BOTSWANA INTERNATIONAL UNIVERSITY OF SCIENCE & TECHNOLOGY

NEWSLETTER

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BIUST and BOFINET Team

BIUST, BOFINET CUT COLLABORATIVE DEAL

Botswana Internationally University of Science and Technology (BIUST), and Botswana Fibre Networks (BoFiNeT), recently met to engage on Information Communications and Technology (ICT). The meeting was held on the 19th of May at BIUST.

BoFiNet team brought along the Digital Delta project and its benefits, which is currently ongoing. The construction for the data center commenced in March 2021 and is expected to be completed by July 2022. The data center is a 1000 square meters facility within the Botswana Digital and Innovation Hub (BDIH) in Gaborone.

In his welcome remarks, Acting Deputy Vice Chancellor, Professor Elisha Shemang mentioned that the project is critical to the university's data sovereignty. Therefore, BIUST was set to be one of the key driving tools at the forefront of this collaboration. "The institution found it vital to re-brand,

Acting Deputy Vice Chancellor, Professor Elisha Shemang giving the welcome remarks during the meeting.

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EDITOR'S NOTE

BY: Rebecca Richard

Partnerships and collaborations play a significant role in exchanging ideas, forming alliances that work towards a common goal as well as addressing problems that we face.

This edition features the stakeholder dinner which was hosted by the Vice-Chancellor as an endeavor to bring together the University stakeholders to forge maximum teamwork and interactions.

BIUST's conjoint research projects to heighten the mining and mineral technology sector with the Research Council Zimbabwe (RCZ), and Botswana Digital Innovation Hub (BDIH).
Exciting news!! Nonofo Gochela recently successfully defended her thesis. The new kid in the block, Dr G has a lot to tell us and BIUST held a Biomathematics Research Workshop for Young Researchers.

We profusely appreciate all those who contributed to make this edition a success and still plead with you staff and students to share with us any information that you deem necessary to barutir@biust.ac.bw and gachalaw@biust.ac.bw

Continue adhering to health protocols. Together we can fight this pandemic

re-focus through the provision of specialized programmes that meet the requirement of an ever-changing Science, Engineering and Technology Industry,'' Prof Shemang emphasised.

The Professor welcomed BoFINET to BIUST and assured them that BIUST was always ready to accommodate such initiatives, especially in areas of information communications and technology (ICT).

BoFiNet Chief Executive Officer, Mabua L. Mabua expressed gratitude towards BIUST's involvement in ensuring that the project is realized. He said that the main objective behind the collaboration was to introduce the Digital Delta Data Centre. He also explained that the Digital Delta is located at the nerve center of the national fibre network, facilitating instant creation of physical and virtual connections to a dynamic global connectivity ecosystem. Therefore, the CEO noted that having BIUST as Technical partners was perfect company.

''We feel its high time as the one driving the economy to diverse our storage. As an enabler and the facilitator of the economy, we thought of bringing this kind of infrastructure to BIUST,'' Mr Mabua said.

Mr Mabua also highlighted that organization such as BIUST needed to create new value through the deployment of digital applications and platforms to cater to and support an ever-changing digital world.

In addition, Commercial Executive for BoFiNet, Mr Segole, stated that his company was at the center of everything telecommunications. On that note, he said they are ensuring that the nation of Botswana improves with the ICTL services.

For his part, the Director for ICT, Mr Seretse Bagopi showed appreciation towards the concept brought forth by BoFiNet. He pointed out that the institution required a high capacity in terms of storage, whereas the assurance of dealing with the experienced power problem.

Mr Bagopi expressed his concern about the institution not having a purpose build ICTL server, hence the need for multiple avenues of transmission in case of security. Bagopi also added that with ample land, they could be provided with a solar-powered network for accessibility all around the campus.

When giving the closing remarks, Mr Bagopi thanked the BOFINET team for the plausible initiative. ''This is a welcome development, a possible avenue we need as we move forward. We are more than ready to help each other and bring solutions, especially in areas of research and technology,'' the director alluded.

