





# QUESTIONS

is a special publication of De La Salle University  
featuring research projects and creative endeavors by its faculty.

It highlights the Lasallian quest for information, action,  
and transformation as DLSU pursues  
its vision-mission as a leading learner-centered  
research university in the Philippines.

When we ask, we see  
different perspectives.  
When we gain knowledge,  
we act on solid ground.  
We do things better.  
We move towards big ideas.  
We seek to transform lives.  
We aim to empower people.

**WE HELP  
SHAPE  
A BETTER  
FUTURE.**



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# Is there a way to prevent coastal disasters?



*A team of scientists, including faculty members of De La Salle University, developed a tool that assesses the vulnerability of coastal areas to disasters such as floods, storm surges, and tsunamis.*

More than 90% of the changes happening to coral reefs can be attributed to human activities, and only an estimated 8% to climate change. To help coastal communities better understand their crucial role in the conservation of marine life and resources, their members are tapped by local scientists to take part in assessing their environment so that they can immediately take the necessary courses of action aimed at lessening, if not totally averting, the force of natural disasters.



DLSU University Fellow and Ecologist Dr. Wilfredo Licuanan, one of the proponents of a three-year research project that sought to assess the potential impacts of climate change on coral reefs, says a vulnerability assessment tool dubbed as the Integrated Coastal Sensitivity, Exposure, and Adaptive Capacity to Climate Change or ICSEA Change (“I-see-sea-change”) has been introduced to DLSU’s partner communities in the coastal areas of Batangas and around the country.

The tool makes use of scores that are assigned to certain conditions of the coastal area, and the user of the tool can immediately make an initial assessment of how vulnerable that area can be.

Coral reefs are known to absorb the impact of waves when approaching coastal areas. Licuanan relates that if, for example, through the use of the tool, a community finds out that the coral reefs within their coastal area are at risk, have been badly damaged, or have died, the community assesses which of the options of relocating homes, planting mangroves, or building seawalls in their area is more viable and sustainable. An immediate response can prevent possible high-hitting waves during typhoons or earthquakes from affecting the community living along the shores. This can mean saving hundreds or even thousands of lives, along with having only minimal impact on livelihood and resources.

The ICSEA Change Tool is one of the major outputs of Project MIRROR-- Monitoring and Impact Research on Resilience of Reefs. (Project MIRROR, meanwhile, is one of the eight projects under the Remote Sensing Information for Living Environments and Nationwide Tools for Sentinel Ecosystems in our Archipelagic Seas, or RESILIENT SEAS, for Climate Change Program of the Department of Science and Technology.)

“We always make sure to involve the local communities in our studies, whether through data collection or some other form of assistance, so that they will have a better understanding of the benefits of having a healthy marine habitat in their coastal area,” Licuanan says.

He adds that through continuous dialogues with local communities, DLSU's COSCA and the Br. Alfred Shields FSC Marine Station have been able to assist in the setup of two marine sanctuaries in Lian, Batangas. Trainings and orientations continue to be held in various coastal areas around the country on the use of the assessment tool and how to identify changes in the conditions of these areas.

Licuanan explains that all these efforts of preserving and protecting the marine ecosystems in the country are continuously done, not just for the short term, but also in the long run, in an effort to make our marine resources available for our children.

*You don't have to be a scientist or an expert to help save our marine resources. You don't even have to be at the marine station or in coastal waters all the time in order to help. I have students who have helped create printed and audio-visual materials about our efforts to protect marine ecosystems. You can help support initiatives in your own way. You just have to have a better understanding of what's happening and dedicate time to help,*

Licuanan ends.

## Monitoring via tablets or smart phones

With a grant from the Commission on Higher Education, Licuanan is working with DLSU faculty member Ralph Vincent Regalado from the College of Computer Studies to develop the mobile app of the ICSEA Change Tool. This will enable anyone who has a mobile phone or tablet to undertake the assessment and file or generate a report in real-time. It will be released around the third quarter of 2013.

Dr. Wilfredo Licuanan







How can government  
deliver services to the poor  
more efficiently?





## Partnership with civil society for transparency and accountability

*A World Bank-funded project of De La Salle University pursues the institutionalization of civil society's role in the monitoring and assessment of government services to provide better services and improve the quality of life, especially of those from the poorest sector of our society.*

Sometime in 2011 in the landlocked area of B'Laan, Malungon, a municipality in Sarangani that has an estimated population of 100,000, students of a public school suffered from a total lack of water supply. With no clean water to drink nor extra water for the toilets, their health and sanitation became a grave concern.

It took a short visit by De La Salle University's partner team—composed of representatives from Mindanao State University, civil society organizations, and the local government unit—to discover their plight and get immediate action from the mayor.

The director of the DLSU Jesse M. Robredo Institute of Governance, Dr. Francisco Magno, notes that addressing such a situation and similar concerns is the goal of the Institute's three-year project entitled, "Institutionalizing Civil Society Monitoring and Assessment of Public Service Delivery to the Poor."

Commenced in 2010, the flagship project aims to promote transparency and accountability by improving the capacity of government agencies and civil society groups to jointly monitor local public service delivery to the poor across the country.

