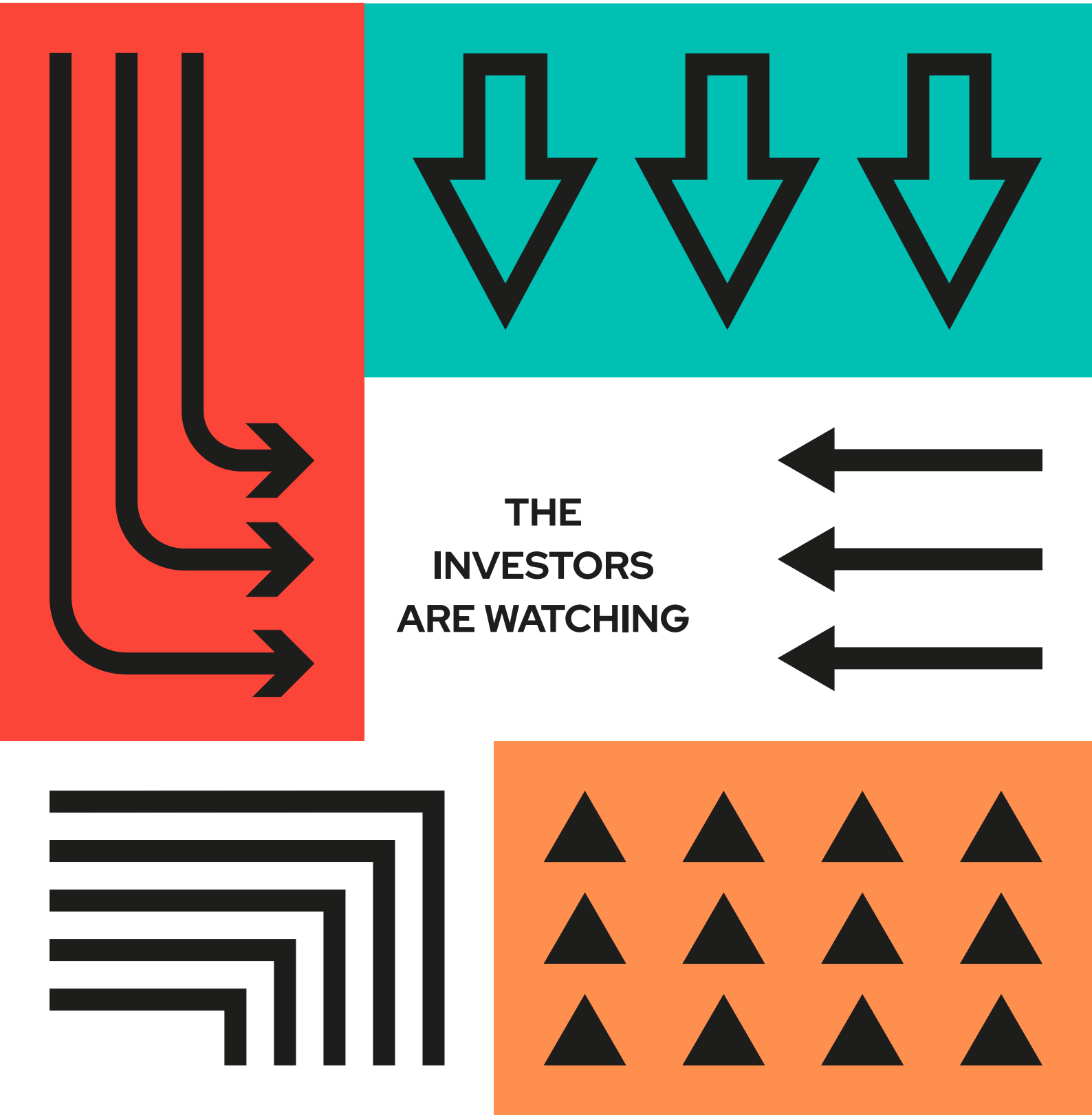
GLOBAL EDUCATION NEWS

November 2021
QS Quacquarelli Symonds
Issue: 06



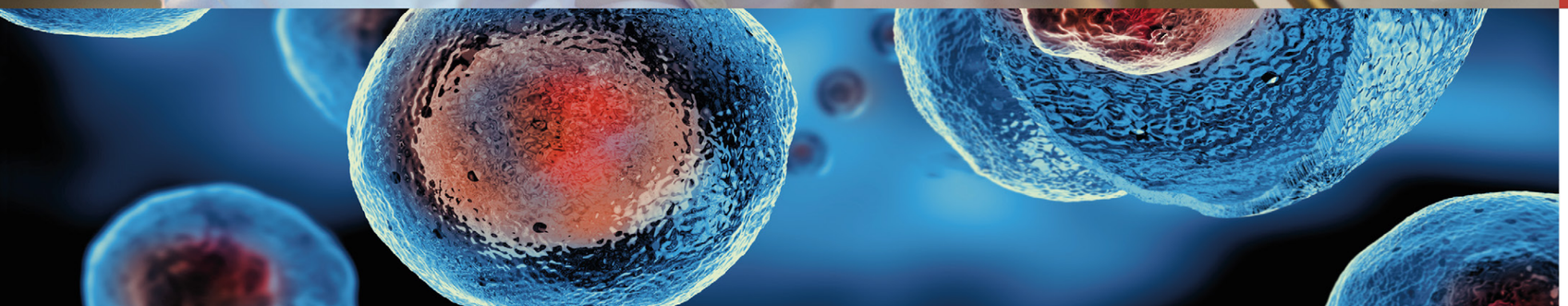
THE INVESTORS ARE WATCHING

Join the Innovative Researchers

INDIVIDUALIZING HEALTHCARE

Just like no two people are identical in physical appearance, neither are they precisely alike on a molecular level.
A person's unique genetic profile can be used to detect the onset of a disease and possibly even prevent it. Researchers from Khalifa University are investigating the specific genome variants that may point to risk factors for certain diseases. Knowledge of an individual's susceptibility to a disease improves diagnosis and means more informed decisions can be made for a patient's treatment.

ku.ac.ae



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TOP 50 ARAB WORLD 2021

QS STARS RATING SYSTEM 2019 ★★★★

QS WORLD UNIVERSITY RANKINGS 651 - 700

THE IMPACT RANKINGS 2020 TOP 600

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1	401+

UI GreenMetric World University Rankings

Private Universities in Bahrain	Arab Region Ranking
1	37

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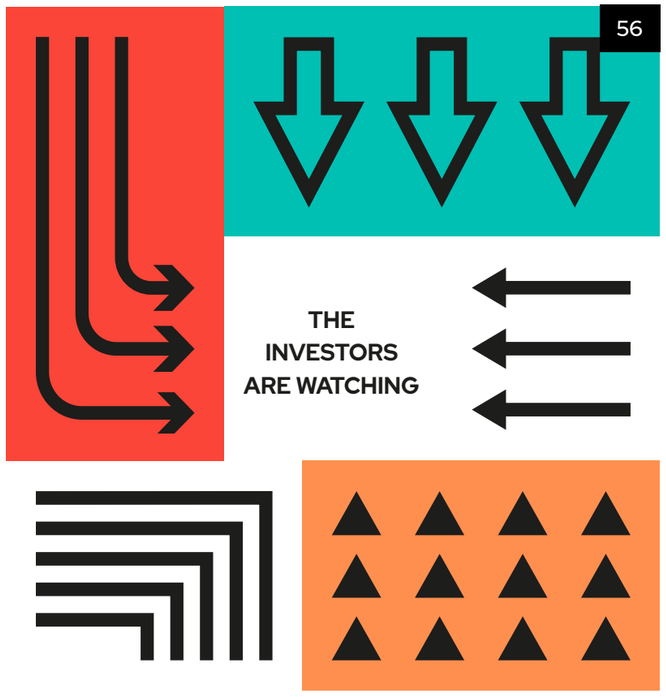
In this issue...



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QS WORLD UNIVERSITY RANKINGS
Ranked
2022

RANKED IN THE
TOP 2.8% WORLDWIDE
ACCORDING TO THE QS WORLD UNIVERSITY RANKINGS 2022

TOP 100
ARAB WORLD
QS WORLD UNIVERSITY RANKINGS
2021

RANKED
71-80
IN 2021 QS ARAB REGION RANKING

THE IMPACT RANKINGS
2021
02 IN UAE
401-600 WORLDWIDE

UI GreenMetric World University Rankings
2020
02 IN UAE
250 WORLDWIDE

QS STARS™ RATING SYSTEM
Online Learning
2020
5 STARS
ONLINE TEACHING

04 INTERNATIONAL ACCREDITATIONS

52 'NO. OF STUDENTS NATIONALITIES

Patient and sticky

While conducting interviews and undertaking research for this issue's cover article on investment in education, I came across several funny finance terms. Two in particular, were the concepts of patient capital and stickiness.

The first, patient capital, is fairly clear, and refers to investments that are willing to wait for longer than usual periods of time to make a return. The second isn't as clear. Stickiness is the concept of a product or service that is embedded into a system and therefore will continue to generate revenue. It is, in effect, "stuck" onto the market.

As the *QS-GEN* team sat down and thought about this edition, however, it became clear that those two terms could equally be applied to education, and particularly higher education. The process of learning is no doubt a patient one, and takes years to show returns. Equally, universities have been a very sticky and consistent part of society, existing for millennia.

It's unusual to consider learning in terms of returns, but the investors and stakeholders we spoke for this edition are bringing forward new and innovative ways not only of learning, but of thinking about learning.

This is the spirit of *QS-GEN 6*.

As well as exploring the motivations and trends in education investing, we look at how universities can change their thinking around climate action. One approach to ensure higher education both talks the talk and walks the walk is a collective self-governing system, which readers of the fortnightly *QS-GEN* newsletter overwhelmingly supported.

Based on the COP26 pre-conference session for QS APPLE 2021, the article also explores the power of collectives to challenge old thinking. Grassroots organisations, such as the Climate Action Network for International Educators, are encouraging new business models which reduce travel for work, and offer sustainable alternatives to international mobility.

It's not only those working in the field making a change, however. Students themselves are pushing universities and other institutions to do better. As one speaker put it, they will be holding universities to account.

On the subject of students, we also look at the learning needs of Generation Z, who have been entering the university sector for a number of years. It's inspiring to read that while some expectations may have changed, generational differences are not as pronounced as we may have been led to believe.

Finally, this is the final *QS-GEN* magazine for 2021. Thank you to all the readers, advertisers, and contributors from throughout the year. We look forward to sharing the latest education trends in 2022.

I hope you are your family stay safe.

Anton John Crace

Anton is Editor and Program Designer at QS Quacquarelli Symonds. He was the former Asia Pacific editor of *The PIE News* and was recognised as the Universities Australia Higher Education Journalist of the Year in 2019 at the National Press Club of Australia.

PMU

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Yarmouk University aims at establishing demanding professional diploma programs

Jordan – The new president of Yarmouk University, Professor Islam Massad, according to his work plan for the next four years, seeks to establish and develop professional diploma programs in partnership with industry.

"These programs aim to enhance participants' work skills in emerging and desperately needed topics by the local and regional labour market," Professor Massad said. He added, "academic degrees alone cannot bridge that gap of building a strong national knowledge economy."

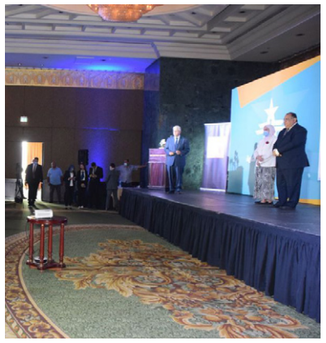
A few programs to be immediately established in the Hijjawi Faculty for Engineering Technology at the university, in collaboration with the Jordanian Center for Design and Development, include medical informatics, robotics design, additive manufacturing and 3D printing, and cybersecurity.

Professor Mwaffaq Otoom, Dean of the Faculty, said each program requires three to six courses that can be completed in as little as six months. The curriculum offers education in advanced information technology, design, and data analysis, and it will be prepared and taught jointly with experts from industry.

Helwan University wins first "Applied Project" award

Egypt – Helwan University won first place among Egyptian universities in the competition for the "Best Applied Project" which has the greatest environmental and societal implications. In a grand celebration, attended by representatives from all Egyptian universities, Professor Khaled Abdel Ghaffar, Minister of Higher Education, handed over the award to Professor Maged Negm, President of Helwan University.

Helwan University's Community Service and Environmental Development Affairs submitted a project for the comprehensive development of the "Kafr El-Alo' slum area, in accordance with the main goals of the university's strategic plan regarding the development of slums in the community. The project included the provision of social, economic, educational and health services.



An ecosystem for entrepreneurship and innovation

UAE – Awarded a stellar 5-star rating in 2019 by the KHDA Higher Education Classification, in partnership with QS, in the core categories of Research, Teaching, Employability & Internationalization, BITS Pilani, Dubai Campus (BPDC) is extensively fostering a culture of innovation and entrepreneurship.

BPDC's entrepreneurial ecosystem comprises the Centre for Innovation, Incubation and Entrepreneurship, an Innovation Laboratory housing high-end equipment open 24x7, and an Incubation Centre certified by Dubai SME and HI2. Courses such as Entrepreneurship, New venture Creation and Business Communication help budding entrepreneurs to understand the market and develop their business models. Through a structured system, the students are also mentored and empowered with cross-domain expertise.

The IEEE Student Branch at the Campus has been recognized as the largest in the UAE. The student robotics teams for IFOR and IORTA and automotive teams for Formula racing have won international laurels.

BPDC's success in entrepreneurship and innovation is attested by the more than 40 start-ups, such as FalconX, Wrappup, Fantasy Akhada, Shopkirana, IoLetics, Kregzo, Sentient Labs, Whizkey, Lancify and Navifly from alumni and students. Further, BPDC student teams have won 6 EXPOLIVE University Innovation Grant projects from UAE and Students Innovations for Translation & Advancement of Research Explorations Award from India.

EURIE 2022 Eurasia Higher Education Summit coming in March

Turkey - The 7th annual Eurasia Higher Education Summit - EURIE 2022 will be organised in a hybrid format 2-4 March, 2022. There will be 3 days of virtual programming and 3 days of simultaneous on-site programming in Istanbul, Turkey.

EURIE connects the dynamic higher education sector in the Eurasian region to the world. The exhibition offers great networking, academic partnership and business development opportunities for the participant higher education institutions and other stakeholders in higher education coming from a diverse set of countries and regions.

EURIE's rich conference program addresses current issues in internationalization of higher education and key topics in higher education management with the participation of prominent experts in the field. The conference theme for 2022 is "Imagining the Future of International Education".

Senior academic leadership, International Office directors and staff, ed-tech companies, international marketing service providers, education abroad consultants, and public higher education authorities are welcome to attend as exhibitors, visitors or panelists in the conference. You can visit the EURIE website www.eurieeducationsummit.com for registration details and the conference call for proposals.

Advertorial

Northern Border University

Leadership and excellence in the fields of education and scientific research to achieve community development with international standards

Saudi Arabia - The Northern Border University (NBU) in the Kingdom of Saudi Arabia was established by The Custodian of the Two Holy Mosques, King Abdullah Bin Abdulaziz during his visit to the Northern Border Region in 2007 (1428 H).

The College of Sciences in Arar, which had been affiliated with King Abdulaziz University, was amalgamated into the newly established University and later the Teachers' College.

A number of colleges in Rafha, Turaif and Al-Uwaygilah Governorates were also amalgamated into the University; these colleges together formed the Northern Border University. Several Colleges were inaugurated after the establishment of the University including the Colleges of Medicine, Engineering, Computer Science, Pharmacy, Nursing, Administration and Medical Sciences, and Social Sciences

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- College of Pharmacy in Rafha
- College of Nursing
- College of Engineering
- College of Sciences
- College of Business Administration
- College of Arts and Education in Arar
- College of Home Economics (female)
- College of Computer Science and Information Technology
- College of Sciences and Arts in Rafha
- Community College in Arar
- Community College in Rafha
- Community College in Turaif
- College of Sciences and Arts in Al-Uwaygilah (female)

Discover more at nbu.edu.sa

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Positive Psychology Center
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Meet QS' Rankings Advisory Board

QS Rankings team gas almost two decades of experience. Martin Ince introduces the Advisory Group behind the QS' rankings.