Commercial Executive Officer for BoFiNet, Mr Segole highlighting some benefits that the two organisations will aguire through the collaboration.

BoFiNet Chief Executive Officer, Mabua L. Mabua presenting the overview of the project.

BIUST STRENGTHEN STAKEHOLDER ENGAGEMENT

BY: Rebecca Richard

Botswana International University of Science and Technology (BIUST) organized the Stakeholder dinner which was held on the 19th of May at the Majestic Five Hotel. The event was a first of its kind in the university's history. It was graced by BIUST Vice Chancellor, Professor Otlogetswe Totolo.

''It is my great pleasure and honor to welcome you all to this evening's Stakeholder feast. It is through engagements such as this one that we strengthen our involvement and association with each other for the benefit of the community within which we operate and reside,'' Professor Totolo said when welcoming delegates.

The Vice-Chancellor highlighted that the Stakeholder dinner was an opportunity for all partners to come together and discuss issues of common interest as corporate leaders and members of the Palapye community. He also said the other reason was to have a better understanding of positions and roles the play within the society.

Prof. Totolo described Stakeholder engagement as an ever-evolving phenomenon that requires collective effort to maintain. He pointed out that the pride of any university lies in its ability to engagein cutting-edge research. Therefore, as the community of BIUST, the aim is to continue increasing research output for the future.

In addition, Prof. Totolo outlined the awards they acquired as BIUST through the production of research output. The Vice-Chancellor informed the Stakeholders that the university was appointed the National Coordinator for the African Very-long based interferometer Network (AVN), under the project of Square Kilometer Array (SKA).

On the other hand, the institution was chosen to be the host of the Southern African Development Community (SADC) Satellite Receiver, which is to enhance Botswana's Geo-Information System through the Monitoring for Environment and Security in Africa (MESA) project.

