.



Ms Thobo Letlhage and Colonel Billy Jibajiba from the Ministry of Defence, Justice and Security.



John Payne displaying his certificate

The President, Dr Mokgweetsi Masisi, recently announced that Kiswahili would soon be part of the school curriculum in the country following adoption by SADC as the fourth official language in the region after English, Portuguese and French.

Meanwhile, other proficiency language courses that the Department of African Languages and Literature offers are Isizulu and Shekgalagari Graduates from the Department are usually absorbed in many government and

private departments and offices, particularly in teaching, curriculum development, translation, interpretation, editing, research work, public relations, local government, tourism, international affairs and many other places.

Apart from offering proficiency African languages short courses, the University of Botswana also offers four international language degree programmes in Portuguese, French, and Chinese.

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16 POST-GRADUATE SCHOLARSHIPS

have the opportunity to engage in research and development.

He said the scholarships would be awarded to prospective or current graduate students who had demonstrated an outstanding academic record, sound professional and

research experience or publications.

"The scholarship shall be awarded to Mphil/PhD and PhD students with relevant experience in their area of expertise so they could serve as Teaching Assistants in their relevant departments and faculties," he observed.

Professor Jotia said such an approach was

designed to reduce costs especially academic staff wages in that the graduate students would teach both undergraduate and post-graduate courses under robust departmental mentorship.

Consequently the awardees, he stated, would receive a full tuition waiver with a stipend.

Each recipient will receive a monthly allowance of P3 000 and P4 500 once-off research allowance. "This initiative is taken with the goal of attracting and retaining more highly qualified Mphil/Phd students, while simultaneously promoting capacity building by employing experienced students as Teaching Assistants," said Professor Jotia.

He explained that this would also nurture their professional development while enriching their research experience as they would be expected to attend conferences and publish, thus contributing immensely to UB's institutional visibility.



Prof David Norris with Minister Douglas Letsholathebe, Prof Oathokwa Nkomazana and Prof Agreement Jotia

IPRC Awards Dr Sekhwela Senior Research Management Professional Status



Dr Mogodisheng Sekhwela

The International Professional Recognition Council (IPRC) has awarded Dr Mogodisheng Sekhwela Senior Research Management Professional (SRMP) status.

IPRC accredited Dr Sekhwela, who is Office of Research and Development Acting Director, through the Southern African Research and Innovation Management Association (SARIMA). Dr Sekhwela's accreditation is a first for the University of Botswana and the rest of the country. Through IPRC, the Southern Africa Research and Recognition Council promotes professional recognition through professionalisation of research managers, not only at a national level but globally.

Therefore, Dr Sekhwela's accreditation represents a great stride for the University of Botswana's research management and leadership competency profile. Thus, he has been accredited to mentor, train and lead in one of the fastest emerging professions with an established international competency framework.

The accreditation affords him a rare opportunity for international recognition amongst his peers, research managers'

community besides large international research funding organisations. Strong research management capacity appears to be having a pull-effect on accessing competitive international research funding in that more external research funding seems to be following universities with strong research management capacity.

Underpinning Dr Sekhwela's feat, is a long and accomplished impactful research career on natural resources utilization and management, embracing policy development, professional services for international funding agencies and government departments.

His footprint includes involved leadership for large multidisciplinary research teams, as well as being part of international collaborations that instilled project management contributing to the competencies leading to his professional recognition. At UB, Dr Sekhwela has featured in many strategic task forces/groups set up to provide directional development for the university. This year alone, he is actively involved in four such groups, underlining the higher education acumen bestowed in him.

In Dr Mogodisheng Sekhwela's words "at long last it has happened. My devotion to improve our research management and leadership competencies is internationally recognised. I now stand accredited to mentor, train and lead research not only at UB but nationally as well as internationally."

Meanwhile, IPRC consists of experienced research managers representing a diverse research management community from across the world. Members are individuals serving in strategic research management leadership such as Deputy Vice-Chancellor for Research or equivalent. Other members come from key agencies or organisations involved in the research and innovation system.

Consequently, accredited professional research managers such as Dr Sekhwela are granted recognition through peer review. Thus, Dr Sekhwela's research management endowment is a demonstration of his expertise and accomplishments.

Two DLIS Students Receive 2021 ARMA International Educational Foundation Scholarships

Two University of Botswana Bachelor of Information and Knowledge Management students in the Department of Library and Information Studies are part of seven recipients of the ARMA International Educational Foundation (AIEF) 2021 Education Scholarship Awards.

The two are Ms Tshepo Moatlhodi, 26 and Mr Nickel Vray, 24. The scholarship carries a cash grant of P12 000 (\$1200) each. According to the Foundation, 2021 again brought numerous strong applications from a diverse and international field of candidates, competing for a limited amount of funding.

"The Foundation is encouraged by the applicants as an illustration that the future of information management is indeed in good hands and will be led by brilliant scholars and professionals," says the Foundation on its website.

Ms Moatlhodi and Mr Vray are excited about the scholarship award and say it came at an opportune time when they are eager to invest the money in furthering their education. The two are Archives and Records Management majors.

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Ms Tshepo Moatlhodi and Mr Nickel Vray.

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TWO DLIS STUDENTS RECEIVE SCHOLARSHIPS

"As an information professional, I wish to pursue my masters in archives and records management and use my knowledge and experiences to develop an advocacy programme for records management informed by peculiarities of the African setup as a way of promoting records management in the public and private sectors," reckons Ms Moatlhodi who describes herself as an outstanding and outspoken woman from Ramotswa.

"Being a recipient of the 2021 ARMA International Educational Foundation Scholarship from among strong international applicants comes at the opportune moment in my desire of becoming a professional records manager as the award will be invested in the Master of Archives and Records Management (MARM) programme at the University of Botswana," adds Mr Vray. He says once admitted into the masters programme, his intention is to contribute emerging and new knowledge to the archives and records management field resulting in new thinking and bettered practice.

The Foundation is a non-profit corporation and leading organisation in the United States

of America that embraces the practical and scholarly knowledge of information management by funding and promoting research, scholarship, and educational opportunities for information management professionals.

Consequently the two aspiring professionals commend their lecturers in the Faculty of Humanities, Dr Tshepo Mosweu, Dr Peter Sebina and Professor Nathan Mnjama who were instrumental in their bid to secure the scholarship.

Faculty of Business Gives Senior Government Managers Financial Management Tips



Some of the participants of the workshop which the Faculty of Business organised

The Faculty of Business in conjunction with the Accountant General's Office in the Ministry of Finance and Economic Development has brought together senior managers in the public sector for a week-long annual East and Southern African Association of Accountant Generals (ESAAG) workshop at the University of Botswana.

The workshop was held from June 17 - 25, 2021. ESAAG Chairperson, Mr Christian Mbekomise, said the objective of the workshop was to sensitize participants on current

national and regional developments in the public sector to enhance their knowledge and skills on issues of economic management. Participants will further exchange of ideas on how to improve their products and services.

Accountant General, Mr Kealeboga Molelowatladi, who was guest speaker stated that ESAAG was conceived in the early 90s by 15 countries. Mr Molelowatladi said the aim was to maintain professional relations besides sharing knowledge and ideas to promote professionalism and accountability.

In addition, he said it was to learn from each other's experiences, identify problems and come up with tools that could enhance their professional work and accountability within their public sectors. Mr Molelowatladi urged the participants to take full advantage of the workshop to enhance their financial knowledge and skills in addition to networking.



ENTRY INTO CAMPUS PREMISES
**MANDATORY
SCREENING.**