The health of both systems is in large part contingent on international students, and the revenue they bring.

The QS team that produces the many global, regional, and subject rankings has almost 20 years' experience in this complex task. But it does not work in a vacuum. Instead, since 2010, it has been able to draw on the expertise of its Global Academic Advisory Board for the rankings.

This group of experts, now numbering 43 members, is of growing importance as the rankings increase their focus on new concerns such as employability and sustainability.

The Board's members are to be found on every continent except Antarctica, and a full list is here. Members include heads of universities, experts on higher education data and management, and those who work directly in teaching and research. They are all involved in day-to-day decisions on higher education for which rankings are a key input. The Board is chaired by Martin Ince, an independent writer and journalist working in higher education and science.

The Board meets periodically online and provides ongoing advice through an email discussion group. It responds to requests for advice from QS, and members themselves suggest ideas for discussion.

Angel Calderon, a Board member in charge of performance measurement at RMIT University in Australia, spends about half of his working life on rankings. He says that the Board "makes a worthwhile contribution to shaping academic performance management."

In particular, "Our knowledge of a wide range of national systems helps us to see the context of why things happen the way they do." He adds that seeing the QS rankings process from the inside has increased his confidence in their findings.

Susanne Raeder, head of the rankings group at the University of Bonn in Germany, explains: "Members share current knowledge, analyses and a large variety of perspectives and ideas to inform QS's strategic decisions on further development of current rankings and of future ranking activities. This can cover specifics related to methods or broader strategic discourses, all with the goal of improving the rankings for their stakeholders."

Greening the Rankings

The Advisory Board has a key role in commenting on possible future rankings and the proposed methodology that drives them. It has been key to the success of the QS Employability Rankings, and of its ranking of a range of business Master's degrees.

It is now starting to advise QS on how the climate crisis will influence what universities will teach, what they will research, and how they will operate their businesses.

As QS builds sustainability more deeply into its performance insights, Angel Calderon points to the novel challenges universities face alongside sustainability, such as distance learning and employability. “There is eagerness in higher education for QS to do more in this space, and the Advisory Board has a role in helping QS to expand in new directions.” He says: “QS has enormous assets, such as its very large academic and employer surveys. The Board can help its impact on universities and on government thinking around the world.” During 2021, new Board members with expert knowledge of remote learning have been recruited in the US, the UK and Canada to strengthen awareness of these issues as they affect students and institutions, both during and after the COVID-19 pandemic. ❖


PHOTO: SUSANNE JUTZELER

Ground-breaking international research determines role insects and deadwood play in carbon cycle

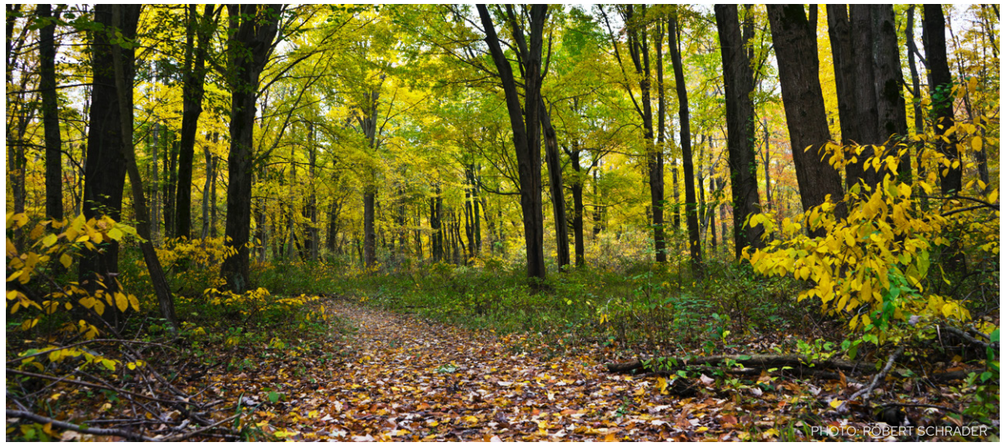

PHOTO: ROBERT SCHRADER

Ireland - An international research team, including University College Cork President Professor John O'Halloran, has determined the annual contribution made by deadwood to the global carbon cycle and quantified the importance of insects in the decomposition of wood for the first time.

While living trees absorb a considerable amount of carbon dioxide from the atmosphere and therefore play an important role in the protection of our climate, little is known about the role of dead and rotting trees in the global carbon cycle.

The decomposition of wood and the associated recycling of the nutrients are among the most important processes to take place in forests.

The focus of the research includes the amount of carbon released from rotting wood worldwide, and the role of insects in this processand was led by the Bavarian Forest National Park and coordinated by the Julius Maximilian University of Würzburg and the Technical University of Munich.

This study, 'The contribution of insects to global forest deadwood decomposition' has now been published by the prestigious academic journal Nature.

Using 55 forest locations and 50 research teams around the world over three years, researchers laid out wood from more than 140 tree species to assess the influence of climate on the rate of decomposition. Half of the wood was placed in mesh cages to preclude insect involvement in decomposition.

The final data demonstrate that the rate of decomposition and the contribution of insects are highly dependent on the local climate, and increase as the temperature rises. Higher levels of precipitation accelerate the decomposition in warmer regions, and slow it down in regions where the temperatures are lower.

The study found that some 10.9 giga-tons of carbon are released from deadwood worldwide every year, equivalent to roughly 115 percent of the emissions from fossil fuels.

Professor O'Halloran, a zoologist, said the research findings are exciting, and important for addressing future climate change challenges and meeting targets.

"We know that temperature, moisture, and indeed insect composition bacteria and fungi are critical for decomposition," he said.

"What we didn't know up to now was the extent of the role played by insects in that process. This is really important because it is only with a detailed understanding of the processes by which carbon is released that we can model the future challenges in relation to carbon budgeting.

"We found that 29 percent of the carbon that's released from forests is actually released through insect decomposition. What does that mean? It means if we lose those insects, we reduce the capacity for decomposition and therefore, the release of carbon back out.

KPI hosts 10th Festival of Innovation Projects 'Sikorsky Challenge 2021 Ukraine & the World'

Ukraine - The 10th Anniversary Festival of Innovation Projects "Sikorsky Challenge 2021: Ukraine & the World" took place at Igor Sikorsky Kyiv Polytechnic Institute (KPI) on 12-14 August.

The purpose of the festival was to pinpoint the most relevant projects in various technical fields, as well as assist authors of the best projects in their commercialisation, and establishment of start-up companies.

The festival opened with the International Defense Investment Forum, presided over by Oleh Urusky, Deputy Prime Minister of Ukraine. Development prospects of Ukraine's defence industry until 2030 were under discussion.

The main event of the festival was the competition of innovative projects "Sikorsky Challenge" for which 320 projects were submitted. The council of experts short-listed 130 start-up projects for the finals in six areas: "Defence & Security"; "Industrial High-Tech & Space"; "Green Energy, Hydrogen Economy, Ecology"; "Biomedical Engineering & Human Health"; "Agricultural Engineering"; "IT, Digital Country, Cybersecurity".

ECIU XR Campus: learning in a new virtual reality environment

Portugal - Europe's first virtual university, ECIU XR Campus is Europe's, has opened after being inaugurated on 20 September by European Commissioner Mariya Gabriel. This new interaction space can be accessed from anywhere and anytime by the ECIU community for instant collaboration on co-creation projects.

The ECIU XR Campus provides an environment for teaching and learning in a stimulating, innovative, collaborative and open way, allowing to approach problems transnationally and without barriers. Using augmented reality, people involved in the challenges feel psychologically immersed and stimulated as if they were physically in the same space.

ECIU University, which integrates universities from 12 European countries including the University of Aveiro, aims to change the learning system with an innovative higher education model based on multidisciplinary societal challenges.

Social Media à la Belvoirpark

Switzerland - students at the Belvoirpark Hotel Management School in Zurich contrib-ute to social media activities.

The simple concept occurs during the fifth semester, in which students report directly from their daily work and share their experiences on the worldwide web via social media.

As part of the "Theoraxis®" - the combination of theory and practice - three students per semester are given an active insight into the world of digital marketing. Accompanied by their lecturer, combined with a penchant for photography and crisp texts, they are co-responsible for maintaining the Facebook and Instagram channel of the Belvoirpark compa-ny.

In this way, potential students and interested parties are directly informed about everything that an apprenticeship for the federally recognized title; «Hôtelier/ Restaurateur HF / Ad-vanced Federal Diploma of Higher Education in Hospitality» entails and, above all, offers.

On the pulse of time. In other words, social media à la Belvoirpark.

Academic response to hybrid threats

Ukraine - Researchers from Kharkiv National University of Radio Electronics (NURE), a member of the international consortium of the ERASMUS+ project WARN, claim adversarial training, which increases the resilience of artificial intelligence against cybersecurity threats, can be used in academia.

The idea is to be piloted in the highly relevant Ukrainian context: the team is developing and embedding new gamified adversarial learning techniques into multi-discipline master`s and LLL study programmes of Ukrainian universities updating them based on the best EU practices. The ambitions are to increase societal awareness of hybrid threats targeting modern democratic societies and apply a-whole-of-society approach to counter them efficiently.

With this aim a trans-sectoral environment will be established, creating an international network of comprehensive security and hybrid threats hubs connecting academic and industrial and state experts.

One hub has already been created in NURE. It comprises interfaculty capacities of Artificial Intelligence Department and Department of Economic Cybernetics and Management of Economic Security, including technical facilities of two newly equipped labs for research and development in the field of hybrid security.

KTU M-Lab laboratory complex: campus landmark of sustainable architecture

Lithuania - Researchers from universities in Kaunas have developed a deep learning-based method that can predict the possible onset of Alzheimer's disease from brain images with an accuracy of over 99 percent. The method was developed while analysing functional MRI images obtained from 138 subjects and performed better than previously developed methods.

"Medical professionals all over the world attempt to raise awareness of an early Alzheimer's diagnosis, which provides the affected with a better chance of benefiting from treatment. This was one of the most important issues for choosing a topic for Modupe Odusami, a PhD student from Nigeria", said Rytis Maskeliūnas, a researcher at the Department of Multimedia Engineering, Faculty of Informatics, Kaunas University of Technology (KTU), Odusami's PhD supervisor.

The deep learning-based model was developed through a collaboration between Lithuanian researchers in the Artificial Intelligence sector.

"Although this was not the first attempt to diagnose the early onset of Alzheimer's from similar data, our main breakthrough is the accuracy of the algorithm", said Maskeliūnas.

Advertorial

ITB: In Harmonia Progressio

Indonesia – Institut Teknologi Bandung (ITB) is the first technical university in Indonesia that was established on March 2, 1959, in West Java, with a mission to serve science and technology to develop the nation. Born in a full of dynamics atmosphere and based on the spirit of the struggle for the Indonesian Proclamation of Independence, ITB is here to optimize the development of an advanced and dignified nation.

With 13 faculties and schools and 130 study programs covering the fields of science, engineering, technology, art, design, business, and management, ITB plays proactive roles in three main sectors or Tridharma Perguruan Tinggi, i.e. Academics, Research, and Community Services, both in national and international levels. Moreover, many of its academic programs have also been internationally accredited by ABET, ASIIN, ABEST21, Royal Society of Chemistry, JABEE and KAAB.

In terms of global reputation, ITB has established collaborations with various prestigious and reputable institutions. To date, ITB has ranked #303 in the QS World University Ranking 2022, #62 in the QS Asian University Ranking, #51-100 in the QS WUR Ranking by Subject in Engineering – Petroleum, #101-150 QS WUR Ranking by Subject in Art & Design, #151-200 QS WUR Ranking by Subject in Architecture/ Built Environment as well as Civil & Structure.

Becoming one of several autonomous higher education institutes in the year of 2000, ITB is managing multicampus, i.e. the Ganesa Campus, the Jatinangor Campus, and the Cirebon Campus thus enabling ITB to expand its Tridharma Perguruan Tinggi in Indonesia.

With its vision of 'Globally Respected, Locally Relevant', ITB aims to contribute and actively take part in the local and global communities for a better and sustainable world.

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#465 QS WUR 2022	#356	#310	#176
#124 QS AUR 2021	#146	#77	#70

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INNOVATIONS TO HANDLE COVID-19

Anti-Body Rapid Diagnostic Test Kit RI-GHA19
The RI-GHA19 Antibody Rapid Diagnostic Test Kit is an innovation in collaboration with Universitas Gadjah Mada and Hepatika Medical Laboratory of Universitas Mataram.

RAISA Robot
RAISA is a robot that can assist health workers in supervising and serving Covid-19 patients. The collaboration product of UNAIR and the Sepuluh Nopember Institute of Technology (ITS) is expected to prevent the transmission of the virus to health workers.

Merah Putih Vaccine
Merah Putih Vaccine is an inactivated vaccine platform in development, currently at the stage of a clinical trial to macaques which will be mass-produced in March 2022 in collaboration with PT. Biotis Pharmaceuticals Indonesia.

Airlangga Robotic Triage Assistant (ARTA)
The ARTA robot is a product of the Faculty of Advanced Technology and Multidiscipline (FTMM) and the Faculty of Science and Technology (FST) UNAIR. The product is designed to assist health workers in the initial diagnosis of Covid-19.

Five Combinations of Covid-19 Drugs
The five combinations of Covid-19 drugs were found by a joint team of UNAIR, the State Intelligence Agency (BIN), the Indonesian Army (TNI-AD), and the National Agency of Drug and Food Control (BPOM).

MEANINGFUL RESEARCH

INTERNATIONAL PARTNERSHIP NETWORK

NORTHERN EUROPE	4
WESTERN EUROPE	20
EASTERN EUROPE	7
CENTRAL ASIA	2
EAST ASIA	90
MIDDLE EAST	12
SOUTH ASIA	20
ASEAN	52
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MEANINGFUL RESEARCH

Merah Putih Vaccine

Merah Putih Vaccine is an inactivated vaccine platform in development, currently at the stage of a clinical trial to macaques which will be mass-produced in March 2022 in collaboration with PT. Biotis Pharmaceuticals Indonesia.

Innovations

111	Start Ups
172	Patents
345	Copyrights
41	Brand Rights

Taking action on climate change

Experts explored *Authenticity in university climate action* at a round-table session prior to the QS APPLE Conference 2021 (1-3 November). Jen Foster explores their insights into how universities might take steps to address the climate change emergency.

"We need to move beyond discussion about the size of climate change and move towards the cost of inaction," says Professor May Tan-Mullins, Dean International at James Cook University's Singapore campus.

Professor Tan-Mullins believes universities must become "leaders" and not "followers" on sustainability, calling for institutions to be "daring enough" to take steps which might be seen as "out-of-the-box".

The ripple effects from November's Climate Change Conference in Glasgow, COP26 for short, in igniting conversations and agendas on the subject of environmental sustainability have been hard to ignore. The message is clear that radical change is needed and that those changes must start now.

As pressure mounts to avoid inaction, university leaders and other higher education stakeholders are expanding where universities can and should begin on building sustainability into their planning and operations.

Leading from the top

The challenge now is how universities can deliver on pledges to take action. Anthony McClaran, Vice-Chancellor at St Mary's University in the UK, believes communication is key to setting the tone of an institution's approach and values.

"I think there has to be clear staff engagement and that has to be coming from the leadership team and working with everyone throughout the organisation," he says.

> ***"We need action now, so institutions really need to walk the walk."***

"The leadership team have to make it clear that this is important. There are a huge number of pressing priorities on any organisation, including universities, at any given time so they need to be saying that this is important."

Tackling misinformation

There is overwhelming scientific evidence that global temperatures are rising and there are increasing numbers of lived experiences of those seeing the devastating consequences of climate change first-hand, including prolonged droughts and wildfires.

