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S&T POST

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Montejo names science ambassadors in Davao, Cagayan Valley

DOST's free Wi-Fi to bridge digital divide in PH

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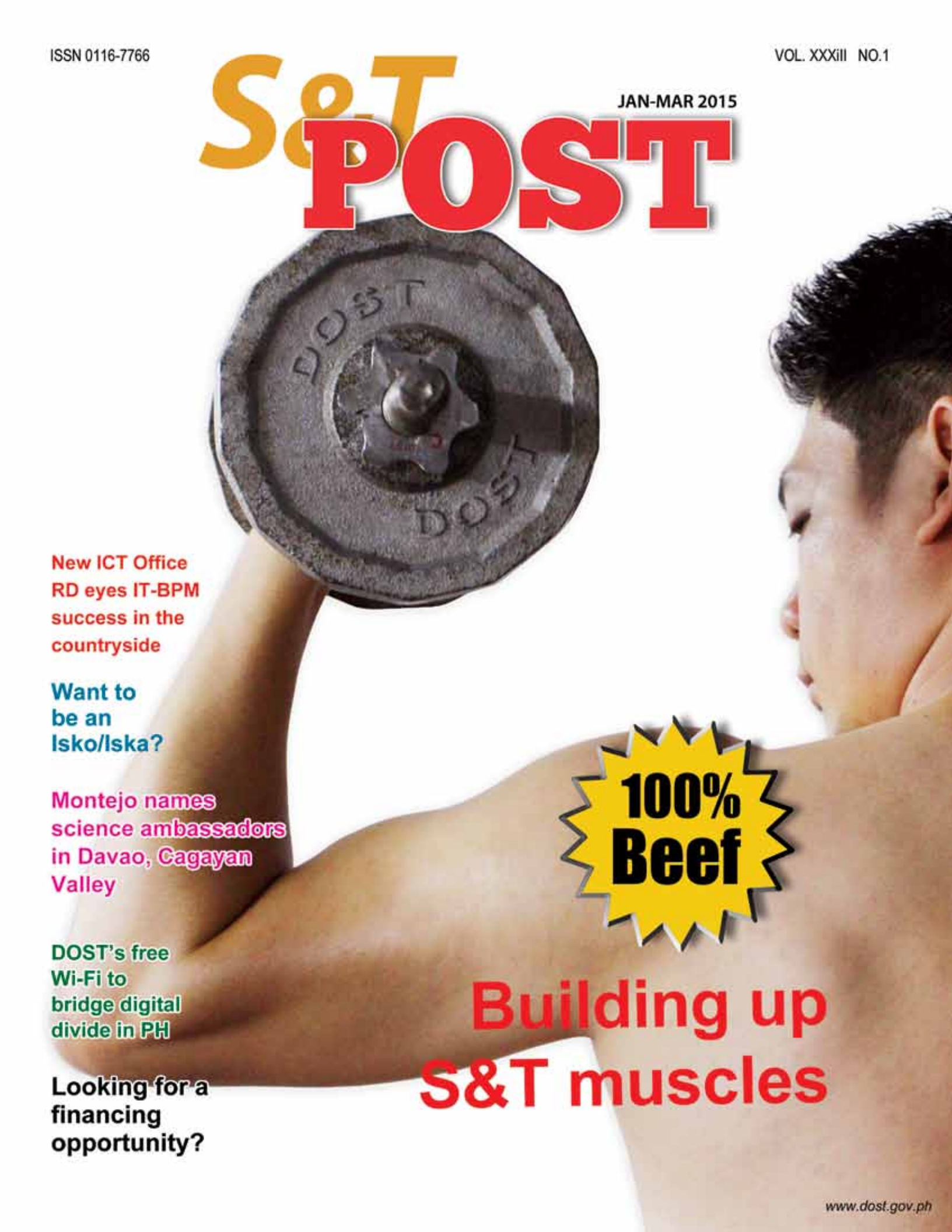

Building up S&T muscles

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EDITORIAL

Science career, anyone?

Is the Philippines a Science Nation?

Without formal research, most people may agree that this archipelago is an arts country, more than it is a science country. One will be able to arrive at this idea simply by gut feel. He can feel the artistic pulse of his countrymen through media, the current popular trends, the topics of discussion, and the constant victory of Filipinos in arts-related competitions.