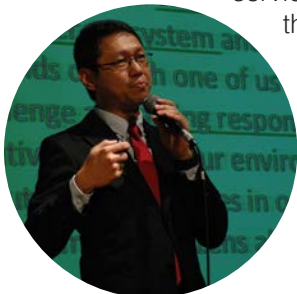
This collaborative initiative is pursued through the

development of knowledge partnerships between local universities. As the lead university, DLSU spearheaded the selection of partner universities that now serve as hubs for the development of knowledge monitoring tools.

Aside from the local universities, La Salle also formed a coalition with local government units, civil society organizations, and national government agencies for this program.

Through the various stakeholders' engagement, capacity-building activities have been identified, developed, and implemented. The project, which is now on its third year, covers eight sites: Solana and Peñablanca, Cagayan; Gubat, Sorsogon; Pavia, Iloilo; Sibulan, Negros Oriental; Pinamungajan, Cebu; Malungon, Sarangani; and Lake Sebu, South Cotabato. Select crucial areas in the delivery of public services including health, livelihood, and social welfare are monitored in these sites.

At the end of the project, lessons learned from the multi-stakeholder engagements, capacity development activities, and monitoring initiatives will be developed into case studies for future reference. A knowledge hub in DLSU will serve as resource for dialogues and seminars as well as for the development of courses and outreach programs, to encourage Lasallians to take part in the monitoring.



Dr. Francisco Magno



Magno also shares that his team will push through with the project even after it is completed by the end of 2013. They plan to increase the project sites and replicate the program in other areas in the country.

*The development concept today is not all government-driven. To ensure accountability, we need social accountability. Knowledge partnership is social accountability because we do not only expose government, we also reform government,* he says.

# Are we ready as a megacity?

## Innovation policies for Asian megacities

A three-year research on ASEAN megacities seeks more comprehensive and inclusive innovation policies, using a conceptual model that is appropriate to developing countries.

*In great cities, spaces as well as places are designed and built. walking, witnessing, being in public, are as much part of the design and purpose as is being inside to eat, sleep, make shoes or love or music. The word citizen has to do with cities, and the ideal city is organized around citizenship - around participation in public life.*

Rebecca Solnit, *Wanderlust: A History of Walking*







A vision of a great city is not lost to the proponents and beneficiaries of Gawad Kalinga, the Philippines' trailblazing community development model aimed at eradicating poverty in the country. So, too, for the nation's globally competitive talents in the fields of medicine and other technological disciplines, who believe that much sooner than expected, individuals and industries across the globe will be seeking for their services.

What is distinctly common among them is their innovation—a characteristic that a team of faculty researchers from De La Salle University's Angelo King Institute for Economic and Business Studies (AKIEBS) studied as part of the project, "Towards Innovative, Liveable, and Prosperous Asian Megacities—City Innovation Systems Asia."

"The project tried to merge analysis and frameworks on urban planning and innovation," explains DLSU University Fellow Dr. Tereso S. Tullao Jr., project manager for Manila and currently the director for AKIEBS. Funded by the International Development Research Center and done in partnership with Chulalongkorn University of Thailand, Asian Megacities project was developed in a span of three years that concluded in June 2012 at the All-Stakeholders Workshop held in Jakarta, Indonesia.



Different research teams from the participating cities of the ASEAN were involved, namely: Manila (Philippines), Bangkok (Thailand), Singapore City (Singapore), Kuala Lumpur (Malaysia), Jakarta (Indonesia), and Ho Chi Minh (Vietnam). Researchers identified the specific strengths and weaknesses of each participating city's innovation systems.

The overall objective of the project was to help cities foster their innovativeness, productivity, and competitiveness in various sectors of the economy. In addition, it aimed to develop practical solutions to address the undesirable consequences associated with rapid urbanization and identify sustainable development pathways that are responsive to the needs and interests of local stakeholders in these cities.

At the end of the project, the researchers collectively came up with their vision and goals of what the ASEAN region will be in 2030—a thriving region with “healthy places, prosperous people.”

*Dr. Tereso S. Tullao, Jr.*



How do you  
teach children  
how to think?







## Transformative Learning in Math

*A recent study gives a peek into a classroom where a DLSU graduate who is now a Math teacher applies the Transformative Learning paradigm she learned in college.*

A young teacher makes learning as irresistible as chocolates.

In one of her lessons, she flashed chocolate bars on a TV screen and managed to hook a class of young boys into the discussion. The topic was on dividing fractions, and the teacher started asking questions that would lead the students to understand the underlying concept of denominators.

Her class of Grade 4 pupils from La Salle Green Hills was the subject of a recent paper by Dr. Auxencia Limjap, a former faculty member of the Science Education Department of De La Salle University. Since DLSU institutionalized the Transformative Learning Framework of teaching in 2005, Limjap has been conducting studies on how TL could be applied in Math classes at all levels.

“In this particular study, one can see how reflective thinking can be nurtured if the teacher knows how to probe into the thinking process of the students. Teacher Christine (Mallari) was very skillful in asking questions and drawing out the ideas from her students,” Limjap notes.