Despite this evidence, climate change denial persists. A November 2021 report from climate action group Stop Funding Heat revealed the weight of the issue on Facebook alone in *In Denial – Facebook's growing friendship with climate misinformation*.

The group, which petitions brands to distance themselves from media outlets that "spread climate lies" by discontinuing their ad revenue, revealed there were up to 1.36 million daily views of climate misinformation through the social media platform.

Among its recommendations, the report calls for a total ban on any advertising supporting climate denial.

Vice-Chancellor McClaran, however, says there are other avenues that also must be considered. He sees institutions as important players in debunking climate change misinformation through the facts and findings of university-led research.

"We are living now perhaps in the time of extreme conspiracy theories, so never has the need for clearly disseminating the impact of the university research into this area been more important," he says.

"But that isn't only external in terms of providing information for society and for leaders to make their decisions; it's also internal, looking at what an integrated curriculum looks like and looking at the place that this issue might have across the curriculum is certainly an aspect of our sustainability policy."

Balancing conflicting priorities

Being a global community is a core value for many universities. International travel has been considered essential to successful international research collaboration, student mobility programmes, and international student recruitment.

Travel, however, comes at a carbon cost.

The pandemic forced all of these activities online, and while doing so proved challenging for everyone, it did show how much can be achieved without air travel. Importantly, however, COVID-19 is external and unforeseen, imposing travel restrictions on universities and global trade rather than it being taken up voluntarily.

University leadership teams are acutely aware of this reality, and are facing questions over what can be done to resist the temptation to return to pre-COVID ways once its restrictions and health concerns are behind us. In some cases, stakeholders say they are "self-conscious" of a complete resumption to old activities.

Professor Tan-Mullins observes that a reduction in carbon emissions must be weighed up against the benefits gained from experiencing day-to-day life and culture in another country.

"Everything has two sides to it," she says.

"People need these inter-cultural understandings and experiences. This is the next generation and if we do not allow them to have the chance or opportunity to experience another country, another culture and learn about other people then will this make the future more intolerant in some sense?"

Some institutions have reported that they have been able to offer more inbound and outbound mobility activity than ever while operating virtually.

Speaking at a panel session during QS APPLE, Professor Johan Lauwereyns, Vice President of International Affairs at Kyushu University in Japan, explains his institution achieved greater mobility numbers as a result of a strategic focus on joint online programmes and courses with partner universities.

It looks likely institutions will continue to adopt a hybrid approach for student mobility into 2022 and beyond.

Generation Greta is coming

In the latest QS report on Sustainability in Higher Education, 94 percent of prospective students said they want to see universities do more to be environmentally sustainable. When asked how universities should improve their environmental friendliness, the top activity was investment in research for sustainable initiatives, followed by reductions in single-use plastics and the amount of waste sent to landfill.

Swedish climate change activist Greta Thunberg, who turned 18 in 2021, might well be considering her own study options for 2022. Certainly, the thousands of school children she has inspired across the world will soon be starting their research into universities and an institution's sustainability record and ambitions will surely influence their decision-making.

Asked whether students should hold institutions to account for their action on climate change, Vice-Chancellor McClaran says that they would, whether institutions want them to or not.

Raising the theme of 'inter-generational justice', he adds: "We have to take seriously that economic factors, and indeed climate factors particularly, are playing out differently for different generations.

"Generations that have largely benefited from the huge advances that were created by industrialisation and globalisation will not necessarily be the ones who are around to pick up the pieces when, as is happening now, that damage comes home to roost."

Time to walk the walk

As well as enabling new approaches at an institutional level, organisations across the sector are discussing what role they have to play in delivering climate change action.

In October, QS announced the introduction of a new Environmental Impact category to its QS Stars rating system. This was in response to institutions wanting to understand their performance

PHOTO: MARKUS SPISKE

on environmental sustainability in relation to an international standard within the sector.

Climate Action Network for International Educators, a grassroots not-for-profit organisation with global members, aims to serve "as a platform to bring the sector together to act as a catalyst for action" and " to drive change within their institutions".

CANIE co-founder Dr Pii-Tuulia Nikula, Senior Lecturer at New Zealand's Eastern Institute of Technology, hopes by 2025, the sector will have achieved "reduced emissions, climate-savvy learners, and a commitment from the sector and institutional leaders to tackle climate crisis".

The organisation brought educators and practitioners together for the CANIE COP26 Climate Action Week with a series of events over 8-12 November, including a Leadership Forum and a series of Regional Meetings.

Dr Nikula explains that if the higher education sector wants to be viewed as 'credible' leaders on climate change then they need to both 'minimize their own footprint' and 'increase their handprint', the positive steps we can take to proactively make a difference.

For her, it is imperative that educators and higher education leaders take responsibility for embedding sustainability across their institutions and not focusing their efforts solely on educating the next generation about sustainability. She spoke about the importance of not placing 'the burden' on young people.

"Most of these people, the young learners we have, are not going to be in positions of power and decision-making roles in the next 10-20 years and we need action now, so institutions really need to walk the walk," she adds.

"They need to measure, manage, and reduce their own emissions."

> ***"We are living now perhaps in the time of extreme conspiracy theories."***

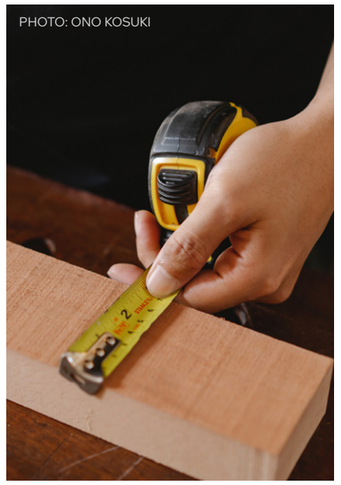

PHOTO: ONO KOSUKI

Keeping change on track

Universities all operate in different political and regulatory contexts, meaning it's unlikely a single system or answer can be applied in the same way to all.

A potential model for managing and tracking climate action within universities is through an independent regulatory body. Critics of this approach, however, question regulators' efficacy, particularly in terms of sufficient resourcing, and their ability to remain impervious to other influences, especially in more volatile political environments.

Dr Nikula feels that institutions themselves are well-placed to take the lead and work together to share best practices and hold each other to account.

"I think we will see more government regulation in the future but, as we need rapid action at this point in time, institutions will really need to lead this process and many have the skills they need internally with access to academic expertise. But you don't necessarily have to do it on your own," she says.

"Collaboration is so important."

Acting on sustainability with the right mindset is also important, she adds.

"[We must] consider it as kind of a win-win, something we want everybody, all the universities, to do and not as a competitive advantage of some type," Dr Nikula notes.

"Let's talk about the ethics and values that we should show at leadership as institutions."

Prior to joining St Mary's University, Vice-Chancellor McClaran worked as the Chief Executive of Australia's regulatory body, the Tertiary Education Quality and Standards Agency. He notes during his five years with the regulator, climate action and sustainability weren't a key priority.

Reflecting on that position, however, he says its institutions that should be the driving force for change within higher education.

"That may be right that the prime leadership on this shouldn't necessarily come from [higher education] regulators," he argues, adding regulation in other fields, particularly the energy industry, does have a critical role to play.

Like Dr Nikula, Vice-Chancellor McClaran believes collaboration is key, but takes it one step further, pointing towards collective action and accountability.

"Universities, in a sense holding each other to account, in a non-regulatory but powerful example of leadership and trying to do the best by the kind of commonly agreed external benchmarks that the sector is signing up to."

> ***"I think there has to be clear staff engagement and that has to be coming from the leadership team."***

Hope for change

Despite the difficult decisions ahead for institutions, there is positivity that change can and will be achieved.

"Change isn't just imperative but it's also entirely feasible if you can find the right trigger," says Professor Chris Rudd, Deputy Vice Chancellor and Head of Campus Singapore at James Cook University.

"These are the kinds of things that I think should give us all hope. In certain societies, it's speeches by political leaders that cut through but I think as educators we've each got to find our own way to reach the audience."

There is clearly an appetite across the sector for climate change action and the continuation of a more sustainable approach to internationalisation and recruitment. Only time will tell where the balance falls between delivering on climate change goals and the other priorities, ambitions and financial pressures which they face. ❖

PHOTO: ENGIN AKYURT

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HKBU's **Interdisciplinary** Research Labs

HKU Engineering made breakthrough in droplet manipulation

Hong Kong - Researchers in the Department of Mechanical Engineering at the University of Hong Kong (HKU) have made a key breakthrough in droplet manipulation. They have discovered an innovative way to navigate liquids on a surface in the absence of external force or energy.

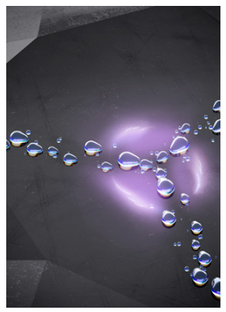
Droplet resembles a ball. In-plane droplet control is similar to snooker where the balls are directed to move along desired trajectory, a feature highly valued for thermal management, desalination, materials self-delivery, and numerous other applications.

Conventionally, researchers fabricate chemical wetting gradient or asymmetric microtextures to drive droplet into motion, similar to designing a conveyor belt to transport the balls. For the first time, RGC postdoctoral fellow Dr Tang Xin, Postdoctoral fellow Dr Li Wei, and Chair Professor of Thermal-Fluid Sciences and Engineering Wang Liqiu from the HKU Department of Mechanical Engineering discovered that when a cold/hot or volatile droplet is liberated on a lubricated piezoelectric crystal (lithium niobate) at ambient temperature, the droplet instantaneously propels for a long distance (which can be ~50 times the droplet radius) in furcated routes.

Depending on the crystal plane that interfaces with the droplet, the self-propulsion can be unidirectional, bifurcated, and even trifurcated.

The discovery has been published in Nature Nanotechnology in an article titled "Furcated Droplet Motility on Crystalline Surfaces".

"This is an unforeseen phenomenon with far-reaching implications. Droplets with a temperature difference mild at 5 °C on a surface can undergo self-sustained propulsion. Imagine placing a ball on a perfectly leveled and smooth table, instead of remaining static, the ball rolls by itself. Even more surprising is that the ball only automatically rolls towards certain definite directions," said Professor Wang Liqiu.



Gold from MTE 2021

Malaysia - Management and Science University (MSU) has bagged another gold from the Malaysia Technology Expo (MTE).

Receiving the COVID-19 International Innovation Award II at the 2021 edition of MTE was a Novel COVID-19 Symptom Detection and Diagnosis System using IOT-based Technology from MSU's Faculty of Information Sciences and Engineering (FISE).

The MSU system of detection and monitoring comprises a smart helmet and a drone. Each is integrated with IoT technology and thermal imaging – which allows for multiple temperature points to be recorded in a single image and a fraction of a second.

The thermography technology is thus ideal for scanning not just individuals but also crowds.

The technology of remote sensing and detection presents extraordinary possibilities in meeting healthcare's safety needs.

The award-winning invention is a joint effort by FISE academic Associate Professor Dr Mohammed N. Abdulrazaq with graduate students Halimatuz Zuhriyah and Nurul Aslamiah Istiqomah from MSU's Master in Information Technology programme, also with Dr Omar Ismael Al-Sanjary and Professor Dr Eddy Yusuf.

Doing SMU proud at Early Career and Student Statisticians' Conference video competition

Singapore - SMU undergraduate Shawn Lew Wei Hwa has done the University proud by winning the video competition at the Early Career & Student Statisticians Conference 2021 (ECSSC) on 26 July 2021.

Shawn, currently in his second year with SMU's Lee Kong Chian School of Business, clinched the prize for his presentation of "Project Guide. Me", an analysis of how well the visually impaired have been able to integrate into Singaporean society.

ECSSC, previously known as the Young Statisticians Conference, is a forum designed to connect student statisticians and those in the early stages of their careers.

Rosie Ching, Senior Lecturer of Statistics from SMU School of Economics and Shawn's statistics lecturer in Project Guide.Me, gave a strong arm of encouragement that helped keep Shawn on track during the process.

Shawn impressed judges with his ability to tell the whole Guide. Me story in technical statistical language, succinctly and eloquently in less than 3 minutes, with masterful strokes that allowed viewers to relate to his message.

"It was a pleasant surprise when I first heard the news, which then turned into relief when I realised all our efforts were put to good use," said Shawn.

Lab-made self-replicating droplet may be missing link for origin of life

Japan - The missing link isn't a not-yet-discovered fossil, after all. It's a tiny, self-replicating globule called a coacervate droplet, developed by Japanese researchers to represent the evolution of chemistry into biology.

Their study is published in Nature Communications.

"Chemical evolution was first proposed in the 1920s as the idea that life first originated with the formation of proliferating aggregates from small molecules," said first-author and Hiroshima University Assistant Professor Muneyuki Matsuo. "However, the origin of such assemblies has remained a mystery as the missing link between chemistry and biology in the origin of life."

Matsuo and corresponding-author Kensuke Kurihara, researcher at KYOCERA Corporation, partnered to answer the century-old question: how did free-form chemicals become life?

The two raised that proliferation requires macromolecule production and self-assembly under the same conditions.

They synthesized a new prebiotic monomer from amino acid derivatives. When added to water in the room, the monomers condensed into peptides, which then spontaneously formed droplets. The droplets grew in size and number when fed with more amino acids. The droplets could concentrate nucleic acids — genetic material — and they were more likely to survive against external stimuli.

They said this study may serve to explain the emergence of the first living organisms on primordial Earth.

DOI:10.1038/s41467-021-25530-6

Placements during the pandemic at Amrita University

India - In these hard times, Amrita Vishwa Vidyapeetham organised a full-fledged campus placement drive, allowing corporations to conduct online recruitment for its School of Engineering students.

In 2020-21, over 110 MNC's and reputable business organisations hired over 78.1 percent of Amrita's B. Tech students using this virtual placement process, including Microsoft and Cisco. Also, in 2020-21 over 660 students attended industrial internships despite the pandemic situation matching the numbers of the previous year.

Through an online recruitment process that comprised over 110 companies, students were recruited for internships and employment (average package of Rs 5.6 lakhs per annum and highest compensation of Rs 56.95 lakhs per annum). Amrita has a Corporate and Industrial Relations (CIR) team across all six campuses. The core objective of the team is to assist in career competency and offer counselling to students.

Amrita Vishwa Vidyapeetham's education is focused on a well-rounded curriculum enhanced by value-based education. Through programmes like HuT and Live-In Labs, students can put their skills to use to tackle societal challenges.

PolyU creates ammonia-powered electric vehicle

Hong Kong - PolyU researchers have manufactured the world's first ammonia-powered fuel cell electric vehicle. The vehicle not only has zero-carbon emission; it also offers higher efficiency and safer energy storage than conventional electric vehicles.

Most electric vehicles are currently powered by lithium-ion batteries, but the batteries' bulkiness and recycling problems gave rise to alternative 'fuel cell electric vehicles' that are powered by hydrogen. However, there are safety concern about the risk of hydrogen explosions.

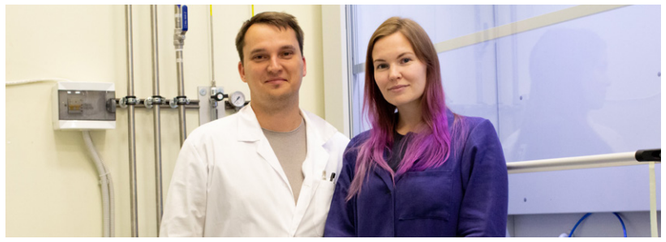
Professor Eric Cheng Ka-wai of PolyU's Department of Electrical Engineering, and Director of the Power Electronics Research Centre, used ammonia as a safer carrier of hydrogen to power electric vehicles and led his research team to manufacture an ammonia-powered golf cart this year and it is the first-ever ammonia-powered fuel cell electric vehicle in the world.

While 99.9 percent of the ammonia can be transformed, the remainder is filtered out by a gas purifier. The hydrogen obtained is used to generate electricity to propel the vehicle.