And while there are bursts of artistic expression among Filipinos, there seems to be merely a trickle of interest in the sciences, at least if you compare the Philippines with more advanced economies where the number of S&T professionals clearly outnumber ours.

Should this be the real score, will there be a chance to develop a reservoir of science workers in the country in the near future? Indeed, can the Philippines be transformed into a Science Nation?

This is the challenge that the Department of Science and Technology faces as it tries to increase the number of science workers needed to jumpstart, at the very least, the country's competitiveness in the global arena.

Unfortunately, we only have the following to show: a ranking of 117 (out of 187 countries) in the 2013 Human Development Index (HDI), 52 (out of 144 countries) in the latest Global Competitiveness Index (GCI), and 100 (out of 143 counties) in the 2014 Global Innovation Index (GII).

The HDI emphasizes that human resources and their capabilities, not just economic growth, are the ultimate criteria in assessing the development of a nation. Meanwhile, the GCI seeks to quantify the impact of certain key factors on a nation's level of competitiveness in the global village. One of these is technological readiness.

The GII, moreover, determines the innovation level of countries by measuring certain variables such as number of researchers, gross expenditure on R&D, graduates in science and engineering, knowledge workers, innovation linkages, and creative outputs among others.

As far as our human resources in science and technology (S&T) are concerned, we can draw an idea from the data of the Science Education Institute - a total of 31,706 graduated scholars as of April 2015, since the inception of the scholarship program in 1958. Not all of these youngsters eventually built a career in S&T.

If the earlier statements hold true about the seeming paucity of interest in S&T in the Philippines, one does not have to wonder why the number of human resource in the field remains shamefully miniscule.

Undeniably true, however, is the government's effort to meet international requirements for the country to become competitive; in this area at least.

The DOST has its hands full in trying to fulfill this objective. Through its "#Push4Science: Maging DOST Scholar Ka!" campaign, the Department hopes to tap at least one science scholar from each of the 71 identified municipalities in the country. Starting in February 2014, the campaign has been conducting extensive scholarship caravans in the target municipalities to encourage S&T-inclined youngsters to build a career in the sciences, apply for a scholarship, and be among the next wave of scientists, technologists and technopreneurs that will lead the country to the next level of development.

Complementing this thrust is the Philippine Science High School System's (Pisay) objective to have a Pisay campus in all 17 regions of the country by 2016. Having the country's premier science academic institution cover the entire archipelago will help in mining human capital more extensively and maximizing its potentials. Talent pooling, indeed, gets better if we go to the grassroots.

So, can the Philippines be a Science Nation soon?

That is what we are seriously aiming for and we have to start somewhere. And the way to start is by rallying our youth to go into science careers and encouraging those who are already into the field to make footprints so that others may follow.

Aristotle P. Carandang, PhD

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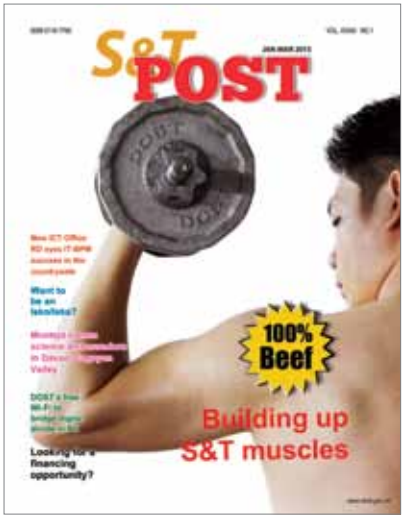
Our Cover



DOST's aggressive moves in pumping up its 8 Outcomes rests so much on its S&T human resources. These experts are the ones doing researches, developing technologies, and creating innovations—all the leg work needed in developing a Science Nation. They are the S&T muscles that move things in the local science community. Through its programs such as scholarships, trainings, and innovation, DOST supports these muscles to become 100 percent beef: sturdy, resilient, and driven to achieve more.

tech·new·logy

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Georgetown, Texas bats for 100% renewable energy in 2 years

Fast charging, long lasting battery now in the works by DOST, UP

Graphene research team members (from left) Szeemaine D. Tigno, Wendell A. Manuel, and Jed Andrew C. Visaya of UP Baguio operate the laser plotter on an optical disc to create graphene oxide, a material for the graphene-based electrochemical supercapacitor, a storage device which can charge at a faster rate and can store larger amounts of energy. (Photo courtesy of Jed Andrew Visaya)

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

A FAST charging, high-capacity battery is what the Department of Science and Technology (DOST) and faculty members from the University of the Philippines (UP) Baguio are working on to boost the energy storage capacity of solar cells.