One of those who pioneered the application of TL in the DLSU classroom, Limjap admits that in the beginning, she found it difficult to shed the habit of content-driven teaching: “For a long time, what was important for me was to cover in the lessons that would come out in the students’ departmental exam.”



*Dr. Auxencia Limjap*

But in TL, she says, she learned to shift her viewpoint. “In Transformative Learning, you start to think of how they think, how they understand things.”

Limjap, who also develops modules for academic leadership and management programs of DLSU, points out that the biggest challenge of the student-centered learning is to introduce this philosophy to other teachers who have yet to embrace it.

“For young teachers like Christine, who have graduated from La Salle, and others who have been introduced to the Transformative Learning worldview, the application of TL in the classroom is no longer difficult,” she adds.

Limjap explains that the beauty of this worldview is that once imbibed and applied, it enables the students to learn on their own. Beyond the syllabus and outside the classroom, students would still be able to remember and apply the theories and hold deep understanding of concepts that would help them solve problems and generate new knowledge.







What plants  
are unique to the  
Philippines?





## “Fingerprinting” and preservation of Philippine flora

*A new species of cycad, named after De La Salle University's Patron Saint, John Baptist de La Salle, was recently recognized by the international scientific community.*

During the centennial year of De La Salle University in 2011, a pair of scientists from the University's Biology Department and the National Museum scoured an open grassland on the low hills of Cagayan de Oro, Misamis Oriental. The exploration—a signature occasion to capture the idea of finding fun at work—yielded a thrilling discovery: a new species of cycad that belongs to the most ancient group of seed plants originating from the Jurassic Period. This particular plant group has diversified in the last 12 million years. The discovered cycad, a species endemic to Mindanao Island, is found nowhere else in the world.

Associate Professor Dr. Esperanza Maribel Agoo, with fellow researcher Dr. Domingo Madulid of the National Museum who also served at La Salle before his retirement, decided to name their discovery in honor of St. La Salle, whose educational legacy in the Philippines was being celebrated by the Lasallian community at that time.

Writing a paper on *Cycas sancti-lasallei* that later saw print in *Blumea Journal of Plant Taxonomy and Plant Geography* (published by the National Herbarium of the Netherlands in November 2012), Agoo shares that the cycad was also reported to have been found in Bukidnon.

The species can be distinguished from the other species of cycads in the Philippines with its very long leaves, crimped leaflets, megasporophyll lamina which has a semi orbicular to orbicular base and triangular top, and few but well defined spines. The species is assessed as critically endangered based on its low population density, low number of mature individuals, and very limited extent of occurrence.



According to Agoo, the discovery of new plant species like the *Cycas sancti-lasallei* is part of a project on “fingerprinting” of different plants, or what is called DNA bar coding. With a grant received from the Commission on Higher Education in 2009, Agoo and her co-researchers have embarked on an extensive data collection on orchids, gingers, cinnamons, and cycads. Their discoveries are brought to a molecular bio laboratory where the plants are given DNA sequences or bar codes.

Agoo’s field of research called Plant Systematics involves the investigation, identification, and classification of plants. Prior to the CHED grant, she had already made some other discoveries during her tour across different parts of the country. Another interesting find was in 2006 in Samar, where she saw a *Rafflesia Manilensis*, which was reported to have been last seen here in the Philippines in the 1800s. Through

her rediscovery, the locals became more aware of the biology of the species and thus, started conservation measures.

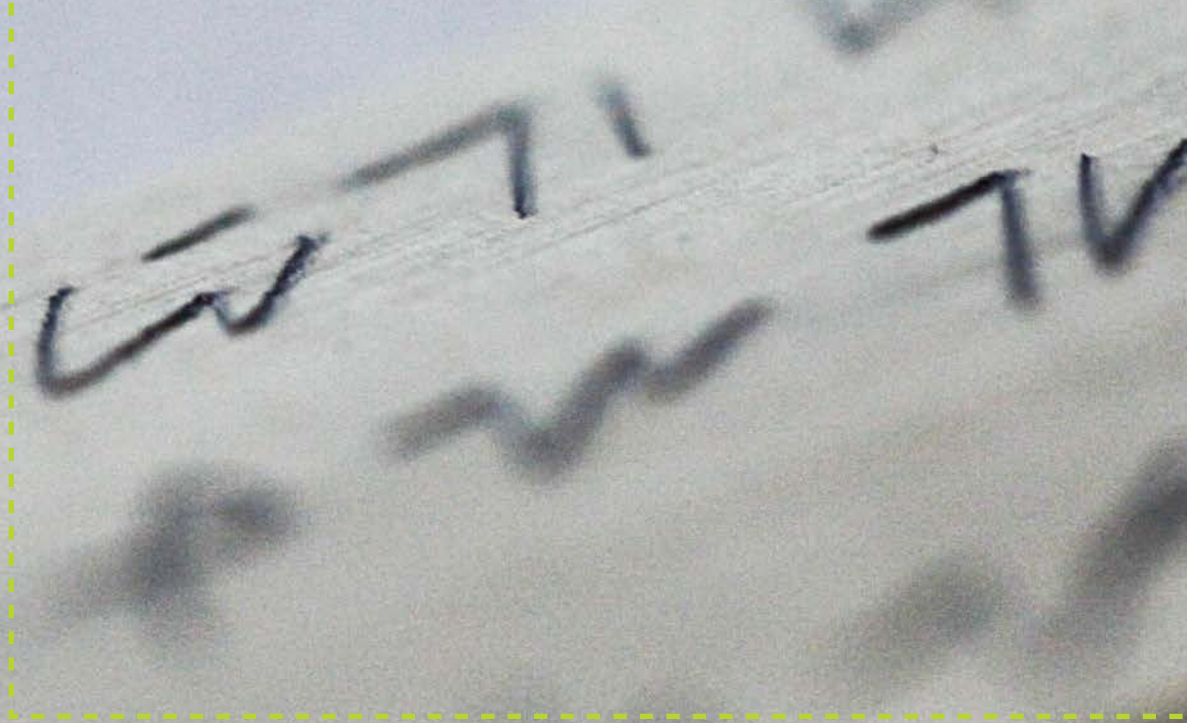
She also points out that through the bar coding, the smuggling of plants can be greatly averted, because the DNA of a plant can be easily checked from the Philippine National Herbarium database to see whether it is illegally traded abroad.