ITMO's nanoparticle paste makes perovskite solar cells more efficient

Russia - Researchers from ITMO's School of Physics and Engineering have created a paste of titanium dioxide and resonant silicon nanoparticles that will increase the generation of photocurrent in perovskite solar cells and maximize their efficiency.

The efficiency of halide perovskite solar cells is over 25 percent, which together with their low cost makes them one of the most promising devices in modern photovoltaics. One strategy to further boost their efficiency is to improve the charge collection or increasing light absorption by the charge generating layer. This makes the resulting devices more expensive.



Researchers from ITMO University together with colleagues from Tor Vergata University went around this problem by using Mie-resonant silicon nanoparticles, as silicon is one of the elements most accessible in nature.

This solution made it possible to increase the generation of photo-induced current in the perovskite structure and reach the efficiency maximum of solar cells based on the simplest perovskite composition.

The results of the work were published in *Nano Energy*.

Genetics of South-Eastern Caucasus preserve fundamental elements despite impact of centuries

Azerbaijan - Researchers from Western Caspian University, Thor Heyerdahl Museum (Oslo), and Copenhagen University concluded joint research on the genetic origins of the Azerbaijani population, looking into possible connections between people from Scandinavian people and the Eastern Caucasus.

The South Caucasus region is a white spot on the genetic map of the world. Therefore, the research group aspired to explore the roots of the population of Azerbaijan, which is presently subject to conflicting theories.

The study delved into how historical changes impacted the culture and language of the people living in contemporary Azerbaijan.

The joint research confirmed that despite all the upheaval by the numerous tribes passing through and leaving their genetic and cultural footprint on our land, they weren't able to have a fundamental impact on this land.

Generally, genetic research demonstrated that most of the Azerbaijani population are identical to the genes of the population of Caucasus before the arrival of Proto-European tribes.

St. Petersburg Mining University to strengthen alliance with University of Belgrade

Russia - St. Petersburg Mining University and the University of Belgrade are raising inter-university cooperation to a new level. Whilst the parties agreed to further work on joint research and deliver new student exchange programmes, the idea of establishing the Centre for Studying Russian Language and Science in Serbia emerged as a focal point.

The Russian Ministry of Science and Higher Education has already approved the project. Meanwhile, the Belgrade-based university is waiting for a green light from the city authorities and the Serbian Government.

The new institution will become a place to provide knowledge about Russia's economic, technological, engineering and scientific capacities. It can also serve as a meeting area for students and professors to share their experiences and exchange ideas.

World's first Bachelor of Climate Change launched by University of Waikato

New Zealand - The world's first Bachelor of Climate Change degree has been launched by the University of Waikato, delivering graduates who will lead future climate change solutions across all sectors of society.

The three-year degree combines scientific knowledge with understanding of economic, social, and political systems and Māori and Pacific responses to climate change.

University of Waikato Dean of Science, Professor Margaret Barbour, says as New Zealand and the world works towards a target of net zero emissions by 2050, our future depends on how we respond to the challenge of reducing greenhouse gas emissions and how we adapt to environmental change.

"While climate change is an incredibly complex problem, the solution is very simple – globally, we need to stop emitting greenhouse gases. This requires a fundamental shift in the way we do business and go about our lives, with careful consideration of inequalities in impacts," says Professor Barbour.

Seven core papers form the basis of the degree which culminates in a third-year group project, where students will come together to work with a company, iwi, or community group to solve a real climate change problem.

World's first AI-derived brain MRI indexes for detection of early cognitive disorders

Hong Kong - In a world-first by a team of researchers at the Faculty of Medicine of the Chinese University of Hong Kong (CU Medicine), a new method has been developed that could enable easier detection of early cognitive disorders, including Alzheimer's disease (AD), dementia with Lewy Bodies (DLB) and frontotemporal dementia (FTD).

The key is the use of brain magnetic resonance imaging (MRI) powered by artificial intelligence (AI). As the discovery facilitates treatment to begin sooner, new hope has been given to millions of elderly patients worldwide.

Harnessing the power of AI and its ability to recognise patterns of brain atrophy, CU Medicine investigated the performance of AI-derived MRI brain atrophy indexes for detecting early AD and other common forms of dementia. The study showed that sensitivity in the detection of mild AD was 92 percent, which was 25 percent higher as compared with visual inspection. Subjects who tested positive could then be investigated further via positron emission tomography or cerebral spinal fluid to confirm the diagnosis. Respective AI-derived MRI indexes also achieved good sensitivity in detecting FTD at a mild to moderate stage (96 percent) and mild DLB (83 percent).

Following the successful trials of its AI-assisted MRIs, the team has launched this innovative technology in the market and looks forward to making a positive contribution to the global treatment of AD and other forms of dementia.

Osh State University Medical facility opened

Kyrgystan - A multi-purpose medical centre is one of the priorities of reforming medical education in Kyrgyzstan. Osh State University is a pioneer among public universities that opened its own clinic. The university clinic is one of the leading medical and diagnostic complexes in the country, providing all types of medical care to the population.

This is a dynamically growing project aimed at providing high-end, 24-hour medical care on an ambulatory end emergency basis. One of these areas is considered an interventional radiology, which will solve the problems of diagnosis and treatment of cancer, endocrine, cardiovascular and other diseases. There had been introduced a complex of the latest cytogenetic methods to study a wide range of bone marrow, lymphocyte, chorionic villi, amniotic fluid, umbilical blood cells. The methods mastered allow verifying congenital genetic abnormalities at the earliest stages of pregnancy (up to 12 weeks).

The clinic provides its facility to students and residents of medical and international medical schools and colleges.

Advertorial

Binus University's Nayakalara:

Using Technology to Fight COVID-19

Indonesia - The COVID-19 pandemic has presented a challenge to all aspects of the human life worldwide However, it also has accelerated the adoption of new technology and pushed innovation forward. As one of the hardest-hit countries in Southeast Asia region, Indonesia is striving to tackle COVID-19 outbreak with domestically produced innovations. University researchers all across the country have been developing innovations in an effort to contribute in Indonesia's fight against COVID-19.

BINUS UNIVERSITY, one of the top Indonesian universities ranked in QS World University Rankings 2022 and Times Higher Education (THE) World University Rankings 2022, has also contributed in research and technology development in Indonesia during COVID-19 pandemic through AI-based robots called "NAYAKALARA". The project is led by Prof. Dr. Ir. Widodo Budiharto, S.Si., M.Kom., IPM., Professor of Artificial Intelligence at BINUS UNIVERSITY.

The name "NAYAKALARA" is derived from Sanskrit, meaning a warrior who fights against a worldwide plague. There are two robots developed by BINUS UNIVERSITY Research Team in the project: a disinfecting robot and a delivery and monitoring robot. Both robots are remotely controlled to minimize human contact and reduce the risk of contracting the virus.

The disinfecting robot is designed to carry 10-20 liters of disinfectant in one go, and can sterilize its surroundings within six-meter range. Meanwhile, the delivery and monitoring robot can carry food and other items to patient rooms, as well as facilitate patient consultation through virtual communication.

Today, twenty robots are currently in production by BINUS UNIVERSITY and two of them have been donated to hospitals in Jakarta. The rest will also be donated to more hospitals in need, located in different parts of the countries. The robots have also been registered to SINTA, the Indonesian registry of science and technology. Through NAYAKALARA, BINUS UNIVERSITY strengthens its commitment to foster and empower society in building and serving the nation.

Advertorial

A bounty of opportunities in Philippine Higher Education

Philippines - When the Covid-19 pandemic caused major disruptions in the delivery of education, it pushed higher education institutions to seek teaching and learning institutions to adapt to the signs of the times. The Philippine Commission on Higher Education (CHED) recognizes the need for uninterrupted education and continues to adapt, innovate and recalibrate to ensure that every Filipino student achieves his academic goals.

In response to the health crisis, CHED launched its policy on Flexible Learning, a continuing effort that provides options to conduct teaching methods in more flexible ways, making use of digital and non-digital tools and modalities. Faculty members of higher education institutions were capacitated through the HiEd Bayanihan program, a virtual and free cooperative environment for educational training, capacity building and resource sharing.

Among the academic advances implemented by CHED is the Transnational Higher Education, an enabling law that promotes the internationalization of Philippine higher education. This is an opportunity to create changes by re-imaging accessibility, equitability, global competitiveness, local responsiveness and sustainability.

Transnational education is opening doors to new niches and emerging fields. It provides endless opportunities to connect and innovate. Exchanges prepare students and faculty for the 4th industrial revolution, and research collaborations have proven to impact communities. Collaborations continue to be developed between Philippine higher education institutions and foreign universities.

Early this year, CHED launched the International Continuing Professional Education (ICPE) program which extends grants to leaders of state universities and colleges. The trainings provide them with the skills and competencies needed as they address the concerns and demands of their stakeholders.

The national strategy of internationalization, expansion of local and international linkages and partnerships, strengthened by new policy reforms, primarily the Transnational Higher Education law, lead to a bounty of opportunities in the Philippines' higher education sector.

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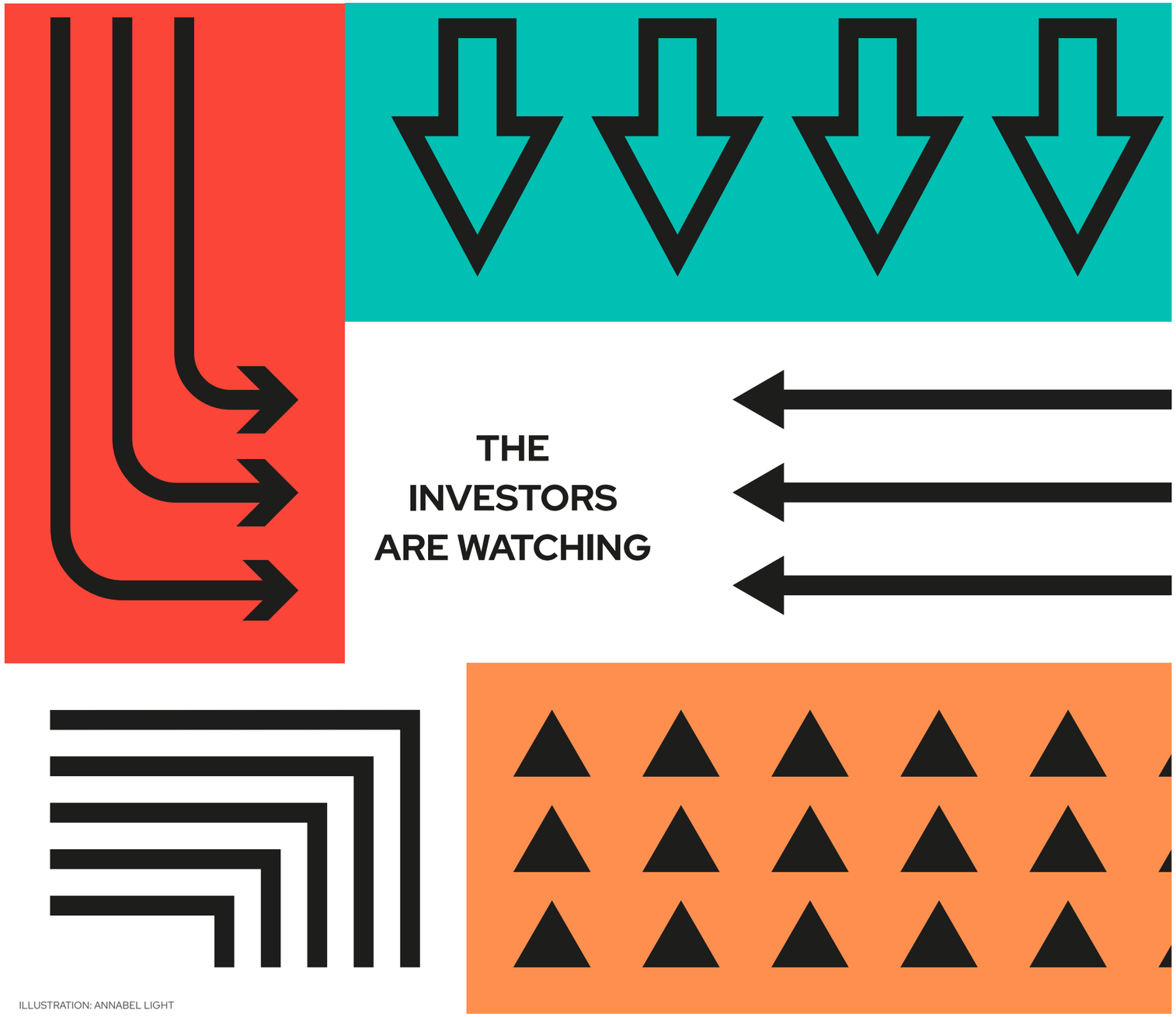


ILLUSTRATION: ANNABEL LIGHT

Edtech investment has seen exponential growth over the past decade, and the sector continues to bring in interest. Anton John Crace explores the motivations of investors, their challenges, and the possible future trends.

In July 2020, during a webinar on *Edtech and its roadmap to new realities*, hosted by entrepreneurial accelerator Wamda, Executive Chairman Fadi Ghandour reflected on what was, at the time, the emerging realities of COVID-19.

In his view, the pandemic finally pushed 19th and 20th century education models into the 21st century, a decade ahead of what many had predicted.

"This experiment basically accelerated everything that we thought was going to happen," he said.

"The pandemic basically said, [edtech is] here, it's here right now, and it forced adoption."

Venture capital and investment has been in the background of the broader education space for some time and is growing. Investors have been waiting patiently for the catalyst to spark the change that shifts the market.

The reasons for the interest are diverse. In the webinar, Ghangour observed a motivator was to serve the community, but there are also financial imperatives and expectations tied to private capital. The investment side of education also carries with it different abilities and challenges from universities.

Whether private investment can challenge, or even wants to challenge, higher education is yet to be seen, but Ghandour was clear in his message on how education should treat it.

"If you're a president of a university and you don't have a strategy for having distance learning, you shouldn't be the president. You're in trouble. You've been caught off guard. You didn't take this seriously," he warned.

"The investor community is watching."

A developing tech market

According to edtech insights provider, HolonIQ, investment interest in the education space has grown exponentially. From 2010-2019, yearly global edtech investment rocketed 14-fold, from US$0.5 billion to US$7 billion.

The highwater mark for the decade was achieved in 2018 when VC reached US$8.2 billion, pushing total investment over the period to US$32.2 billion.

While the sector closed out the decade with a downturn in yearly investment, HolonIQ remained overwhelmingly enthusiastic of its potential.

A mere few months before the pandemic took hold in 2020, the US and Australian-based company predicted the coming decade would see in excess of US$87 billion enter the market.

Its report tracking investment up to the first half of 2021 shows US$26.1 billion already, comprised of a record $US16.1 billion in 2020 alone.

Despite the growth in capital, HolonIQ's Co-Chief Executive and Co-Founder Maria Spies tells *QS-GEN* private investment in education is relatively low and still in its infancy.

"We did a comparison at one point about the combined market cap of education companies and healthcare companies," she says, continuing that comparing the two provides a level of insight as both are often seen as "quasi-public sectors, but quasi-privatised".

"Healthcare is more than 10 times the size [of education]."

One reason for this difference in size is that innovation in healthcare has been achieved through hardware development; new machines in the provision of prevention and cure with a tangible, physical product.

"In education, often the... companies are software providers, essentially," she says, pointing to platforms such as Coursera and Zoom Classroom, which utilise external content into a scalable learning system.

Recent history has also seen a number of big providers go public, such as Coursera and game-based learning system provider Kahoot! Spies says since the beginning of 2020, there have been almost 100 initial public offerings and second listing events, a significant number for the education market which she anticipates will continue to grow, but still remain comparatively low against other sectors.

Consequently, the vast majority of private investment in education, particularly edtech, remains at the VC stage. The relatively small number of public education companies, however, is only one contributing factor to the low number of retail investors and funds considering education as part of their portfolio.

Another, arguably more impactful factor, Spies notes, is that education as an investment is not on the minds of most people.

"I don't know that your average investor would... think about the education vertical," she says.