The battery is called graphene-based electrochemical supercapacitor, a storage device that can charge at a faster rate and can store larger amounts of energy compared with ordinary batteries or capacitors.

Graphene is a thin layer of pure carbon with a single, tightly packed layer of atoms that stick together, forming a honeycomb shape. It is 100 times stronger than steel by weight and has extraordinary properties.

"What if you can charge your energy storage device in less than a minute?" asked project leader Dr. Ian Jasper A. Agulo of UP Baguio. He added that the battery's inherent strength makes it possible to be charged and discharged 100 times longer than ordinary batteries.

"Currently, we are experimenting on red and blue lasers to make graphene supercapacitors," Dr. Agulo revealed. The project is being supported by DOST's Philippine Council for Industry, Energy, and Emerging Technologies Research and Development.

The abundance of carbon in the human body and in the universe makes graphene an ecologically friendly and sustainable source of material for many uses.

Explained Dr. Agulo, "Electric cars require high specific power storage device to work while mobile phones require high specific energy device to run a longer time. However, graphene-based electrochemical supercapacitors possess both these characteristics which is why it can be used on a wide range of consumer electronics and energy harvesting applications."

The team emphasized that the graphene supercapacitor will complement lithium-ion devices as this will boost the battery's capacity and enhance its charging capability. (S&T Media Service)

ADMATEL helps build a stronger semicon industry in PH

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

CLIENTS FOR the country's first state-of-the-art electronics and semiconductor test lab, the Advanced Materials Testing Laboratory (ADMATEL) of the Department of Science and Technology (DOST), are expected to double this year as the global electronics and semiconductor (S&E) industry sees a stronger outlook.

This was learned during DOST's media briefing "Agham na Ramdam" at the ADMATEL facility in DOST Complex, Bicutan, Taguig City.

"It has been two years since President Aquino came here to inaugurate this facility which is DOST's contribution to invigorate our local manufacturing industries," says DOST Assistant Secretary Raymund E. Liboro. "And the public should know the strides that ADMATEL had since then."

ADMATEL's services, since the lab opened its doors in 2013, have steadily picked up the pace as clients from the local S&E industry continue to send sample hardware for testing and analysis in the facility.

The laboratory offers local testing and analytical services on electronic chipsets, virtually slashing rates by 40 percent. Also, ADMATEL has a shorter turn-around time of 24 hours on test results compared with a 5- to 6-day turn-around time when done outside the country. This means chips productions resume with less delays.

Reports say that local companies are spending $9-18M annually in tests and analysis which are the identified gaps in a study by the Nomura Research Institute.

According to ADMATEL General Manager Virgilio Aguinaldo, in 2013 alone, the electronics testing lab has received more than 40 electronics components for failure analysis and materials characterization from various S&E companies.

Aguinaldo adds that the number of client companies has doubled since then. He said that he is expecting to serve 170 clients this year.

Surprisingly, Aguinaldo reveals that 38 percent of ADMATEL's clients came from outside its target industry. Companies from allied industries such as construction and energy, medical, and automotive industries have been sending samples for analyses.

"We had a client from the auto industry who had us test a specific model because of the model's lack of power when driven off-road. And the result showed us that the unit's oil filter had foreign objects that block the air flow," explains Aguinaldo.

ADMATEL is looking forward to round-the-clock operations once demand for testing and analysis rises in the next few months.

ADMATEL does five types of testing in the facility. It conducts failure analysis to determine the cause of the product inefficiencies. It also undertakes process development testing to help manufacturers optimize their procedures. Also, ADMATEL aids in product development, quality inspections, and research and development.

Aguinaldo says that the laboratory is open for R&D collaboration with the academe. "That is what we really are encouraging our students to do. Actually, we have students coming here to have their hardware tested for their thesis."

For students, Aguinaldo says that ADMATEL is offering a socialized fee while clients from the micro, small, and medium enterprises are billed at a 20-percent reduced rate.