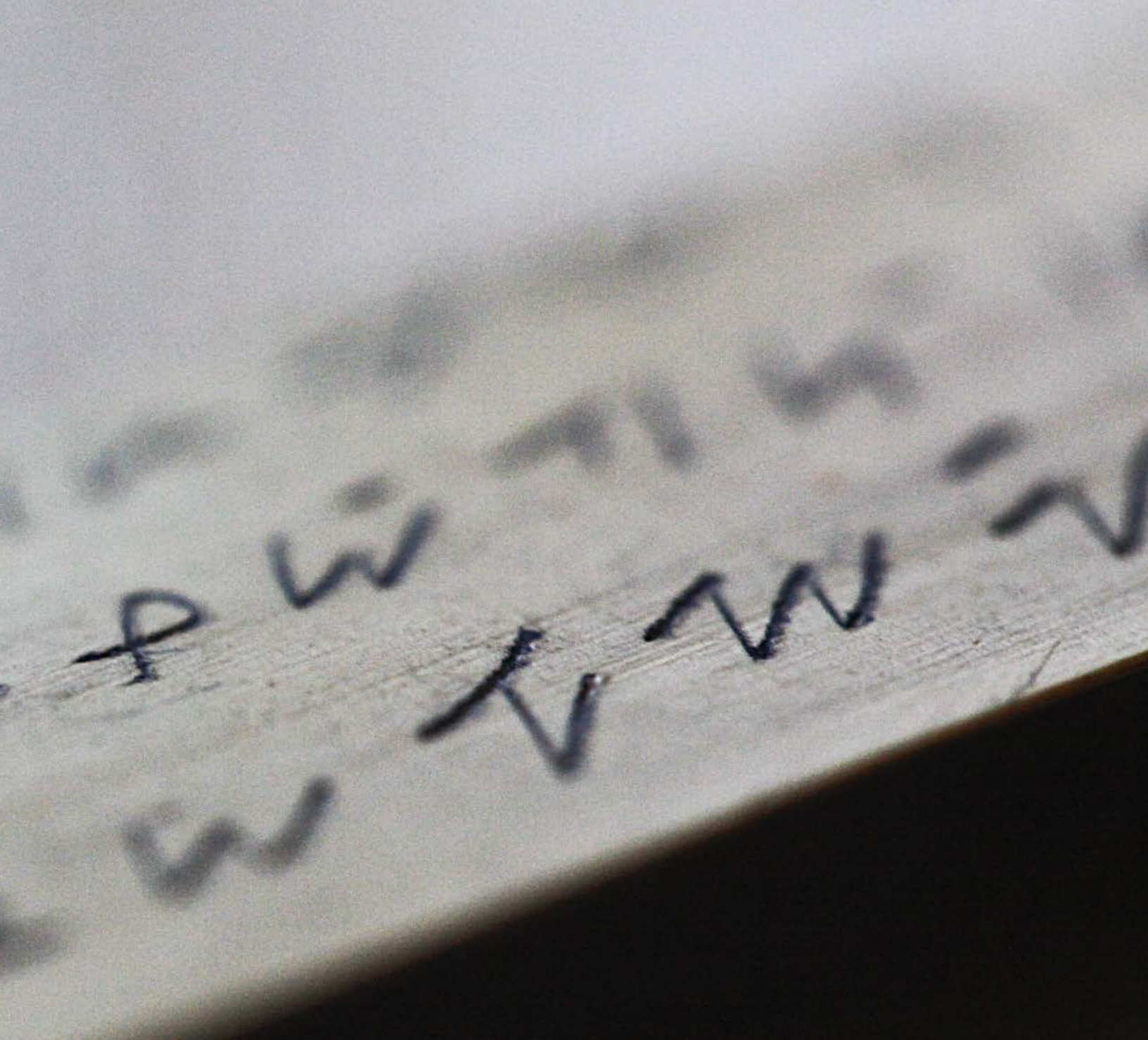
Sharing to her students the joys of scholarship and research in this particular field, Agoo continues to raise their awareness on the country’s rich but vanishing resources. “If they are just able to take a second look at plants after the course, then I’ll be happy.”