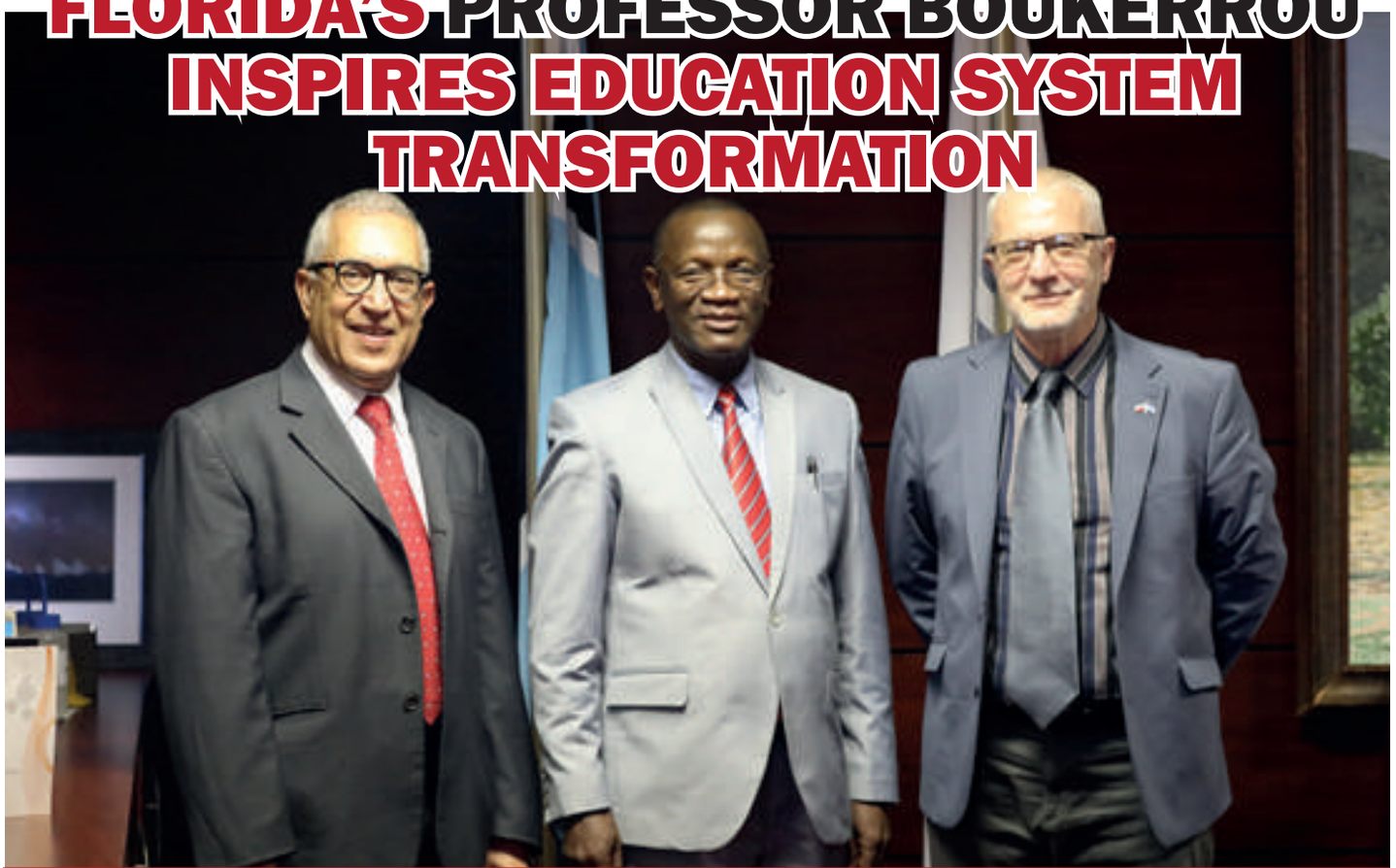
According to Prof. Totolo, BIUST has signed about 40 Memoranda of Understanding with other institutions, companies, and organizations around the globe. The partnerships cut across varied sectors of the economy such as government, parastatals, and the private sector.

In his closing remarks, the Vice Chancellor outlined several remarkable projects BIUST is spearheading. To mention a few of the big initiatives, BIUST is currently coordinating astronomy development in Botswana.
The initiative, he said, is a collaboration of 9 countries in Africa and spearheaded by South Africa. This is an international project under the Square Kilometre Array (SKA), with a budget of Two billion Euros.

''One of our landmark developments is the establishment of BOTS SAT 1- Satellite, which is currently underway and coordinated by our highly qualified professors. The project entails the development of novel Nano-engineering materials, and it will serve as a platform to develop research and to share the best practices in technology and in business,'' Totolo noted.

Lastly, Prof. Totolo applauded the Stakeholders for their commitment to holding strong partnerships and encouraged them to continue with the good spirit for the advancement of BIUST.

FLORIDA'S PROFESSOR BOUKERROU INSPIRES EDUCATION SYSTEM TRANSFORMATION



BIUST Vice Chancellor Professor Otlogetswe Totolo & the Florida International University delegates.

BY: Tshegofatso Teseletso

"A Country's development revolves around continuous amplification of its education system & the feasibility of a knowledge-based economy is dependent on equipping employable graduates," Director International programs & Global Initiatives at Florida International University, Professor Lakhdar Boukerrou said during his honorary visit to the BIUST Campus.
The intent of this appearance was for the duo to prospect & discuss a possible partnership, focusing on areas such as student internships, research opportunities, and the offering of double degree programmes.

When giving welcome remarks, BIUST Vice Chancellor, Professor Otlogetswe Totolo enunciated that BIUST was a research-intensive institution, that thrived to produce innovative graduates hence visitations such as these were paramount to achieving its core existence.

Unraveling BIUST to Prof. Boukerrou, Prof.Totolo stipulated that as a research-intensive university they have a vision of being a hub for Academic Excellence, Commercial Attractiveness, and Social Relevance.