ADMATEL is one of DOST's initiatives in strengthening the manufacturing industry. With the S&E as one of the country's leading and important industries, and giving support to the manufacturing industry, it generated $21 billion in 2013. The lab has already applied for ISO 17025 accreditation for its three laboratories.

DOST is now pushing the industry to hit $50 billion by the year 2016 and become a major player in the global electronics supply chain.

"Agham na Ramdam", organized by the DOST-Science and Technology Information Institute, is a series of media briefings highlighting DOST program milestones and updates.

DOST's venture financing pushes growth of start-up biz

By MARIA LUISA S. LUMIOAN
S&T Media Service, *DOST-STII*

DOST-TAPI Director Engr. Edgar I. Garcia congratulates Pawel P. Rafael and his wife Marlene, owners of the MillenniumToolings and Fabrication Services, as they received financial assistance via the Venture Financing Program. With them is DOST-CALABARZON Regional Director Alexander R. Madrigal. (S&T Media Service)

WITH AN upcoming assistance from the Department of Science and Technology-Technology Application and Promotion Institute (DOST-TAPI) via the Department's Venture Financing Program, entrepreneur Pawel P. Rafael, owner and manager of Millennium Toolings and Fabrication Services (MTFS), hopes to make a crack in his field of business.

Rafael's hope is hinged on his recent signing of a Memorandum of Agreement with DOST-TAPI and DOST-CALABARZON early this month for the implementation of the Venture Financing Program that will provide his firm a financial assistance worth PhP 1,850,000 for the acquisition of a laser marking equipment.

The DOST-TAPI Venture Financing Program, primarily catering to micro, small and medium enterprises, provides funding to start-up and technology-based projects to hasten the commercialization of new and emerging technologies and inventions.

The Calamba, Laguna-based MTFS is involved in the manufacture of precision and semi-precision components for semiconductors, electronics, laboratories, and automotive parts and components among others. The laser marking equipment upgrade is expected to increase production capacity of the MTFS by at least 20 percent by doing away with manual marking.

According to the agreement, MTFS will repay the financial assistance to TAPI, interest-free, for a specified time period.

Prior to receiving assistance via the Venture Financing Program, MTFS is also a beneficiary of TAPI's Consultancy for Agricultural and Manufacturing Productivity Improvement (CAMPI) Program. The purchase of laser marking equipment was in fact, one of the recommendations of the consultant tapped by TAPI under CAMPI.

For more information about the Venture Financing Program and CAMPI, please contact TAPI at 8373186 or email at tapi@dost.gov.ph or visit the DOST Regional Office or Provincial Center near you.

Die and mold center will gear up manufacturing industry

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

THE DEPARTMENT of Science and Technology (DOST) is expected to gear up the manufacturing industry a little faster as the Die and Mold Solution Center (DMSC)– a one-stop solution for die and mold design and fabrication – starts running within the year.

DMSC is one of the featured DOST programs and projects during the "Agham na Ramdam", a series of media briefings which highlights the Science Department's program milestones and updates. "Agham na Ramdam" is organized by the DOST-Science and Technology Information Institute