Dr. Esperanza Maribel Agoo

How do we keep  
our literary tradition  
alive?





## Honing the craft through workshops

*Craft Lectures, a regular project of the Bienvenido N. Santos Creative Writing and Research Center, seeks to provide a venue for students of De La Salle University to personally interact with established writers on the art and practice of writing.*

At De La Salle University, renowned local and international literary artists sit with young writers and book enthusiasts to discuss a specific aspect of the craft of writing or share techniques of a specific genre.

Through these lectures, students have the chance to closely interact with elite writers that most college students could only come across in books, including Cirilo Bautista, Paulino Lim, Clodualdo del Mundo Jr., Isagani Cruz, and Marjorie Evasco.

Without leaving the campus, students are likewise exposed to the world's voices, as the Center reaches outside the country for poets and scholars who, in person, can share their unique writing techniques or critical practices. Thus, a pupil learns not only skills but also a sense of the writer's own culture and history.

For example, students learned a different meaning of freedom and how it is to be Vietnamese in the point of view of poet Nguyen Phan Que Mai, an advocate of children and women's liberties in her native country.

They learned about "Earth Languages," a concept introduced by Dr. Stuart Cooke of Australia, from his study of trans-pacific indigenous Australian and Chilean poetics.

They experienced a distinctly Singaporean perspective on literature, memory, and imaginative frontiers from Singapore-born and British-educated poet Alvin Pang.

Apart from enabling young writers to engage practitioners in the art of creative writing, the activity also offers a chance of hearing the writer give voice to his own works, a practice lost in this age of social media, where anonymity is de rigueur and personal interaction has taken on a new meaning.

Through Craft Lectures, the Center reinforces its support of the work and vision of creative writers and uses these to enhance the cultural life of the University. With this is the hope that the young writers who benefit from the program will serve the communities to which they belong and foster and preserve the tradition of excellent creative writing in the Philippines.



*Bust of Bienvenido N. Santos*

Genevieve L. ASENJO

## Looking for Ginkgo

I. The wind lashes at the branches of the tree in front of you. You feel the cold crawling up from your wet socks to the hem of your pants. But the rain no longer holds any terror for you. Nor anything sentimental. So it's not as if you had mistakenly left your umbrella in Rm 203 of a five-story building. It is ash-colored, but it bears the inscription "corner Green House"—an engraved tablet beside a glass door, which opens upon approach and triggers automatic floor lamps, lighting up the stairs to your room. This amazed you the first time, like when you first sat on a wooden floor (the same color as the low table) in a nearby restaurant, where you pantomimed an order of *bibimbap* and *kimchi* for lunch.

You fish out a piece of candy from your bag, a token from that restaurant. You still have thirty minutes to wait out the rain, which you believe is a tail of that typhoon in Manila; three hours away by plane. Shuttle bus stop, says the sign beside you. The English words feel like a friendly pat on your shoulder. You have been studying Hangul for less than a month. You came from the main library and your class is one building away from this pedestrian lane and shuttle bus stop.

June means *tag-araw*, summer, in Korea. This is what's written in the guidebook, on Wikipedia; what your friends said when they found out you got accepted into a writing program. Still, what greeted you at Incheon airport was the equivalent of a December chill in the Philippines. You liked this and slept well that first night. In your dream, you saw colorful roses lining the length of the road and hanging from the neighbors' fences. You longed to pick them, but your guide reminded you that these belonged to other people. You shuddered at an imaginary headline: Filipina, arrested in Seoul for picking roses! The memory never fails to make you smile.

Your cellphone vibrates. *Stay dry*. From him. *How can a summer rain ravage a girl from a country of typhoons and floods?* You answer. But you sought shelter anyway. Your sister sent you a text message yesterday: influenza A(H1N1) has now spread to the Visayas. They take your temperature every Monday in this university. Even with medical insurance, you fear getting sick. In the library earlier, you found out that you can borrow up to five books for ten days. You asked if it was possible to renew. The male librarian shook his head. *Anneo opsoyo*. Weird, you thought. You repeated: "Renew...extend!" "Postpone?" he asked. You hesitated, then nodded, ready to surrender: *if that's what they call it here, fin*. Surprisingly, the limit was extended to twenty days. In the elevator, you felt tickled by giggles that refuse to escape your mouth. But what if you found yourself in the emergency ward? They have their own language, their own English, which follows a different pronunciation and vocabulary. Like how they manufacture their own cellphones and cars. Even the *noorebang*, their version of our kara/videoke, which they take so much pride in.

Then—as the candy melts in your mouth and you dismiss the illusion that someone will share their umbrella with you, just like how in the subway here the men don't offer their seats—you notice trees in front of you. There they stand among the granite buildings, adding greenery to the entire car. They line all the roads but it is only now—in the rain—that you notice their leaves. Fan-shaped *abaniko*, they convince you that the trees are ginkgo. *Ginkgo biloba*.