He further accentuated that BIUST was established to equip knowledge workers; that is people who bring and produce scientific and engineering solutions to global problems. "We have strategically positioned ourselves as a catalyst towards the realisation of a knowledge-based economy here in Botswana," he said.
Prof. Totolo elucidated that BIUST was always looking for lucrative opportunities that would enable them to grow and offer diverse programs that the market is in dire need of. "A renown university like FIU can assist us to achieve this," he emphasised.

He also stated that the university is working tirelessly to become a university of Industries hence their engagement with diverse companies like Debswaana, CEDA, LEA and Botswana Defense Force.

The delighted Vice Chancellor highlighted that (BIUST & FIU) have a common goal which is to amplify the education system hence the need for collaboration to ensure that this dream becomes a reality. "This truly marks a beautiful and blossoming relationship between the two institutions. We are more than happy

to learn from Florida and exchange ideas that will enable us to grow as a young university," the BIUST Vice Chancellor concluded.
For his part, Prof. Boukerrou expressed a hearty appreciation to the Vice Chancellor and the BIUST community for the warm welcome.

He emphasised the importance of the education system as a tool that would ensure the equipment of employable graduates. "Our mandate today is not only to exchange academic-based ideas with BIUST but to also learn and grow together," he said. He further indicated that the reason for all the effort was to improve student preparedness for the global market.

According to the savant Director of International programs & Global Initiatives, the duo must not only identify a common goal but also commit to succeeding. In this regard he highlighted the following as possible collaboration areas with BIUST;
• Collaboration in research
• Exchange in capacity building; student exchange such as internship, and collaborative teaching.
• Joint dual degree programs offering
Prof. Boukerrou implored BIUST to always share information with students, as that would enable learners to be responsible for their education and become accountable experts. He also encouraged BIUST staff to brainstorm and instigate possible services or products they can offer to the United States of America-based students, and in that way position themselves in an international market.

Furthermore, Prof. Boukerrou indicated that he intended to share with BIUST USA partnership Opportunities, Research Funding available in the USA, collaborations on online international Learning, and possible opportunities for staff and students. He briefly unraveled FIU to attendees through a university overview, which touched base on already mentioned opportunities as well as their distinctive education system.

The symmetrical flow of events led to an illuminating discussion where BIUST Executive Management got to pose questions and make suggestions on possible areas that they could conjoint with FIU. The dialogue ended successfully with the duo having identified areas of possible collaboration which include student internships, staff exchange, research opportunities, and the offering of double degree programmes.

In closing, BIUST Deputy Vice Chancellor-Research Development and Innovation Prof. Abraham Atta Ogwu implored the two institutions to officially unify through a Memorandum of understanding toward the transformation of the education system.

"This is indeed a great opportunity for both BIUST and FIU learners and a substantial step towards a knowledge-based economy," he concluded. The enlightening and productive day was cemented by an exploration of selected BIUST labs.

Biust Executive & Distinguised Guests posing for the camera

RCZ, BDIH DESCEND BIUST IN PARTNERSHIP VISIT

Botswana Digital Innovation Hub's Director of Innovation and Technology, Dr. Budzanai Tacheba

BY: Tshegofatso Teseletso

Research Council Zimbabwe (RCZ) and Botswana Digital Innovation Hub (BDIH) recently descended the BIUST campus for appreciation of the advancement of the projects that they have collaborated with the Palapye based institution on, and to map a way forward on further progression of the ventures.

This alignment which operates under the Science Granting Council Initiative seeks to instigate and implement a collaborative research project in Mining and Mineral Technology between the two countries. The role of BIUST is to do research & develop commercial products that will heighten the Mining and Mineral Technology sector across the globe.

"It is a great honour indeed to be hosting you here at our campus so that we can be able to touch base with each; to compare notes and take stock of our collective achievements so far," said the BIUST Deputy Vice Chancellor-Research Development and Innovation Prof. Abraham Atta Ogwu when he welcomed the distinguished guests. He went a step further to applaud BDIH and RCZ for playing a pivotal role in propelling the appetite for research in the region.