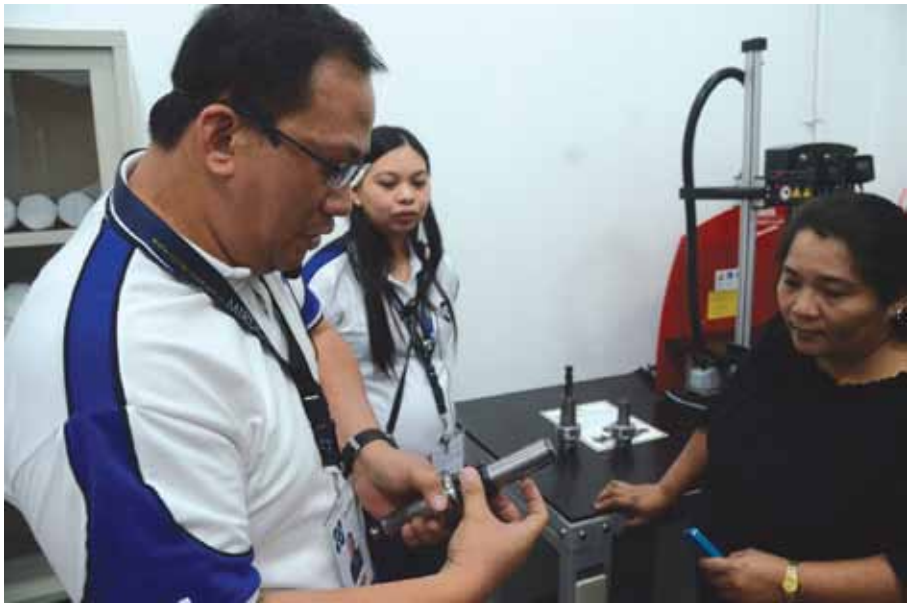
The facility, housed inside DOST's Metals Industry Research and Development Center, is a project under the Makinarya at Teknolohiya Para sa Bayan or MakiBayan Program. It is a one-stop center for die and mold fabrication, allowing for a shorter production turnaround time at a relatively lower cost, thus avoiding the previous costly practice of sending die and mold designs overseas for fabrication. The center hopes to create a significant impact on the local metals and allied industries as well as in the manufacturing sector.

Die and mold fabrication is a key element in the manufacturing industry but a major capability gap among the local metals industry.

"Every product starts with the die and molds," says Philip Ang, president of the Philippine Die and Mold Association, emphasizing the importance of the die and mold sector.

This sector of the metals and allied industry takes care of the cutting and shaping of parts that are put into a press to enable the mass production of the final product.

Manufacturers usually send out die and mold designs abroad for fabrication as this service was not previously available in the country. This resulted in costly and longer manufacturing processes as fabricated die and molds take much time to be shipped back.



Consequently, this gap marred the growth of the metals and allied industries in the country. The manufacturing industry in the past three decades was dramatically on the decline due to weak infrastructure support, and research and development. Also, the global free trade has hit the local industry hard in the latter part of 1990.

However, with the government's revitalized vision supported by a pool of local experts, DOST looks forward to DMSC helping the local manufacturing industry accelerate in the global manufacturing supply chain. (S&T Media Service)

Local manufacturers back DOST die and mold center

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

A surface metal grinding machine was shown to the members of the media at the DOST-MIRDC Die and Mold Solution Center (DMSC) during a recent Agham Na Ramdam, a media briefing on DOST programs updates. The grinding machine is one of the many precision cutting, grinding and stamping tools inside DMSC which aims to help strengthen the tool and die manufacturing and eventually revitalize local manufacturing. (Photo by Gerardo Palad, S&T Media Service, DOST-STII)

LOCAL MANUFACTURERS have expressed support to the Department of Science and Technology's (DOST) Die and Mold Solution Center (DMSC) during a recent media briefing at DOST's Metals Industry Research and Development Center (MIRDC) in Bicutan, Taguig City.

With the establishment of the DMSC, local manufacturing industries are expected to catch up with neighboring ASEAN countries in terms of capability. The Center offers modern infrastructure support services and capabilities that will connect firms involved in processing of raw materials with firms that convert these into the final product.

According to Chito Madroño, general manager of 13PM Enterprise, the industry needs to have such an infrastructure similar to boost the manufacturing industry.

13PM Enterprise has been partnering with the government especially with DOST-MIRDC since 1978. Madroño reveals that his game "Brain Twister" was a product of public-private partnership, with the game chip pieces having been developed by DOST-MIRDC a couple of decades ago. Brain Twister is a tile-based board game which requires a player to form given shapes using four oddly-shaped tiles.

"I went to MIRDC and asked them to fabricate the molds that will be used for the tiles," explains Madroño. "And I am happy because it is cheaper and produced the expected results."

Madroño, who sought MIRDC's assistance for his other board game "Word Factory" reveals that majority of local manufacturers subcontract their manufacturing processes to China because of its cheap overhead costs and faster turn-around.

He adds that the country currently cannot catch up with China in terms of production output but with 100 million Filipinos, local manufacturers can rely on the domestic market to boost local production.

Philip Ang, president of the Philippine Die and Mold Association shares Madroño's sentiment. The local market should support local manufacturers as this would equate to more economic gains, Ang said, and encouraged the media to come up with more positive news to attract more investors into the country.