"If you're investing in ethical stocks or SDG type rated stocks, yes, [but] it's such a small part of the public markets.

"I think there's an opportunity for it. But if you did an analysis of the public companies in education, you have quite a lot of mature, education delivery," she continues. These include players operating in the traditional education model space, such as Kaplan. Companies, Spies says, which started as providers creating and teaching their own curriculums before going public.

Sign of the times

"There's been a flurry of capital into the system in the last two years," agrees Nic Newman, Partner at Emerge Education.

"Until recently, edtech had been seen as a poor cousin of the technology sector. People have been looking, but people haven't seen the same return opportunities, so therefore they've been sitting on the sidelines."

Newman sees the ongoing COVID-19 pandemic as the main driver behind the US$26.1 billion invested in edtech since 2020. With lockdowns and face-to-face teaching and research limited, new online solutions were needed.

"COVID has really allowed edtech to have much more voice, personality, and results," he says.

"Edtech is trendy. Suddenly, edtech looks like it's achieving very high multiples, so it looks like it's going to have a great return on capital perspective, similar to other technology sectors."

Year	China	United States	India	EU	Rest of World	Total	Change
2015	2.0	1.5	0.1	0.1	0.5	4.2	
2016	1.6	1.1	0.2	0.1	0.2	3.2	-23.8%
2017	2.3	1.3	0.3	0.3	0.2	4.4	+37.5%
2018	5.2	1.6	0.6	0.5	0.3	8.2	+86.4%
2019	3.9	1.8	0.5	0.6	0.2	7.0	-14.6%
2020	10.2	2.5	2.3	0.8	0.3	16.1	+130.0%
2021 H1	1.9	3.2	1.4	1.4	2.1	10.0	+37.9%

Investment in edtech ($ billion) source: HolonIQ

Interest wasn't always this high.

Founded in 2013, Emerge was an early player in the education investment space. At the time, Newman says private money into the sector tended towards grants, philanthropy, and impact investments.

Reflecting on his experience as an entrepreneur in mobile technology the decade prior, Newman says he and Emerge founder Jan Lynn-Matern saw early signs that parallels could be drawn between telecommunications and the potential trajectory of education.

"Back in 2003, mobile was a little bit like edtech was five years ago," he says. "People were like, 'Oh, you're doing ringtones, you're doing websites, you're doing SMS, and you're doing SMS platforms'.

"What on earth are you doing? Look at all this technology over here, this is why mobile's interesting. And of course, in 2007 the iPhone came along."

Sticky and patient

Investing carries inherent risk and investing in education carries the additional burden of potentially low, slow, or no returns on investment.

"Firstly, if you're going to invest in education, you have to be patient; it's called patient capital," says David Linke, Managing Director of Australian edtech peak body, EduGrowth.

"It would be a rare tech company that you invest in and then get a return in a three-to-five-year horizon."

Ironically, Linke observes, investment in learning shares parallels with the education system itself.

"I don't know that you go to school and come out two years later and have learnt everything," he says.

"It's something you're just going to keep learning and you get more."

In general, there are two broad types of private investors. Those looking for returns by eventually cashing out, through acquisition or via an IPO, and those looking for ongoing revenue. In the case of the latter, notes Linke, education can be a compelling prospect for "sticky revenue", continued income over long periods of time, albeit at a lower rate of return compared with cashing out, orexiting.

"Once you get into the market, it's very hard to displace that product," he says.

"If I sell to a university and I've spent two or three years making that sale, and they spend a year or so installing it, implementing it, and doing it properly, it's very hard for any institution to then say, 'You know what? We don't like it, we'll flip to another [product]'."

Revenue generating companies, adds Newman at Emerge, are popular with the private equity market, which usually invests in established organisations that are not publicly listed on the share market, and tends to prefer majority ownership.

Focussed on early-stage companies with high growth potential and above-average rates of return, particularly start-ups, the VC market tends to prefer exiting, however, it may also look towards sticky revenue, and it's not uncommon for private equity to invest with exit in mind.

A series of risks and returns

The lifecycle of private investment moves from pre-seed and seed in the initial stages of a company, through to Series A, B, and C, as the company matures, and eventually onto an IPO if it chooses to go public. The company may also continue past Series C, be acquired by another, or stay as a private organisation.

Each of these stages of private investment carries with it expectations of returns based on its level of risk.

Newman, whose Emerge operates in the pre-seed and seed stages, explains the earlier the investment the higher risk, but adds this carries with it higher return expectations. To mitigate that risk, start-ups will usually be part of a larger portfolio.

"We're hoping, of course, that the company is going to achieve a significant amount. The whole fund has to return three to five times the capital to what you put in," he says.

Across a portfolio of 20 start-ups, Newman tells *QS-GEN*, it's likely five will fold, 10 will perform reasonably, and five will outperform the market.

"You have to allow for the losses, and you only really get to return money to investors if you have some outlier returns," he says.

From Series B funding onwards, the risks attached to a company reduce as it proves itself in market, grows its client-base and revenue, and increases its number of employees. Because risk is reduced, the expectations of returns also diminish, from five times the value of investment down to two.

Supplement, complement, replace

"There aren't many metrics when you're investing early. You really are investing in the team and the market itself," continues Newman.

"To take the highest risk, you've got to have a really deep understanding of the market, a real belief in the markets, and you've got to really believe in the founders."

According to Newman, private investment's growing interest in education stems from a strengthened understanding of the challenges education is facing.

HolonIQ estimates the list of edtech unicorns, companies valued at over US$1 billion, sits at just over 30, as of November 2021.

In its history, a handful have left the list after going to an IPO, such as massive open online course provider Udemy and language learning app Duolingo, but it continues to grow.

In the second half of 2021, newcomers included Articulate, GoGuardian, upGrad, Emeritus, Vedantu, and Andela. Half of those, it's worth mentioning, made the list after entering Series E funding.

More importantly, says Spies

of HolonIQ, are the stages of the education lifecycle that investors are targeting.

"They're not positioning themselves in opposition to, or in competition of traditional models of learning," she says. "They're not even thinking about it."

It's other external challenges that attract investment. Challenges such as life-long learning and reskilling due to Industry 4.0, career progression, graduate employability and connecting with employers, tracking student success, and supplemental education. These challenges see investment concentrated around higher education, but not wholly within it.

The government is watching

The growing concerns of Industry 4.0 has led to 50 percent of VC sitting within workforce education and training alone, however, the 'future of work' is only one influencing factor.

Spies says workplace training opportunities are "typically unencumbered by regulatory restrictions", which have accelerated investors' interest.

"[A] downside of education VC is that it's a regulated environment that's always trickier, higher risk, and slower," she says.

The relationship between accredited higher education and employment is accentuated by both employers and students. According to the 2013 *Recovery: Job Growth and Education Requirements Through 2020* report compiled by Georgetown University in the US, employer demands for higher education have more than doubled over the past four decades.

In 1973, 28 percent of jobs required some level of post-secondary study. By 2020, that figure rose to 65 percent.

Meanwhile, 84 percent of students said they chose a college to "get a better job", according to the 2020 CIRP Freshman Survey, from the Higher Education Research Institute at the University of Californica Los Angeles's Graduate School of Education and Information Studies, in the US.

QS' 2021 International Student Survey also found 50 percent of respondents chose a course so they could enter the field of work they wanted.

To be able offer an accredited qualification, a provider must meet their region's respective quality assurance requirements, which can be onerous, and consequently disincentivise private capital from pursing full degree-issuing status.

> ***"I don't know that your average investor would... think about the education vertical"***

This difficulty in navigating regulatory requirements is also an influence directing investment towards the supplemental education market, particularly within the K-12 space through online tutoring and after-school services.

Things can change quickly.

In July, the Chinese government introduced new guidelines to reduce the burden on students, which included measures that bar private tutoring companies, including edtech providers, from raising capital and earning profits.

The crackdown caused stock prices to plummet and was a contributing factor to the substantial drop in investment between 2020 and the first half of 2021 in the country, shrinking from $US10.2 billion to US$1.9 billion.

Testing grounds

There are other regulatory frameworks, such as consumer protections laws, the investors need to be mindful of, but the obligations educational regulations impose don't entirely preclude private investment from establishing accredited programmes. The London Interdisciplinary School, founded in 2017 in the UK, is one example with a physical presence.

LIS received degree awarding status in 2020, and Co-Founder and Chair Chris Persson tells *QS-GEN* that while seeking accreditation can be difficult, it also has benefits.

"The buyer is very conservative, they want to have a recognised degree," he says, echoing the findings of the Georgetown, HERI, and QS reports.

"By having our own degree to award students that come through the LIS programme, we're sort of on par with Oxford, Cambridge, and all the other universities."

A more significant benefit of accreditation is that regulators require investors have a plan for almost any eventuality, "other than an asteroid hitting the Earth" jokes Persson.

"As a Start-Up, it's actually quite a good list of checkpoints to make sure that we do the right thing," he says.

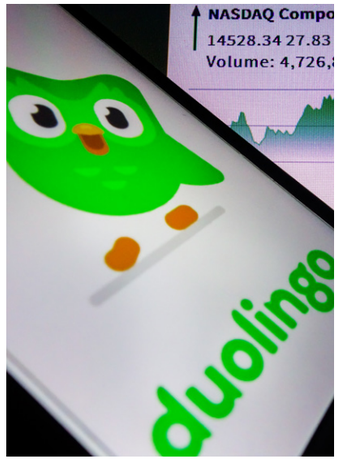
"You have a lot more responsibility to that 20-year-old because they gave all their trust to you. You have to take that seriously, and that regulatory framework helps you, as a start-up, to set up your company."

Now that it has received accreditation, LIS is looking at how it can innovate from inside the system.

Offering a single Bachelor of Arts and Science programme, majoring in Interdisciplinary Problems and Methods, the school flips the conventional education model, with students studying from the perspective of a problem they want to solve, rather than through set subjects.

The school also delivers non-accredited online programmes, with an accredited master's programme is set to launch soon.

LIS also has a small, diverse cohort of 65 students which is backed by a learner-centric approach and attention to outcomes, tracking how students learn to make teaching more impactful.



Parts of the curriculum are online to explore the effectiveness of doing so, which informs LIS' other online courses and MOOCs.

Persson says the institution is in a research and development stage for the direction of higher education and he and his investors are prepared to wait.

"Our focus is on quality of learning outcomes, over maximising profit," he says.

"We believe that our application of existing and new technology, including online courses will lead to much more useful learning, and we want to play in that high-quality student outcome game."

Underrepresented audiences

Prior to COVID-19, the UN's Sustainable Development Goals put access to education into focus. As returns in education can be slow and limited, SDG four, to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, sits as another motivator for investors.

How this motivation plays out varies between investor and edtech solution. LIS, which is backed by Emerge, sees there is an opportunity to challenge the current admissions system.

"In most countries in the Western world, you apply through a grade system which is really unequal," says Persson.

"If we were only looking for students with the top grades, we will get a certain kind of student and we don't think it's representative. We take a rounded view of the students; every student is interviewed for two hours."

Questions LIS asks include students' passions, and their ability to deal with problems in addition to determining their understanding of maths and sciences. This approach, Persson says, borrows from the job market, where employers are becoming less concerned with hard skills, and more focussed on character traits.

Persson started his career in management consulting and invested in marketing software to help restaurants and other retail operations. After some time, he says he came to the conclusion that the work was exciting, "but pretty pointless in the big scheme of things".

Wanting to have more impact, he says he and his fellow LIS co-founders turned to education. This focus led to their approach to curriculum.

"We want to create a degree programme which has the opportunity to address the important issues in our society, such as climate change, inequalities and most recently Covid," Persson explains.

"We think the most effective way of doing that is to have an interdisciplinary mindset in this networked world we're living in."

Emerge's founder Lynn-Matern published a manifesto for the company in 2020, detailing the reasons he chose to invest in education. A child of migrants, he says growing up, his parents decided "education was the answer - whatever the question". Their commitment to education led Lynn-Matern to secure scholarships and eventually secure a place at Oxford.

"It's a familiar enough tale and one that's created many entrepreneurs through the ages," he writes.

"But I believe that now, as a path out of poverty, it's just not working so well anymore. Today's education no longer provides the opportunities we need it to."

Newman, meanwhile, says he came from a working-class background and hadn't considered university as an option until a teacher encouraged him to apply.

"The power of democratising education, that was a belief perspective," he says on investing in education.

The thoughts of Persson, Lynn-Matern, and Newman underline what many education investors are attempting to achieve.

"They're trying to build a whole new market," says Spies at HolonIQ.

"They're trying to build a whole new way of thinking about learning. They're trying to build whole new audiences from non-audiences."

It's the challenges higher education faces that have created several potential audiences, not only at a learner-level through access, but also at an institutional level to serve and understand student needs. The problem, as Newman puts is, is that for a long time "people thought it can't happen, or it's going to happen, but it's going to take years".

The length of time it can take to shift a market is another reason why those investors tell *QS-GEN* capital needs to be patient. Spies, however, adds this patience can also work in advantage of VC, especially large funds.

"The venture money does allow [audience building] for potentially ever, or certainly for a very long time."

Gold, gold, gold

"I do worry just a little bit about; is there a gold rush coming?" asks Linke at EduGrowth.

"Are we going to see a whole bunch of capital coming into the market not necessarily with great understanding of what education and education technology is and drive-up valuations for a spike?"

Growth begets growth, and as edtech and the increased levels of investment in education elevate the sector above its "poor cousin of technology" status, there are some concerns that it could encourage the wrong types of players into the market.

"Whenever there's a hot property, you get people who pour into it. It doesn't necessarily mean that they're there long term, either," he adds.

How much concern should be placed on that eventuality is unclear; Linke reiterates those looking for quick returns have chosen the wrong sector with education.

There is, however, another partner that may also provide further oversight in the eventuality of a "gold rush".

In most parts of the world, government is the biggest investor in both education and edtech. In Australia, EduGrowth has long advocated for the creation of a national innovation fund to support the country's edtech sector. In the UK, innovation agency Nesta partnered with the Department of Education to launch the Edtech Innovation Fund in April 2019.

Linke sees a need for a split between private and public investment to bring the benefits of both into the development of edtech. Having government participation creates a more holistic understanding of the potential pain points of new educational realities, particularly from a regulatory standpoint.

Another consideration is the quantity of capital within the market.

"The potentially more concerning area is where investment or capital is taken as an indication of like success," says Newman.

"Some tech companies choose to highlight their recent funding rounds, say their Series B... and they use it as part of their sales proposition."

Smaller providers that don't have developed procurement procedures, particularly K-12 schools where buying can be less sophisticated that in universities, the value of company can be the influencing factor rather than the quality of the solution, or the needs it actually meets.

The future of investment

There are two ways of look at the expected growth in investment. Newman observes that it can encourage duplicated solutions and create a noisy marketplace. Alternatively, he suggests it can be seen as further confidence in education as an investment opportunity.

A benefit of increased capital has meant founders and entrepreneurs are now taking education seriously when previously they may not have do so. Other, established companies, are now broadening into new markets.

Linke agrees and says, "capital's not going away. It's just a matter of where it's going to go.

"Education technology investment is going to increase, and we'll see more consolidations... and the market will become less fragmented."

There is a clear future for investment in education, and Spies says its necessary to achieve the goal of long-term prosperity.

"In order to grow something or build something new, you need capital. That's just the law of business," she says.

"One of the things about the current, public education market is that it has got certain structures and rules, and people are excluded from it. A lot of people are excluded from it.