Can  
computers  
create stories  
for children?









## Language and literacy through technology

*"Picture Books," a four-year research project from DLSU's Center for Language Technologies, seeks the power of storytelling through computer-generation to help develop a child's language and literacy.*

Exploring the complex, creative potentials of technology in terms of generating stories for young children, faculty researchers of De La Salle University's College of Computer Studies embarked on the development of "Picture Books," a multi-faceted project that has engaged a number of undergraduate and graduate students to work on its various challenges.

The program director of this research on computer-generated stories, Assistant Professor Ethel Ong, says that the project started in 2007, with the first Picture Books (PB) system designed for 4-6 years old beginning readers. The proponents used animal characters like rabbits and giraffes to incorporate lessons on honesty and courage with lessons on language and reading. Based on a given input of images, the system automatically develops and tells a story, with a causal arrangement of events and actions.

“Everyday conflicts that young children may experience as part of their growing years are encountered and must be solved by the character as the story unfolds,” Ong notes in a paper. “As the story progresses, the character experiences the consequences of misbehavior and attempts to find a resolution, ending with an episode where the character has settled his conflict and acquired the lesson or target behavior,” she adds.

In 2009, the second Picture Books system was developed for older children in the 6-8 age group. The research group, then funded by the Department of Science and Technology, attempted to make a more elaborate interaction among the characters, who are set in more exciting locations like a camp or a park.

Ong notes the challenge of making the characters appear believable and ensuring that their actions are driven by the correct motivation. She cites sample stories that present such difficulty, admitting that “we are far from achieving this goal in PB3.” She also points out linguistic concerns from evaluators like literary writers, linguists, and child educators, who have provided the research group with inputs regarding the areas that they need to work on. Such concerns have been underscored, particularly in the case of “Booklat,” which is an attempt to generate the story text in Filipino.

Currently, the team is developing PB4 using PB1 as the foundation. The project aims to enhance user interface with a layout that is more understandable for children. In addition, PB4 is being designed for use on android tablets.

With optimism on the full potential of computer storytellers, Ong and the rest of her group are looking ahead for new projects that will bring story generation to the community as an alternative educational tool. Beyond language learning, they are considering areas like health awareness and environmental concerns to reach specific targets like children and women. Through technology, they further seek to open up new possibilities that will empower people with knowledge and values needed in this ever-changing, complex world.



*Ethel Ong*



How clean  
that we

# is the air breathe?



## Air quality monitoring

*The Physics Department of De La Salle University teams up with the Department of Environment and Natural Resources to gather data on the quality of air in one of Manila's busiest avenues, supporting national efforts to keep a healthy environment.*

Despite the heavy traffic along Taft Avenue during rush hour on a regular school day, commuters can still breathe a sigh of relief; after all, the total suspended particulates (TSP) in the air remains "safe to breathe." TSP refers to the micrograms per normal cubic meter—the unit for measuring the air quality of an environment. In the Philippines, anything over 90 TSP is considered unhealthy, and around the vicinity of De La Salle University, the TSP is estimated at 60.

The Department of Environment and Natural Resources' Environment Management Bureau shares this information as it looks into the data generated from one of its major projects dubbed Air Quality Monitoring System (AQMS), done in partnership with De La Salle University's Physics Department.

Department Chair Dr. Edgar Vallar points out that La Salle helps the bureau in collecting real time air quality data using a P10-million machine. The project stems from the efforts of DENR to strengthen the air quality monitoring in the country through the installation of AQMS at different locations in Metro Manila.