Prof. Ogwu unraveled that ZRC and BDIH have funded a jointly implemented project between BIUST and Zimbabwe University on coal benefaction in support of the metallurgical industry in Botswana and Zimbabwe, which obviously may extend to other parts of the region. "The project seeks to develop a process which can produce coke from Botswana and Zimbabwe coals, and we anticipate that it will go a long way in growing and consolidating the industrial capacities of our economies in safe and clean benefaction of our coal resources," he explained.

According to the Deputy Vice Chancellor-Research Development and Innovation, this project seeks to assess the feasibility of producing metallurgical coke through the blending of various Botswana and Zimbabwean coals to improve their coking properties.

“Given the abundance of coal reserves in both Botswana and Zimbabwe, the innovative coal washing processes which are more likely to be developed through this project gives me the confidence to anticipate that a much pool of beneficiaries, including small scale miners, also stand a huge chance to gain more access into the mainstream coal production and coal export industries,” he said.

Furthermore, he delineated that metallurgical coal is a critical component in the production of steel, which also is consumable in infrastructure development and will certainly provide our economies with the much-needed push to facilitate economic growth.

Prof. Ogwu emphasized and implored that the resultant research output from this project should not be underestimated. “I trust that project co-principal investigators will put all of us to speed on the milestones achieved so far and the challenges if any, and how we can collectively act to mitigate against them,” he concluded his speech.

In response Botswana Digital Innovation Hub’s Director of Innovation and Technology, Dr. Budzanai Tacheba stipulated that their union with BIUST came after a thorough call for proposal towards bilateral research was made in which BIUST splendid proposal has rendered them to victory. In brief, Dr. Tacheba indicated that this initiative stands to create collaboration and pave a lucrative way to further the mineral technology sector. "We are here to appreciate what our outstanding researchers are doing on the ground and to map the way forward to ensure that we meet our project completion timeframe,” he said.

The Zimbabwe Research Council, Finance & Administration Manager Ms.Rudo Tamangani applauded BIUST researchers both staff and students engaged in these projects for their dedication and great progress made. She further indicated that coal is the right tool to use to reclaim African mining sites; on basis that high-quality coal is essential for steel production and both Botswana and Zimbabwe have large coal deposits. "BIUST’s proposal is marvelous in the sense that it is fixated on global industrialization evolvement,” the passionate Ms.Tamangani said.

In addition, Ms.Tamangani elucidated that the expectation is for the researchers to merge the two uniquely diverse coal deposits from the two countries, to produce commercial products that are in high demand like steel, cooking coal, and more. Addressing the investment return Ms. Tamangani explained that the duo has a lot of coal deposit and the research result would lead to large production of steel hence widening industrialization.

The visitation took an adventurous route, as patrons got to explore the progress rate on specific projects they have ventured into with BIUST. The distinguished guests got to fully express and get first-hand information from staff and students who are engaged in these projects on challenges and the progress rate of these projects.

The exploration was summed up by a discussion amongst the sponsors, researchers, Deans, and Directors of the institution. The mandate of this discussion was to map a way forward in order to ensure the successful completion of these projects within the given timeframe. Challenges and strategies were brainstormed and the team concurred to adjust to these strategies moving forward. Zimbabwe Research Council’s Acting Executive Director Dr. Timothy Marango appreciated BIUST researchers, Deans, and Directors for their dedication and the remarkable progress they have made thus far. He implored all team members to continue to engage and work in unity towards the success of these impactful projects.

BIUST HOSTS BIOMATHEMATICS RESEARCH WORKSHOP FOR YOUNG RESEARCHERS

BY: Tshegofatso Teseletso

In the words of inspiration at the Biomath
ematics Research Workshop for Young Researchers, BIUST Professor Edward Lungu, who was welcoming delegates, was quoted, “Permit your attitude towards education to position you as an expert who instigates practical solutions to global issues.”