"If you want to provide access, if you want to provide opportunities for people to do education in whatever form, for outcomes, for jobs, then you need to invest." ❖

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- State Key Laboratory of Oral Diseases (the only one in China)
- National Clinical Research Center for Oral Diseases
- International Cooperation Research Center for Oral Disease

- National Virtual simulation center for experimental stomatology education
- National Demonstration Center for Experimental Stomatology Education

- The first stomatological museum in China
- The first oral health education museum in China

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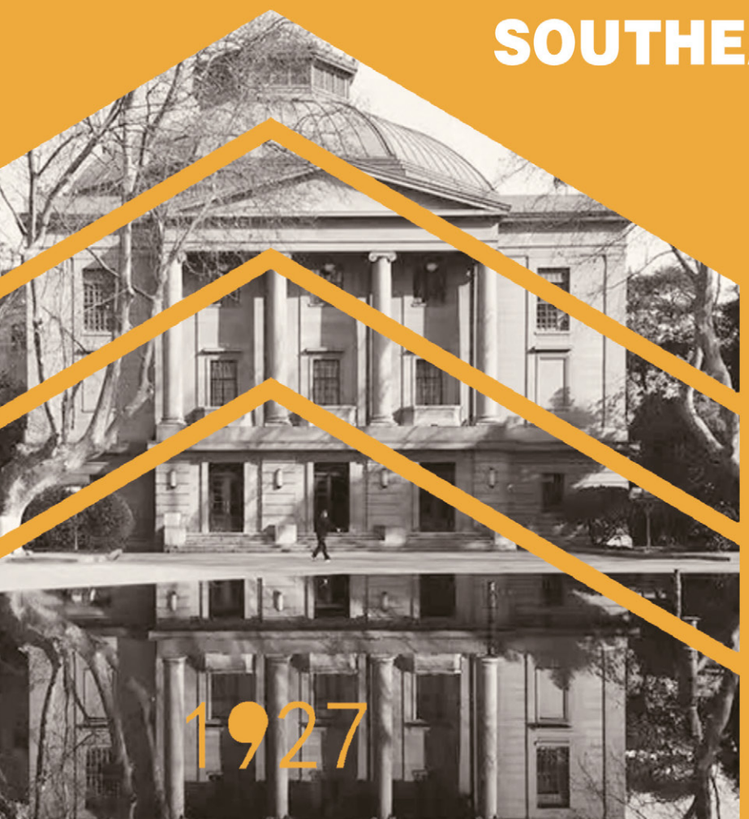

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NUUz unveils innovative centre within the initiative NICOPA

Uzbekistan – National University of Uzbekistan (NUUz) launched a fresh innovative spot aimed to modernize curricula in precision agriculture using new technologies Geographic Information System (GIS), Big Data, and Remote Sensing collaborated with the Local NICOPA Project Coordinators.

Within the framework of this event, project authorities officially disclosed the virtual Computer class (VCR) and the PASO office at the Faculty of Geography and Natural Resources, and professors, teachers and students who completed 72-hour courses on precision agriculture were awarded international certificates.

Current project sets two practical curricula: Examining and upgrading existing curricula according to educational needs; and organizing new certified curricula according to the new accomplishments in the sphere, the labour market requires and the Bologna Process.

COVID-19 vaccination on a remote island by Tokai University

Japan - In order to contribute to the safety of the islanders living in Ogasawara Village in Chichijima, an island located approximately 1,000 kilometres from Tokyo, Tokai University dispatched medical staff, including doctors, nurses, and pharmacists by means of the university's research and training vessel "Bosei Maru" during the summer of 2021.

As Tokai University has a School of Medicine and a School of Marine Science and Technology, this initiative was achieved through an agreement between the Tokyo Metropolitan Government, Ogasawara Village, and Tokai University based on cooperation and collaboration for vaccination against COVID-19.

Since 12-year-olds were also vaccinated on the island, there were some questions from parents about the long-term prognosis of the vaccine, and efficient explanations were given by the doctors. (In Japan, people over 12 years old are eligible for vaccination.) Fortunately, no one had any serious adverse reactions after being given two doses of the vaccine.

Melon-harvesting Robot, IPB University innovation for Smart Harvest

Indonesia - IPB University has presented a new innovation in the form of a melon-harvesting robot.

Dr Karlisa Priandana, the head of the innovator team explained that the innovation is aimed at the automatization of a smart melon greenhouse at IPB University's Agribusiness and Technology Park (ATP). Dr Karlisa, who is an expert in robotics from IPB University's Computer Science Department, also described that with the robot, precision of ripe fruit selection would be higher, leading to higher quality of harvest. This innovation is one of IPB University's efforts to increase the interest of younger generations towards agriculture.

The concept and all components of the robot, including the robot body, robot arm, and the development of image processing technique to recognize fruit ripeness, were designed and developed in IPB University's Advanced Research Laboratory.

PT XL Axiata, on the other hand, provided 5G infrastructure so that the robot could communicate with the server in real-time, while Dian Nuswantoro University developed the robot's control.

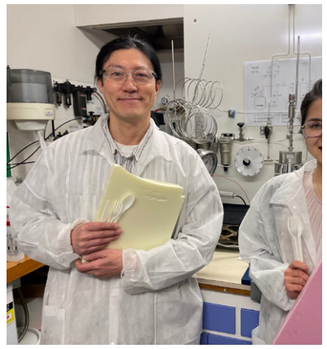
New New Zealand research, plastic cutlery recycled into home-insulating foam

New Zealand - Biodegradable plastics are supposed to be better for the environment but, rather paradoxically, because they are designed to degrade quickly, they can't be recycled. Offering a potential solution, New Zealand researchers have found that compostable plastic can be turned into a foam that can be used as building insulation.

University of Canterbury Chemical and Process Engineering academic Dr Heon Park, along with co-authors PhD student Lilian Lin, and BE(Hons) graduate Young Lee, have developed a method, using the right temperature and pressure, to convert single-use plastic, such as knives, spoons and forks, made from PLA into a foam that can be turned into insulation or flotation devices.

Polylactic acid (PLA) is a plastic made of fermented corn starch or sugar cane. It is designed to break down harmlessly, but if PLA enters the environment, it doesn't always break down as intended.

Dr Park, who studies biodegradable foams and the synthesis and processing of biodegradable plastics says, "by tweaking the temperature and pressure, there is a window where we can make good foams. We found what temperature or what pressure is the best to make those non-foamable plastics into foams."



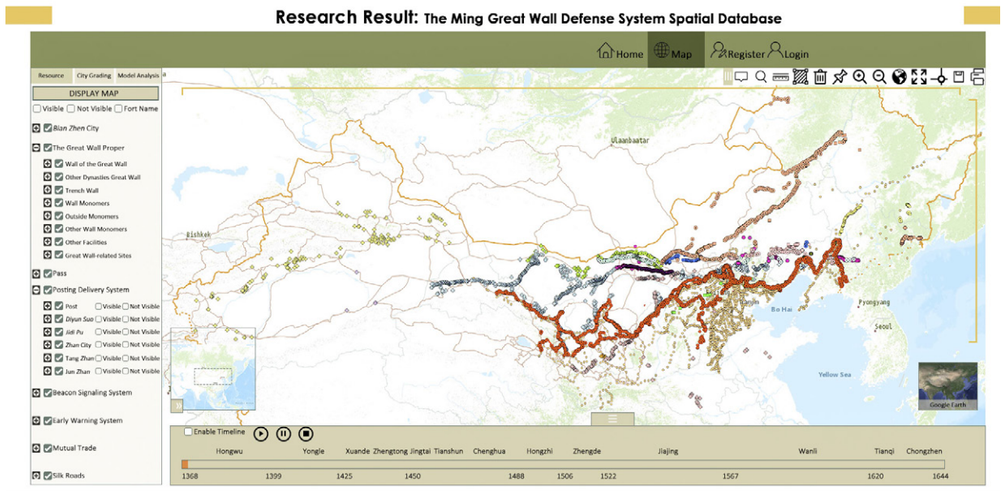
The researchers found, contrary to what was previously thought, lower chamber pressures led to bulky foams, good for flotation buoys.

Ming Great Wall integrity study and global-full line database

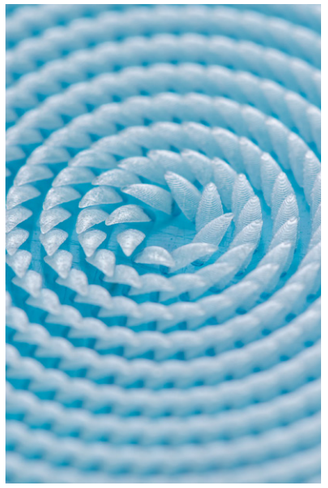
China - In the past 20 years, Professor Zhang Yukun of Tianjin University has led a team to complete the defence system integrity study and set up two databases through global and full-line field research, historical document verification, and independent research of information collection equipment, and initially realized the overall digitization of the Ming Great Wall.

The data components of the "Ming Great Wall Defense System Spatial Database" include the Great Wall ontology, border forts, passes, post transmission systems, beacon transmission systems, early warning systems and border trade gates.

"Ming Great Wall's full-line image and 3D database" has completed centimetre-level accuracy of 5,500 kilometres (total 6,200 kilometres of artificial walls) of 3D data and point cloud processing of the Great Wall, using image-based artificial intelligence technology, automatically identifying feature points, and amounting to about 8TB.



World's first discovery of liquid directional steering on a bio-inspired surface



Hong Kong - Inspired by a tree leaf found in a theme park in Hong Kong, scientists at City University of Hong Kong (CityU) demonstrated for the first time the directional transport of different liquids on the same surface, solving a two-century-old challenge.

"The conventional understanding is that a liquid deposited on a surface tends to move in directions that reduce surface energy, determined mainly by the surface structure rather than liquid's properties, such as surface tension," said Professor Wang Zuankai in CityU's Department of Mechanical Engineering who led the research.

But he and his team found that liquids with different surface tensions exhibit opposite directions of spreading on the Araucaria leaf, in stark contrast to this understanding.

They designed a surface with 3D ratchets of millimetre size, replicating the Araucaria leaf's physical properties with 3D printing of polymers. It enables liquids of different surface tensions to spread in different directions.

They controlled the liquid flow direction by adjusting the proportion of water and ethanol in the mixture to change its surface tension. This breakthrough provides insight in using 3D surface structures for intelligent liquid manipulation and heat transfer applications.

The findings were published in the prestigious scientific journal *Science*.

With EQUIS accreditation, the first & only Triple Crown School in Japan

Japan - On September 29, 2021, NUCB Business School was awarded European Quality Improvement System (EQUIS) accreditation from the European Foundation for Management Development (EFMD), one of the largest international quality evaluation organizations for management education.

Only educational and research institutions that demonstrate the highest possible quality in curricula and research activities throughout a rigorous review by a panel of esteemed expert examiners are eligible to become one of the few hundred (as of now 197 business schools worldwide) to earn EQUIS accreditation.

Graduate schools of management that have acquired all three of the most influential and established international accreditations - AACSB (U.S.), AMBA (U.K.), and EQUIS (Belgium) - are known as 'Triple Crown' schools achieving the highest level of excellence. With its accreditation by EQUIS, NUCB Business School now becomes the first Triple Crown business school in Japan, having also been the first to be dual-accredited by the AACSB (2006) and AMBA (2009).

We are proud to be amongst the 1 percent of business schools

worldwide with this distinction, and are eager to continue improving the quality of our programs in line with recommendations from the world's foremost experts on management education.

Award-winning Lingnan University Wheelchair Control System assists caregivers and improves safety

Indonesia - The Lingnan Entrepreneurship Initiative (LEI) of Lingnan University (LU) in Hong Kong has developed the CREW Wheelchair Control System which intelligently predicts a carer's intentions to better control a wheelchair, improving the safety.

The research team won the Gold award at the international MUSE Design Awards, and has already filed patent applications in Hong Kong and Mainland China for this ground-breaking humanitarian innovation.

While electric wheelchairs have become increasingly popular, they hard to control for neuromuscular disorder patients and older adults with deteriorating hand functions.

The force-sensing-based CREW Wheelchair Control System can be plugged into the wheelchair push handles to detect and intelligently predict the magnitude and direction of force, both forward and backward, making them easier to push or stop.

It is especially helpful on a slope, as the system provides additional power when moving up a ramp or down a hill with a regenerative braking system converting kinetic energy to recharge the batteries.

The system can also automatically travel in a straight line, which helps carers and minimise the risk of injury.

Improved additive for engine oil by VolSU researchers

Russia - Modern engine oil is a high-tech product with a complex composition. In addition to base oils combination, different functional additives are used to improve its effectiveness. Researchers of the Institute of Priority Technologies of Volgograd State University (VolSU) under the guidance of Prof. Dr. Irina Zaporotskova developed an additive with enhanced performance characteristics.

As VolSU researchers noticed, there were many different additives based on nanoparticles. They decided to use carbon nanotubes as the most perspective nanomaterial which achieves the greatest affinity for petroleum hydrocarbons.

By adding a certain amount of carbon nanotubes into oil composition, VolSU researchers got an impressive result: the obtained composition had significantly improved physical and mechanical properties, oxidation stability as well as delayed aging and extended operating temperature range.

At present time, VolSU researchers are developing a new additive using carbon nanotube dispersions. According to the preliminary results, the additive can be put in oils during their operation. Also, it is not necessary to change completely the oil in a vehicle and it has a longer service life compared to the existing ones.

Students catalyse sustainability-aligned transformation toward green campus and beyond

Taiwan - Students as changemakers play key roles to foster social innovation and maps strategies to solve real-life challenges to address Sustainable Development Goals (SDGs) on and off campus.

Taking National Taiwan University as an example, student clubs such as uCup Club, Climate Action Club as well as Roots and Shoots Club undertake pilot initiatives to advance SDGs. As a catalyst for social transformation, uCup Club successfully implements a system of renting reusable plastic cups to reduce over ten thousand plastic cups and was awarded national-level Circular Innovation Prize.

Vice President for International Affairs Prof. Hsiao-Wei Yuan says that it is vital for students to pivot toward social and environmental sustainability and generate far-reaching impact through a community-engaged platform.

Students gain an understanding of different standpoints from multiple stakeholders and develop competences in communication and problem-solving aimed at raising public awareness of ecological sustainability.

While environmentally sustainable practices are integral to cast accountable higher education institutions, shared community and the planet, students take the role of global citizenship to bring out locally-relevant robust influence.

VNUHCM receives USAID funding to strengthen teaching, research, innovation, and governance excellence

Vietnam - The US Agency for International Development (USAID) announced the Partnership for Higher Education Reform (PHER), a five-year project providing up to $14.2 million to strengthen teaching, research, innovation, and governance within the three largest national and regional universities in Vietnam, including Vietnam National University - Ho Chi Minh City (VNUHCM), Vietnam National University Hanoi and Da Nang University.

Through investments, the Vietnamese Government and World Bank have inked a loan project to improve teaching and research capacities in leading universities in Vietnam.

This new partnership intends to build on effective models, introduce innovative approaches, and develop a new partnership with international universities and industries to assist VNU-HCM in becoming a World –Class University.

The project is designed based on the co-creation of ideas and inventions through facilitating mutual collaboration and cross-learning. The purpose of the main activities is to enhance teaching methodologies, research quality and quantities, and preparation of graduates well-aligned with the demand from the workforce for a developed social economy and nation.

On 6th October 2021, the first workshop, "Program for teaching and learning excellence" was operated online with more than 100 international and local educational managers and researchers from U.S Universities, Vietnam National Universities, and Da Nang University. The discussion emphasized on proposing technical solutions to improve teaching and learning, online learning, industry linkage, and employability.

With USAID support, VNUHCM has the great potential to accelerate the current university system into regionally competitive institution with advanced teaching and research capabilities. This will also foster VNUHCM into a new direction to reach its vision, becoming *"A university system in the top of Asia, a home for the convergence of Vietnam's science, technology, culture and knowledge."*

UA&P wins Asian Business Case Competition 2021

Philippines - The University of Asia and the Pacific (UA&P) team composed of Industrial Economics students Ethan Gabriel Lee, Scott Gabriel Tiamson, Regina Maria Padojinog, and Marco Antonio Agonia was awarded Grand Champions of the Asian Business Case Competition 2021 (ABCC). They are the first Philippine team to have ever won in the 13-year history of Asia's largest sustainability case competition.

The UA&P team outranked students from universities around the world, including the University of Cambridge, University of Oxford, National University of Singapore, Singapore Management University, University of New South Wales, and the University of Belgrade. This places them alongside previous winners such as the University of Toronto and Nanyang Technological University.