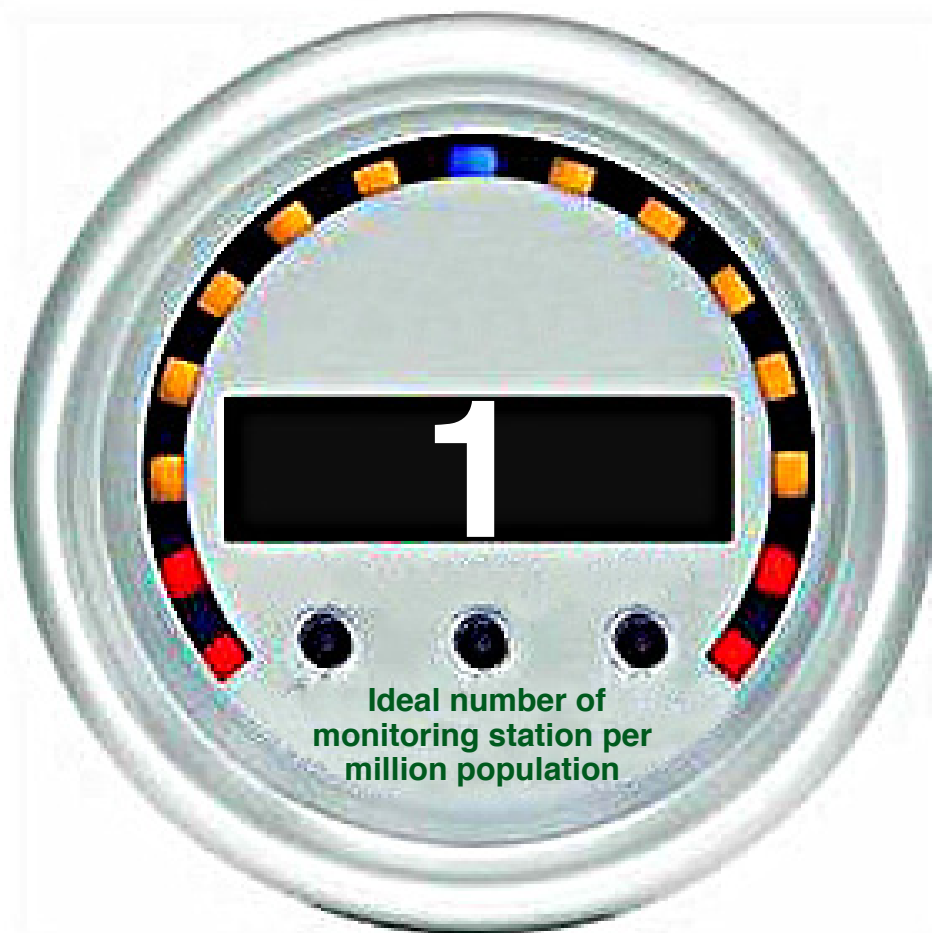
The University's strategic location—being straddled on one of Manila's busiest areas and being near the Manila Bay—allows DENR to study land-sea interactions. It is an ideal spot to detect aerosols from motor vehicles and industrial machines, in dusts, and even in sea salt.

This unmanned station—the first of its kind in the country—automatically sends daily measures of air pollutants present in the area. It monitors

**Facts:**

Source: DENR





*Dr. Edgar Vallar*

the TSP in the environment, including sulfur dioxide, nitrogen dioxide, ozone, carbon monoxide, benzene, toluene, xylene, and carbon monoxide.

According to DENR, the data generated from the monitoring machine would be used in advancing studies on areas like health, vegetation, and construction materials. The information would also serve as the basis for determining action plans, programs, and policies aimed at curbing air pollution and likewise improving traffic and land quality in the country.

Engineer Teresita Peralta of the DENR shares that apart from policy formulation, the data gathered would also be used to measure the effectiveness of existing environmental policies.

With the presence of AQMS, DLSU takes on a vital role in the ongoing efforts to implement the Clean Air Act that was made into law in 1999. Through this project, Metro Manila residents—and the rest of the country—can always be on the lookout, to ensure that landscape change and city progress will never be veiled in choking smog.







Can Filipinos  
make their own  
tools for the sick?





## Development of Philippine-made biomedical products

*An award-winning member of De La Salle University faculty pushes for the practical side of excellence by collaborating on the development of the first mechanical ventilator to be manufactured in the country.*

Seeking to advance health services for more Filipinos with the help of engineering, the Manufacturing Engineering and Management (MEM) of the DLSU Gokongwei College of Engineering has been pursuing the development of medical devices that are commonly needed, proven to meet quality standards, and more affordable for medical institutions, practitioners, and patients.

Since its establishment of the first biomedical engineering program in the country in 2004, the MEM Department has already produced pioneering, outstanding research projects in the field. It was, thus, of little surprise that in 2012, a team of faculty research experts under the leadership of MEM Chair Dr. Nilo Bugtai, PhD would receive an invitation

from the Philippine Council for Health Research and Development to take part in a four-year, P8-million research project.

The project aims to develop a cheap but safe and reliable mechanical ventilator for respiratory failure support to be used by local hospitals. With a challenge to lead in the mechanical aspect of the project, the DLSU team has established a partnership with researchers from Mapua Institute of Technology and medical practitioners from University of the Philippines College of Medicine-Philippine General Hospital in the production of the new prototype. Headed by Dr. Abundio Balgos, M.D., associate dean for Planning & Research of UP-Manila, the project was scheduled for initial testing in the first quarter of 2013.

“Our country has to start producing its own tools for the medical field. This is a major step for our industry because this will mean cost–efficiency for local hospitals, a contribution to economic sustainability. This is also significant because it gives recognition to the capability of Filipino engineers and scientists to generate knowledge that offer practical solutions to medical concerns in the country,” he says.

In recent years, Bugtai has mentored and advised many, if not most, of the award-winning engineering student theses in the University. Among these projects is an automated lateral turning bed to prevent bedsores on patients. This hospital bed has an automatic motor that offers electrically controlled patient rotation in manual and automatic modes.

Another interesting student thesis is a comprehensive gait data acquisition system, for patients trying to recover from troubled joints or limbs. A recent group of graduates developed a related project, which is a robotic leg exoskeleton for partial gait rehabilitation.

Bugtai also served as adviser for a project involving a robotic arm rehabilitation machine with biofeedback for Filipino stroke patients. Likewise, he also saw the development of a jointed articulating laparoscopic tool, which is used for minimally invasive surgery. This tool is used to make only three small incisions on the abdomen of the patient, instead of the traditional open surgery.