To unravel Biomathematics Research Workshop for Young Researchers, BIUST, Communication, and Public Affairs officer Ms.Tshegofatso Teseletso converse with the main speaker of the event from the University of Johannesburg Prof. Farai Nyabazani.

1 Kindly introduce yourself to our readers?

Prof Farai Nyabadza is currently a Professor and Head of the Department, at the University of Johannesburg. His Mathematical career started at the University of Zimbabwe and did his PhD at the University of Botswana, being the first doctoral student in the Mathematics department then. He is passionate about Mathematical modeling and in particular modeling infectious diseases, crime, substance abuse, and systems thinking dynamics. He is a former President of the Southern Africa Mathematical Sciences Association and has held many positions in international bodies. He is an academic mentor (having supervised 57 MSc students and 12 doctoral students), a researcher, an author, a facilitator, and a motivational speaker.

2 What are your roles concerning this workshop and the overall UK-APASI project?

UJ and BIUST were participating institutions in the UK-APASI project. Prof EM Lungu and I were co-principal investigators on the project.

3 When did the UK-APASI project start?

The UK-APASI project started in January 2020 and finished in March 2022.

4 Kindly describe to us the relevance of this workshop?

The UK-Africa Postgraduate Advanced Study Institute in Mathematical Sciences (UK-APASI) seeks to strengthen and support research collaborations between the UK and African mathematicians.
Our vision and motivation are to increase postgraduate capacity development and the quality of mathematics training in Sub-Saharan African Universities and therefore our programme will focus on four key areas: Research, Education, Training, and Collaborative Networking in Mathematical Sciences.

Hence, this programme has three main objectives: (1) to strengthen the UK and Southern African human infrastructure in mathematical sciences research through capacity building, (2) to forge and sustain collaborative relationships between applied mathematicians in the UK and Sub-Saharan Africa (SSA) on both research and teaching fronts aimed at untangling development challenges faced by Official Development Assistance (ODA) countries in this region, and (3) to use mathematics to influence government policies on disease, crime and wildlife management, control and prevention. The mode for building capacity within UK-APASI is to address existing and emerging questions relevant to SSA (e.g. control of infectious disease transmission, control of crime spread, management, and conservation of wildlife) using applied mathematics both interdisciplinary and inter-institutionally.

Our workshop is centered on strengthening collaboration between UJ and BIUST as part of forging and sustaining collaborative relationships between applied mathematicians and using mathematics to influence government policies on disease, crime, and wildlife management, control and prevention.

5 How will BIUST and UJ benefit from this workshop?

The workshop aimed at giving students from the two institutions the opportunity to interact and learn from each other. The students were introduced to research techniques that are essential for their post-graduate

studies.

6 What are some of the goals that are leading this workshop and why those?

There were three main objectives driven by the UK-APASI goals: (1) to strengthen the Southern African human infrastructure in mathematical sciences research through capacity building, (2) to forge and sustain collaborative relationships between applied mathematicians in Sub-Saharan Africa (SSA) on both research and teaching fronts aimed at untangling development challenges faced by the two countries in this region, and (3) to use mathematics to influence government policies on disease, crime and wildlife management, control and prevention.

7 The practical and theoretical lectures were delivered to the attendees; which topics were tackled, and which practical was displayed and why those?

Students were introduced to scientific writing on the following topics:

1. How to write a scientific introduction
2. The art of formulation models
3. The nut and bolts of analysing mathematical models
4. Parameter estimation in epidemic models.
5. Model simulations and the challenges.

8 Would you say the attendants were actively participating and have learned from this whole experience?

The participants gave interesting feedback. They learned how to write their first research articles and strengthen their capabilities in their current studies.

9 Any economic advancement that you believe will be brought forth by this workshop and UK-APASI project?

Not directly, but certainly the development of human capacity for our universities.