UA&P's second team likewise put up a strong fight and placed within the top nine teams of the competition.

Clinical venture and innovators assess new biomed accelerator projects in TMUxBE Accelerator's Demo Day 2021

Taiwan - The TMUxBE Accelerator's Demo Day is the first Hospital Joint Venture in Taiwan that focuses on innovative counseling projects for smart healthcare. The exhibition of projects passing the first-phase selection was held in July 2021.

Nine biomedical start-up companies shared their experience in product development and how they accelerated business growth. In addition to showcasing actual results, this event also promoted the upcoming Market Expansion Pilot Trial.

US Partner Christine Winoto, Executive Director of UCSF Rosenman Institute in the United States; and Japan Partner Yujiro Maeda, Co-director of Japan Biodesign & Co-founder of Premo Partner, were invited to participate and facilitate overseas expansion of Taiwan's medical startup teams.

The TMU Biomed Accelerator is the first international-level innovative medical university accelerator in Taiwan, targeting three major themes including digital medicine, artificial intelligence and medical equipment.

Bolshoi Ballet Academy hosted 5th National Research-To-Practice online conference

Russia - In Russia, 2021 has been declared the Year of Science and Technology, and the main topic of the Conference was "Urgent Issues of Evolution of Ballet and Choreography Arts".

Ballet teachers, post and undergraduate students, researchers, and arts and culture workers from the Uzbekistan State Academy of Choreography, The Belarus State College School of Choreography, the Kazakhstan National Academy of Choreography and others participated in the Conference.

The topics varied between science and technologies in arts and culture institutions and activities and accomplishments of prominent researchers and scholars of arts criticism and arts teaching techniques.

The participants discussed hot problems of contemporary studies of arts and culture, as well as innovations and succession in the field of arts. Topical issues of evolution of ballet arts and choreography education, as well as role and accompaniment craft in dance education got their share of attention too.

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Teaching Gen Z

Generation Z, or Gen Z for short, is quickly beginning to represent the largest cohort of students at universities around the world. Chloe Lane finds out whether this new batch are snowflakes, tech-addicts, or simply just misunderstood.

Addicted to technology, low attention spans, snowflakes: these are just a few ways Generation-Z have been described in the media recently. However, according to the lecturers who teach them, these labels couldn't be more wrong.

"It's intensely annoying to see phrases such as snowflake bandied about," says Professor Paul Wiltshire, a journalism course leader and senior lecturer at the University of Gloucestershire in the UK.

"In the last two years [throughout the COVID-19 pandemic], this generation has shown huge creativity, resilience and sacrifice."

Generation-Z, often shortened to 'Gen Z', are the generation born between 1997 and 2012. Currently, this includes university students aged between 18 and 24.

Professor Sunita Malhotra teaches on the CEMS Master in International Management (MIM) at Louvain School of Management in Belgium.

"I love teaching Gen Z students and hope I never have to stop teaching them," she says.

"As a truth-seeker myself, I want to make the world a better place and believe in individual expression, so Gen Z's values are extremely close to mine."

"I want to make the world a better place and believe in individual expression, so Gen Z's values are extremely close to mine."

Engaging Gen Z students

According to Vision Critical, the average Gen Z student has an attention span of just eight seconds. Despite this, Pew Research has found them to be the most educated generation yet, with around 57 percent of university-age students enrolling in higher education, compared to 52 percent of Millennials and just 43 percent of Gen X.

With such a supposedly low attention span, teaching students to the expected high standard should pose challenges, but Professor Malhorta believes this statistic doesn't account for student engagement.

She says if a student is interested in what they are learning, they will have the passion to fully engage in the material.

"Rather than having a short attention span, Gen Z students want to be engaged, valued, and listened to as individuals within their learning," she says.

Gen Z also crave flexibility, explains Professor Malhorta. They don't want to be stuck in a monotonous 9-to-5 job, and instead crave passion and purpose in their work.

Dr Louise Robson, a senior university teacher at the University of Sheffield's School of Biosciences in the UK, also challenges the statistics on attention spans. She tells *QS-GEN* that in her 25 years of teaching experience, she's found Gen Z have a similar attention span to any other generation of student.

"If a lecture involves an academic standing at the front of a large lecture hall and talking at a group of students for 40 minutes, the attention span in the room will understandably wane, whether the students are Gen Z or not," she says.

Using digital teaching methods

To avoid drops in attention spans, Dr Robson has changed the way she teaches, using technology alongside traditional lectures to encourage students to play an active role in the learning process.

As class sizes continue to increase year-on-year, she's found using technology helps large groups of students to feel more engaged and creates a supported learning community.

The University of Sheffield's hybrid teaching and learning platform Echo360 enables Dr Robson to create video recordings for students before class. During the lecture, she uses the platform to drop anonymous polls and open questions to keep students engaged.

It seems Gen Z students feel incredibly comfortable using technology. According to Global News, Gen Z spend approximately 10 hours online each day.

"Gen Z are truly digital natives," explains Professor Malhorta. "Digital is part of who they are, and they have never had to learn it."

Professor Malhorta has also made the switch to digital learning, finding it a much more effective and interactive method of teaching than traditional lectures.

"I rarely use slides and if I do, it is just a few to introduce the concept. Quizzes, collaborative whiteboards such as Miro, and resources that are colorful, visual, and engaging also work brilliantly," she says.

Professor Wiltshire often uses social media platform TikTok in his journalism lectures, as well as online learning tools such as Padlet and Socrative to collaborate, seek opinions, and reinforce learning.

"Each year we embed social media more intensively into assessments and our teaching: TikTok has been a particular focus in the last year," he says.

The length of TikTok's videos are 60 seconds or less, but Professor Wiltshire and his colleague Sophie Flowers often use them in modules as explainer videos and in their news day social media output.

"We also get our first-year students to look at how journalists use TikToks as virtual CVs," he said.

PHOTO: COTONBRO

Changing the way students are assessed

It isn't just lectures that are becoming more technological. The pandemic has encouraged change from the traditional exams and essay assessment methods, reveals University of Sheffield's Dr Robson. As a result, assessment methods are now a lot more diverse than they were 10 or 20 years ago.

Dr Robson explains that the type of assessment she sets depends on the year-group of the student. For example, for first year students, lectures involve multiple choice quizzes, data-analysis tasks, or oral presentations, which help them assess the basic subject knowledge and understanding.

However, in second and final year, lecturers are looking for a higher level of critical analysis.

"We find open book problem solving assessments are a great way to ensure students have developed the key skills they need to use to succeed in their chosen fields once they start their careers," says Dr Robson.

Similarly, Dr Malhorta is trying to move away from the traditional assessment methods to engage students and interest them in the subject.

"I'm a firm believer in not setting drawn-out, complex exams. It is better to assess students in fun creative ways, which accurately capture their passion for the subject," explains Professor Malhorta.

Dr Malhorta's CEMS students run a cross-cultural leadership fair and online exhibition as part of their assessment. She thinks this method of assessment is a lot more beneficial to students than the traditional exam format.

"I rarely use slides and if I do, it is just a few to introduce the concept."

PHOTO: ALYSSA ROSE

When reviewing students' performance in these assessments, Dr Malhorta rewards creativity and always makes sure to give personalised qualitative feedback.

While teaching his journalism students, Professor Wiltshire tries to move away from academic writing as much as possible, preferring to encourage journalistic writing instead.

Instead of traditional essay assignments, many of Professor Wiltshire's assessments involve building students' portfolios, with online stories, social media shorts, videos, podcasts, and presentations. He also uses quizzes as part of the formative assessment.

Helping students find solutions to complex global issues

Ultimately, Gen Z students want to be passionate about what they're studying and understand the reason for studying it.

"Gen Z students have a keen interest in finding solutions to many of the world's greatest challenges, from climate change to sustainability, equality, and diversity," says Dr Robson.

At the University of Sheffield, sustainability has been embedded into the curriculum as a direct result of conversations with students. Dr Robson encourages higher education professionals to talk directly with students about what they want from university curriculums.

Gen Z also has a stronger interest in certain subjects, such as technology, climate change, social justice, and world issues, adds Professor Malhorta.

"It is rare I sit with a Gen Z student and do not have a philosophical discussion of some kind. The key if you are preparing something as a teacher is to make sure you add in cases that address the issues of today," she says.

For journalism course leader, Professor Wiltshire, the challenge is finding new ways of approaching these important issues and approaching them as journalists.

"We very much teach in short bursts, with frequent breaks and changes of pace," says Professor Wiltshire.

Avoiding stereotypes

As with any generation, there is a tendency to generalise and stereotype. In reality, each student is different and will learn in different ways, explains Professor Malhorta.

"Every individual is different based on upbringing, culture, and values, so it is not as simple as dividing generations into categories according to year of birth," she says.

Although certain generations can share certain interests and views, it is only by spending time with each student that you can find out who they are and how they like to be taught.

Overall, all three lecturers enjoy teaching Gen Z students.

"I absolutely love teaching Gen Z students" says Professor Wiltshire

"It's a huge privilege to be let into their lives, and to see them grow in confidence and skills over the time they are with us.

"They can occasionally be frustrating, but they are always fascinating, and always keen to be the best versions of themselves possible," he adds. ❖

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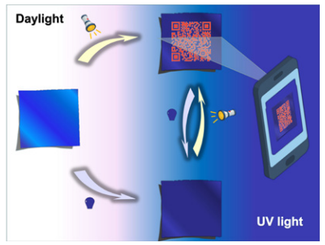
Switching counterfeiters off

Singapore - Counterfeit money and goods such as microelectronics, software, pharmaceuticals, and clothing not only cause enormous economic losses but also put the health of consumers at risk.

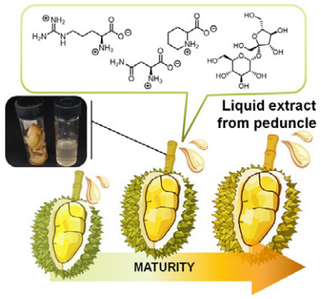
To fend off counterfeiters, an Nanyang Technological University (NTU) team developed a novel photoresponsive material for use as high-security anticounterfeiting ink. Featuring a reversible chemical luminescence on/off switch that responds to changes in light, the new ink enables the reversible encryption and decryption of multiple information patterns.

By remotely alternating ultraviolet and visible light irradiation, the luminescence signal could be switched on and off, allowing the researchers to verify the anticounterfeiting tags multiple times.

"Our high-security anticounterfeiting ink can be used to authenticate food, medicine and other goods," said Professor Zhao Yanli of NTU's School of Chemical and Biomedical Engineering and School of Physical and Mathematical Sciences, who led the research.



Chula chemist finds durian ripeness indicator



Thailand - A Chula Chemist has found that sugar and amino acid content in durian stems can indicate its ripeness to help growers with timely harvest.

The traditional wisdom of durian growers in tasting the liquid of the durian stem sparked an interest in Associate Professor Dr Thanit Praneenararat, Department of Chemistry, Faculty of Science, Chulalongkorn University, to use the knowledge in chemistry to analyze the age of durian from the stem without cutting the fruit from the tree.

For the research, Associate Professor Dr. Thanit used three groups of Monthong durian from the orchards in Rayong province at 13-weeks old, 15-weeks old, and 17-weeks old.

"We found that the liquid in durian stem contains sugar compounds that correspond to the sweetness from tasting, but chemical analysis showed that when the durians began to ripen, the amount of sucrose drastically increased while glucose and fructose decreased," said Associate Professor Dr Thanit.

"This research is the first step towards developing a method that will help growers assess the age of uncut durian, which can reduce economic losses from premature harvest."

Findings were published in *Scientific Reports*, an international journal affiliated with *Nature*.

NCUT and Taiwan Mitsubishi Electric hold 2021 CNC Smart APP Summer Camp

Taiwan - Mitsubishi Electric Taiwan Corp and National Chin-Yi University of Technology (NCUT) jointly held the first batch of "2021 CNC Smart APP Summer Camp" from 23-25 August.

Mitsubishi Electric Taiwan Corp, challenged for the first time to hold short-term learning activities, brought together strong faculty from industries and academia for a total of 3-day courses and attracts 40 trainees from 14 universities to participate in, and continue to inject new momentum into Taiwan's smart machinery industry.

To enable trainees of Mechanical Engineering to step into the field of software development, in the beginning of courses during the 3-day summer camp, teachers from Electronic Engineering and Mechanical Engineering were invited to instruct courses based on software tools and interface design to help non-IT major students build up the foundation for software development grammar.

Advanced Mitsubishi Electric CNC controller software API development practice course was arranged in the rest of courses.

Trainees are led by the instructor from Department of NC Technical Support in Mitsubishi Electric Corp. to operate the controller to provide API for data access which gradually strengthens trainees' confidence in learning and triggers an interests in the development of applications of intelligent machine

It is expected that the trainees are able to work on research and development in intelligent machinery in the future and drive to upgrade in Taiwan industries.

Enhancing forest inventory via high-resolution satellite imagery

Malaysia - Researchers from Universiti Teknologi MARA (UiTM) Malaysia have embarked on a research project to develop predictive models to estimate the above ground biomass, stand volume, and carbon stocks of Eucalyptus plantations using high-resolution WorldView-2 satellite imagery in Sabah, Malaysia.

Ahmad Farid Mohsin, a graduate research assistant at the Faculty of Applied Sciences, conducted the research under the supervision of Professor Ts Dr Mohd Nazip Suratman. In collaboration with Sabah Forest Industries (SFI), the study has contributed to enhancing forest inventory practices which supports the realization of Sustainable Development Goals (SDGs) in addressing climate change agenda, promoting sustainably managed forest, and strengthening partnerships for sustainable development.

The research which was jointly funded by the Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education, Malaysia is the first of its kind in the country for the development of predictive models of biomass and carbon stocks of forest plantations using remote sensing.

Blood biomarkers show presence of Alzheimer's

Australia - World-first research at Macquarie University has paved the way to a low-cost blood test that could diagnose Alzheimer's disease up to 20 years before the onset of symptoms.

Macquarie University Department of Biomedical Sciences Research Fellow Dr Pratishtha Chatterjee is the lead author on a ground-breaking new study published in the journal Alzheimer's & Dementia.

The study is the first to show higher blood levels of Alzheimer's-related proteins in cognitively-normal older adults whose brain scans showed pre-clinical Alzheimer's, than in otherwise similar adults with normal brain tissue.

The researchers also found rising levels of these proteins in the blood of affected subjects over time.

"Our findings highlight promising biomarkers for use in early diagnostic and prognostic blood tests for Alzheimer's disease, prior to symptoms," Dr Chatterjee said.

"These findings will allow more cost-effective screening and prognosis in clinical trials."

The research involves an international, multi-disciplinary team from around Australia, the UK, the USA, Sweden, and Belgium headed by neurobiologist Professor Ralph Martins from Macquarie University's Department of Biomedical Sciences, who is also Foundation Chair of Ageing and Alzheimer's Disease at Edith Cowan University in Western Australia.

Is melting of permafrost in the arctic zone a global problem or new opportunities?

Russia - A. Tugushev, a graduate of the Department of Construction Technology (St. Petersburg State University of Architecture and Civil Engineering), under the advisory of Dr Professor A.N. Egorov performed a Master`s dissertation developing the assessment methods and mathematical modelling in the design and construction of green roofs.

At the recently held international conference "Arctic Territorial Development: Challenges & Solutions" (SPbGASU) speakers convincingly proved that an effective solution to the issues of green urbanism in the Arctic is real.

In strategically planning the development of the Arctic zone territories, it is advisable to apply optimization economic and mathematical modelling in the definition of construction objects, which will ensure simultaneously sustainable accelerated development of territories and environmental protection.

Google visionary told MAI students about future innovative technologies

Russia - Ivan Poupyrev, a graduate of Moscow Aviation Institute, visionary, inventor, scientist, director of the advanced technologies division of Google, gave a lecture to the students of MAI on innovative technologies of the future, which are already being developed today.

Former employee of Sony and Disney, he now is the innovation team lead at Google ATAP that creates smart things for brands like Levi's, Samsonite, Yves Saint Laurent, and Adidas.