*Research projects such as these show great ideas coming from our students. There is great potential for our country in the field of biomedical engineering. If we will just trust in our capacity to create, we can do much for the country,* he says.

## Ventilator project evaluation

Bugtai shares that the ventilator will be evaluated under normal, obstructive, and restrictive conditions of respiratory mechanics and will be run continuously and monitored for:

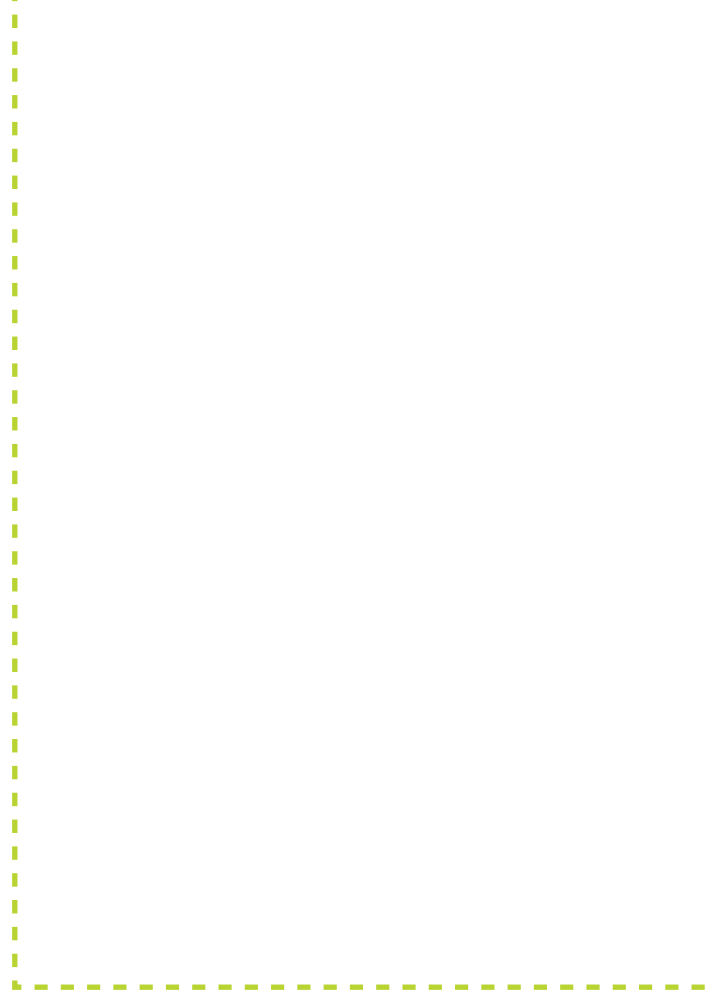
1. Function failure
2. Part failure
3. Failures that occurred in first 15,000 hours of operation
4. Failures that occurred after 15,000 hours of operation

From the parameters mentioned, data can be selected for comparison with previous multivariate studies on reliability of ventilators done by other researchers.



Dr. Nilo Bugtai

What's  
in your coffee?





Understanding the  
chemistry of food



*Faculty members and students of DLSU's Chemistry Department collaborate on studies involving the properties of local crops, such as coffee beans eaten and excreted by Philippine civet cat ("alamid") and common vegetables, to address issues on health and wellness.*

At a coffee farm in Batangas, a province south of Metro Manila, a group of student researchers from De La Salle University gather coffee beans that are considered the most expensive in the world. They bring back samples of the coffee popularly known as kape alamid (or kopi luwak in the international market) to the laboratories at DLSU, to understand what makes it so special.

Under the mentorship of Emmanuel Garcia, assistant professor of the Chemistry Department, students analyze the different chemical aspects of the coffee beans, which have been eaten and excreted by a civet cat. These undigested seeds are collected by farmers, washed, and roasted.

“We try to uncover the factors in the chemical components of the coffee. We want to understand the basis for the claim that it is the best coffee and to check whether there is really difference from non-civet coffee,” Garcia says.

For his students, the work involves conducting an aroma profiling of its compounds. They also conduct a microbial analysis and protein analysis of the beans. “This study also opens up questions for others fields like psychology. It takes a multi-disciplinary approach to shed valuable insights on this matter,” he adds.

Garcia’s fellow faculty member and Chemistry Associate Professor Dr. Marissa Noel, meanwhile, similarly engages her students with the study of chemical processes and interactions of compounds that can be found in common vegetables.

Noel, who specializes in food science, has done extensive studies on numerous types of common vegetables such as cabbages, pechay, radishes, broccoli, and alugbati. She has particularly looked into glucosinolate, the compound in these vegetables which is said to have anti-cancer properties. Her research has involved different types of cooking methods, such as boiling and frying, to see the effects of such processes on the compound.

“When one becomes more aware of what is in the food –and this is especially helpful for those in the food industry–one becomes more conscious of what should be prepared and how it should be done,” Garcia notes.

“With one’s knowledge of food science, which includes food chemistry, creativity in food preparation naturally follows. It also sharpens one’s taste and likewise assures you that you are taking in a healthy mix and right amount of foods,” he says.



*Mel Garcia*

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