10 Should the BIUST community look forward to more engagements of this kind moving forward?

There is an arrangement for further engagements, with BIUST students visiting UJ at the end of the year.

11 Where do you see this initiative 5 years from now?

There was an agreement to look for research funding to advance the collaboration and make it an annual event.

12 Any last word?

The workshop was a huge success and many of the students experienced being out of their country for the first time and interacting with other students in a different country.

NEW KID IN THE BLOCK: DR NONOFO GOTCHA

I recently successfully defended my PhD thesis to earn my highest qualification of PhD in Biological Sciences specialising in Entomology. I also have a Master of Science degree in Biological Sciences (BIUST), also in the field of Entomology where I investigated some of the environmental factors that could likely influence Ceratitis fruit fly population dynamics. I started my science career with a Bachelor of Science degree, where a took a chemistry major and biology minor (University of Botswana). It was during my BSc study that I learnt that Science consists of many fields, and ultimately what one chooses is what one enjoys the most. I chose the field of Entomology.

I began my work experience as a laboratory scientist in one of the local firms in Botswana. I first started as an analytical chemist in which my work involved conducting nutritive analysis of different products developed by the firm. Later still at the same firm, I switched to being a microbiologist where I did a microbial analysis of the same products. In both instances I learnt two things; 1) As a scientist one must pay attention to detail (accuracy) and 2) one should be able to communicate by speaking (presenting findings) and writing (reports). I however found that the work was monotonous for my liking. I was doing the same tasks every day and that became redundantly boring for me. I joined a different firm once again as a laboratory scientist, and it was during this time that I decided that to get more I needed to further my education. It was when I persuaded my MSc degree that I got introduced to the world of research. I loved it instantly. Research is about finding new information, and one gets to do challenging things every time. Therefore, it was not surprising that I decided to pursue a PhD programme immediately after getting my Master of Science qualification. While pursuing my postgraduate qualifications, I got an opportunity to both teach as well as do research, allowing me to improve my communication skills (information transfer), project management (lesson planning), and problem-solving skills.

I love working with insects, and I also love teaching and research, so I see myself continuing in this direction. I think the field of Entomology is an area that is being neglected here in Botswana despite its significance. Due to lack of knowledge, most people only know insects as pests, and one of my first tasks is to change that mindset. I would like to see Entomology being taught in schools and universities here in Botswana because the field has the power to change the status of our food, health, and ecological insecurities here in the country, as well as address some of the socio-economic challenges experienced by the locals. It is unfortunate that BIUST does not have postdoctoral funding, given an opportunity, I would have wanted to continue as a postdoc/Research Associate, to complete some of the questions that couldn't be completed during my PhD.

My project was on identifying some of the key variables that could affect dung beetle survival and performance in delivering the ecosystem services they do for our environment. I chose this topic because although insects often seem 'useless', they represent a humongous natural capital worthy of billions of dollars globally, through either their ecosystem services or loss of incomes associated with their control. As such, I would like to contribute towards their appreciation, preservation and conservation, and optimisation of ecosystem services. Dung beetles take care of the dung from our domestic and wild animals. They bury the dung, preventing land fouling. Can you imagine if there was nothing to remove all this dung? Will individuals volunteer to follow their animals around to remove all the animal matter they drop on the land? I don't think so. Dung beetles bury animal dung underground, therefore recycling nutrients back into the soil. To produce food, we need fertile soils. Locals are demanding to be given synthetic fertilisers by the government, and these fertilisers are to be purchased. But how sustainable is this really? Will the government manage to purchase enough fertilisers for the entire Botswana agro-systems? Dung beetles also contribute towards animal pests' control, and by so doing save farmers money for buying antiparasitic drugs. If we conserve our rich dung beetle diversity, we will continue to benefit freely from these insects. If we don't, we will suffer the costs of replacing such services in the future. Thus, my work basically looked into the anthropogenic factors likely affecting dung beetle ecosystem service efficacy and thus helps inform policy for conservation in climate-changing environments.