From his point of view, computers and gadgets have long ceased to be just business applications, but have now turned into our companions. While running we take them with us, we have them by our side while cooking or communicating with friends and parents or doing many other things.

"We are not trying to create new gadgets. Our idea is that technologies improve existing things by adding new functions to them," Ivan noted in his speech.

Medicinal benefits of magic mushrooms

Australia – Following State government approval, Queensland Alliance for Agriculture and Food Innovation's Dr Alistair McTaggart is studying native magic mushrooms to help identify characteristics that may be useful for medical research into psychedelic treatments.

Dr McTaggart said Australian magic mushrooms may be different from international species and may have been moved overseas, where they are now used clinically.

"Many species exist in Australia but we do not know how many species produce psilocybin – a psychoactive compound with effects similar to LSD," he said.

"However, we are very interested to find out and to aid research on their impacts for depression and post-traumatic stress disorder.

"Australian native magic mushrooms may have evolved different methods for psilocybin production and offer adaptations that are preferential for use in clinical treatments."

Dr McTaggart believes the current global interest in magic mushrooms is similar to that of the medical cannabis industry 15 years ago.

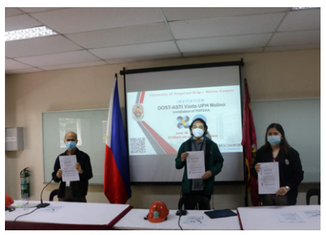
His study will be combined with another project, using genomic sequencing to determine which species of native non-magic mushrooms in Australia are edible, poisonous or adaptable for medicinal use.

UPHSD MOLINO and DOST-ASTI signs Project ULAT agreement

Philippines - The University of Perpetual Help System DALTA Molino Campus and Department of Science and Technology-Advanced Science and Technology Institute (DOST-ASTI) signed a Memorandum of Agreement for the installation of a P-POTEKA Lightning-Detecting Automated Weather Station (AWS) in the university, through the project locally called "Understanding Lightning and Thunderstorms for Extreme Weather Monitoring."

Project ULAT aims to observe the country's weather behaviours through studying torrential rainfall and thunderstorm occurrences as parameters to enable short-term forecasts eventually. This significant partnership will support the community, particularly the faculty and students of the College of Engineering, to be involved in the site selection, deployment, maintenance, and provide a safe and secure location for its continuous operations.

More importantly, relevant data shall be available for the university for research that may be used to prevent severe impacts of extreme weather conditions.



Breakthrough development of rapid screening of COVID-19 inhibitors

Taiwan – Finding a cure for COVID-19 with effective drugs is the aim of an international research team led by Professor Chia-Ching Chang from the National Yang Ming Chiao Tung University (NYCU) along with researchers of CGU and NCKU from Taiwan and the University of Malaya (UM).

A promising "Biosensing Platform" for the rapid screening of drugs with SARS-CoV-2 Inhibitors has been developed that would suppress the COVID-19 infection.

"With this platform, the SARS-CoV-2 entry inhibitors from the database of approved drugs can be identified fast." Professor Chang explained.

This new platform can be adapted for other infectious diseases as well. This demonstrated success would not be possible without the "Taiwan-Malaysia Semiconductor and Biomedical Oversea Science and Technology Innovation Center", jointly supported by NYCU and UM.

HKBU scientists invent rapid 'barcode' sensor for drug-resistant bacteria

Hong Kong - A research team led by Hong Kong Baptist University has developed a novel cell sensor that enables rapid and low-cost screening of drug-resistant bacteria.

Antibiotics are often used to treat bacterial infections, but their overuse has led to drug resistance. Antimicrobial susceptibility testing (AST) is currently used to determine which antibiotics can successfully inhibit the growth of a particular strain of bacteria, but conventional systems are either slow or expensive.

To solve this problem, the researchers designed a fully automatic, microscope-free AST system. Bacterial samples are injected into the cell culture zone, and the bacteria then flow into different micro-channels which host different concentrations of an antibiotic. The bacteria form visible bars, the lengths of which are proportional to the number of bacterial cells cultured under the different concentrations of the antibiotic. This "barcode" can then be photographed and analysed by a mobile app developed by the team, and it will reveal within three hours whether any drug-resistant pathogens are present in the sample.

The research was published in the journal *Biosensors and Bioelectronics*, and the invention could potentially be used to screen food and water, as well as urgent samples during an infectious disease outbreak.

Unveiling galaxies at cosmic dawn hiding behind the dust

Japan - While investigating the data of young, distant galaxies observed with the Atacama Large Millimeter/submillimeter Array, Dr Yoshinobu Fudamoto from Waseda University and the National Astronomical Observatory of Japan noticed unexpected emissions coming from seemingly empty regions in space that, a global research team confirmed.

To understand these mysterious signals, Fudamoto and his colleagues investigated matters further. In their latest paper published in *Nature*, they presented a thorough analysis, revealing that these unexpected emissions came from two previously unknown galaxies heavily obscured by cosmic dust. One of them represents the most distant dust-obscured galaxy discovered so far.

This discovery suggests that numerous such galaxies might still be hidden in the early Universe, many more than researchers were expecting.

This study constitutes an important step in uncovering when the very first galaxies started to form in the early Universe, which in turn shall help us understand where we are standing today.

UCSI's Joel advances research 'in' Harvard

Malaysia – In late 2019, UCSI University's alumnus Joel Phua Jia Meng began his research with Massachusetts General Hospital (MGH), a Harvard University Hospital right before the peak of the pandemic chaos.

Joel Phua, a Biotechnology student at UCSI, was one of the few students selected to do high impact research at a renowned institution of higher learning under UCSI University's Star Trek programme.

The programme aims to award the university's brightest students with opportunities to obtain exposure working or studying with top corporations and universities.

Joel's story is a testament for other students who are aspiring to study and do research in a prestigious school overseas. However even through his success, he has kept himself grounded and holds truly to his religion as a moral compass.

Sperm staining with black glutinous rice extract

Thailand – Thammasat University has invented a "sperm staining with black glutinous rice extract" technique to address infertility. The method, called "BR dye", assesses the fertility of sperm along with estimated proportion of healthful sperms to the total sperms count, and comes from research by Assistant Professor Dr Chollanot and Assistant Professor Dr Sirinart Chomean.

The principle uses extract from black glutinous rice together with cationic additives to aid in the staining of the genetic material in the nucleus of the cell. With this invention, the sperm staining enables us to see the shape and the healthiness of the sperms which leads to the right treatment process.

With the success of "BR dye", it will be further developed to stain the sample of vaginal discharge from wet mount (vaginitis test) in the case of women being assaulted.

The technique won the Outstanding Research Award of the Year 2021 from the National Research Council

EdUHK research recognised as 'World Leading' and 'Internationally Excellent'

Hong Kong – Over 60 percent of The Education University of Hong Kong's (EdUHK) overall research profile was judged to be 'internationally excellent' or 'world leading' by the Education Panel, in the Research Assessment Exercise (RAE) 2020 conducted by Hong Kong's University Grants Committee (UGC).

Under the new 'research impact' category, all of EdUHK's educational research was judged to have 'considerable' or 'outstanding impact' in terms of reach and significance. The University's research was also recognised as reaching the three-star or four-star level in different assessment units, covering earth and other physical sciences (67 percent), geography (62 percent), Chinese language and literature (55 percent), psychology (44 percent), computer studies and science (44 percent), and linguistics and language studies (43 percent).

The RAE assessed the research performance of the eight publicly funded universities against levels of quality defined by international standards. The UGC brought together 361 distinguished scholars with extensive professional knowledge and expertise in their respective fields.

EdUHK President Professor Stephen Cheung Yan-leung commended the research teams, stressing that the University had been committed to sharing research results with the education community through knowledge transfer, and would continue to promote educational innovation and contribute towards societal development.

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ARTHUR DINIZ

I am an 18-year old international student at Zayed University. I came from Brazil to join CIS (College of Interdisciplinary Studies), more specifically, the Computational Systems bachelor. Besides being a student, I am a musician, so I have interest in working with music technology in the future, which will be possible with the knowledge I'm acquiring at ZU. My experience so far could not be better: with the methodology of this program I've been learning so many new things, and I get to engage with the content in a way I never did before. After 2 months of course, I can affirm that this is the next generation university experience.

SHANZILLA AHMED

I am currently an International Student at the CIS program at Zayed University. I have always been interested in business and have started different projects of my own. This is the reason that I was attracted to the Business Transformation program at Zayed University. Unlike traditional Universities this program is most relevant for me as a business major as I don't just study theory related to business but I also get experience that makes the education more relevant and effective.

JAKUB MALISZEWSKI

I came here to Dubai all the way from Poland to study at the Zayed University's newest CIS program. My biggest passions are engineering and programming, so pursuing my interests, I've chosen a major in Artificial Intelligence and Data Science. The experience at the program is unique, it is something new and it completely changed the way I think about education. I will welcome you all to consider the program as it will change the way you think and prepare you for the future.

MAHREEN MUNIR

I am 19-year old from Al-Ain with Pakistani roots. I am a student entrepreneur and activist who aims to foster a culture of innovation amongst the youth. To do so, I started an organization that equips teens for the real world by igniting leadership, supporting creativity, and providing mentorship. Engaging with my passion for innovative learning further, I decided to join Zayed University's new interdisciplinary program. My experience so far has been more than anything I have ever wanted from an educational institution. What stirs my interest the most is the fact that I get to build my algorithmic, creative, and critical thinking skills - all the while transferring these expertise to a company project. I believe my fascination with entrepreneurship and data analytics will facilitate my decision by the end of this academic year. Until then, I am relishing every second of what the program is offering.

GABRIEL BASQUES

My name is Gabriel, I came all the way from Brazil to study in the new Zayed's Interdisciplinary program. Since the beginning of High School I realized that I was going to work in the technology field. However, last year I discovered my passion about entrepreneurship, leaving two businesses back home. With this new opportunity I am willing to study either Business Transformation or Computational Systems. The experience so far in the program is amazing, being outside of my comfort zone all the day, with learning every moment. New culture, food, family, friends and education. The hybrid model allows me to maximize my learning and time, testing every theory that we learn. If something goes different from expected, the peers and professor helps me to understand the topic and how to apply my knowledge in the real world.

To learn more about Zayed University Programs, visit our website.

www.zu.ac.ae

www.zuxminerva.com

QS Stars results

QS Stars is a rating system that provides a detailed look at an institution, enabling you to identify which universities are the best in the specific topics that you care about, like program strength, facilities, graduate employability, social responsibility, inclusiveness, and more.

QS Stars understands that universities are different to one another and therefore need to be assessed on a range of categories that recognize distinct strengths. It also recognizes that each student is looking for something different, and not all universities – even the highest ranked institutions – suit every student.

Using QS Stars when searching for your future program will help you understand which universities have performed well against a comprehensive list of indicators, allowing you to match your interests to the universities that are strong in the topics that matter to you.

In the methodology used for QS Stars, universities are evaluated in dozens of indicators across at least eight categories. After the assessment, universities are awarded with an overall Star result which ranges from 0 to 5+ Stars, depending on the number of points achieved through the evaluation.

Explore the latest results from QS Stars.

American University in the Emirates

The AUE was established in 2006 with accreditation from the Commission of Academic Accreditation (CAA) under the umbrella of the Ministry of Higher Education and Scientific Research in the United Arab Emirates. The AUE has experienced increased student enrolments from 25 countries and follows the American model of higher education with a general-education program and credithour system.

The University boasts seven colleges—Media and Mass Communication, Business Administration, Law, Design, Computer Information Technology, Security and Global Studies, and Education—with programs that cater to current and future marketplace needs.

VERY GOOD

Central Mindanao University

Central Mindanao University is a State University located in the heart of Mindanao Island, Province of Bukidnon, Philippines. It is one of the oldest premier universities in Southern Philippines. In 2017, CMU became the first Higher Education Institution in Mindanao awarded with Institutional Accreditation (Level II) by the Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP), Inc.

At present, the university has ten (10) colleges offering 33 undergraduate degree, 28 master's degree and 11 doctorate degree programs. The Commission on Higher Education (CHED) recognizes the University as the Center of Excellence (COE) for the four academic programs, namely: Agriculture, Biology, Forestry and Veterinary Medicine.

GOOD

Eastern Mediterranean University

Eastern Mediterranean University (EMU) provides a broad range of internationally accredited (i.e. ABET, AQAS, ASIIN, FIBAA, MIAK, NAAB, TEDQUAL, WACS World-Association of Chefs Societies) undergraduate and postgraduate degree programmes through its Faculties of Architecture, Arts & Sciences, Business & Economics, Communication & Media Studies, Dentistry, Education, Engineering, Health Sciences, Law, Medicine, Pharmacy, and Tourism, and Schools of Computing & Technology, Health Services, Justice, Tourism & Hospitality Management and Foreign Languages & English Preparatory School.

With its 17,000 student population from 110 countries and over 1,000 academic staff from 35 different countries it provides a vastly international environment for learning and cultural development. The total alumni of the university has surpassed 65,000 with the majority of these working overseas. EMU also gives great importance to keeping close ties with industry and to emphasizing practice alongside theory and prides itself in its safe, supportive and approachable manner both administratively and academically.

VERY GOOD

James Cook University

The Singapore campus of James Cook University is fully owned by James Cook University Australia, which is ranked in the top 2%* of universities in the world. James Cook University Australia established its Singapore campus in 2003 as part of its expressed intent of internationalising its activities and offers a suite of university level programs at the Singapore campus covering the areas of Business, Information Technology, Psychology, Education, Science, Commerce, Accounting, Aquaculture, Environmental Science, Games Design, Tourism and Hospitality.

James Cook University provides the opportunity for students to study in Singapore and in Australia and yet still remain as Singapore based students paying their fees in Singapore currency. This is a unique program in Asia because the university operates across both countries. The program is designed to ensure students get the best possible outcomes from their years of study with the university.

* The 2020 Academic Ranking of World Universities (ARWU)

EXCELLENT

Industrial University of Ho Chi Minh City

Industrial University of Ho Chi Minh City (IUH) closed the year with success as it obtained a 4 Stars overall rating in the second review of its QS (Quacquarelli Symonds) Stars evaluation. Previous, IUH completed a Stars audit in 2019 and obtained 3 Stars. Based on the QS Stars recommendations and suggestions, IUH has improved the performance and achieved their goal. "It has been a long journey for IUH to reach where we are since we started the audit in 2019. This didn't make us sad but instead it gave us an opportunity to improve ourselves. Thanks to QS Stars detailed report, we have had a chance to review our system, to find ways to improve our poor indicators" commented Dr. Huy Phuc Nguyen, Head of Office of Testing & Quality Assurance of IUH.

The university received 5 Stars in the categories of facilities, teaching, employability, academic development, and inclusiveness.

VERY GOOD

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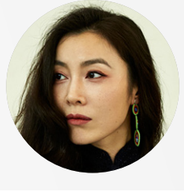

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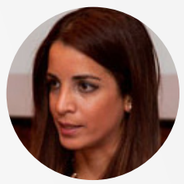

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* QS World University Rankings 2022
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QS-GEN is a quarterly newsletter that highlights students and faculty achievements, programme developments, research breakthroughs, innovations, international collaborations, inter-national mobility agreements and other notable accomplishments happening within universities across the world.

The online edition is emailed to our extensive network of academics and university leaders worldwide. Complimentary copies of the print edi-tion are also sent to university leaders around the world. In addition, these copies are distributed at all QS events

Version 1

CONFERENCES 2022

Mark your calendar and start planning for these events

QS MAPLE
1 - 3 March 2022 | UAE
www.qsmaple.org

QS China
April 2022 | China

EduData Summit
9 - 10 June 2022 | USA
www.edudatasummit.com

QS Europe
6 - 7 July 2022
www.qseurope.org

QS Americas
September 2022 | Latin Americas
www.qsamericas.org

QS India Summit
November 2022 | India
www.qsindiasummit.com

QS APPLE
November 2022
www.qsapple.org

QS Reimagine Education Conference & Awards
December 2022
www.reimagine-education.com