In previous years, the Philippines only had 170 tool and die shops serving the local manufacturers compared to Thailand's 1,110. In 2011, the country imported about $50 million of tool and die compared to less than $9 million of exports for the industry.

DOST-supported harvester cleans up river, gives livelihood to folks

By MARIA LUISA S. LUMIOAN
S&T Media Service, *DOST-STII*

AS THE water hyacinth population burgeoned in Buhi, Camarines Sur, Engr. Joel P. Sadol of the Central Bicol State University of Agriculture pondered on how he could turn this threat into an opportunity. Water hyacinths often clog waterways and degrade water quality. These pretty-looking pests actually block sunlight and prevent photosynthesis, thereby lowering the level of oxygen in the water.

First in his agenda was to get rid of the hyacinths, and then perhaps turn them into something useful. So he made a machine that can collect the hyacinths, and then recently improved its features to make the machine more efficient using less fuel.

The water hyacinth harvester is set to benefit farmers, fisherfolks, and handicraft makers in his hometown, through the assistance of Department of Science and Technology-Technology Application and Promotion Institute (DOST-TAPI).

Under DOST-TAPI's Technology Based Enterprise Development (TBED) Program, Engr. Sadol received a grant amounting to P247,000.

Aside from managing water hyacinths which are a perennial threat in Lake Buhi, the harvester provides opportunities for livelihood as well. Harvested water hyacinth can be made into baskets, matting, fertilizers, handicraft, and other products, said Engr. Sadol whose earlier model was funded by DOST through the Philippine Council for Industry Energy and Emerging Technology Research and Development.

DOST-TAPI's TBED program encourages the development of new or improved technologies that may have potential for commercialization. Research and development institutes, state universities and colleges, and government offices are qualified to avail of this assistance.

For more information about TBED, you may contact the Provincial Science and Technology Center or DOST Regional Office in your area.

IAEA chief lauds nuke tech projects in PH

By HANS JOSHUA V. DANTES
S&T Media Service, *DOST-PNRI*

"YOUR COUNTRY is not only using these technologies for your purpose, but you are also helping other countries in sharing technology, in your region and beyond; this is very important, and I thank you for your cooperation," so said International Atomic Energy Agency (IAEA) Director-General Yukiya Amano in his visit last January at the Department of Science and Technology -Philippine Nuclear Research Institute – (DOST-PNRI).

Director-General Amano commended the Philippines for the country's extensive applications and projects of nuclear technology in various fields, as well as its cooperation with other IAEA member states.

Amano's visit was part of a larger tour of the IAEA member states of Southeast Asia, particularly Indonesia, Malaysia, Singapore and Brunei.

The Philippines has been a member state of the IAEA since 1958. The IAEA, which was established in 1957 as the "Atoms for Peace" organization within the United Nations family, is the world's foremost organization for scientific and technical cooperation in the peaceful use of nuclear technology.

IAEA Director General Yukiya Amano

With DOST Undersecretary for R&D Amelia P. Guevara, Dir. Amano visits PNRI nuclear facilities

Atoms for Peace and Development

The Director General highlighted in his remarks the ever-increasing role of the IAEA and nuclear applications in the development of countries around the globe.

"In a sense, for me, the IAEA is not only 'Atoms for Peace', but 'Atoms for Peace and Development' and this objective needs to be carried out by all the members of the IAEA," he said.

Amano also addressed questions from journalists regarding the future of nuclear power, emphasizing that "it is your country, your people, who decide whether nuclear power is good for your country or not."

"The role of the IAEA is to help (countries) when they decide to use nuclear power. What we do is to help them to use nuclear power safely, securely and sustainably," said Amano.

For his part, DOST Secretary Mario Montejo expressed his gratitude and optimism for the continued partnership of the IAEA and the DOST, through PNRI, in future technical cooperation projects.

"This visit highlights the strong partnership nurtured through the years by the two partners that is the promise of what technical cooperation can bring about," said Secretary Montejo.

Tour of PNRI facilities

Amano toured the latest facilities of the PNRI which received assistance from the IAEA, including the recently inaugurated Electron Beam Facility for more advanced irradiation applications, the Technetium-99m Generator Facility for the production of radiopharmaceuticals, and the Isotope Ratio Mass Spectrometry Laboratory which will make isotope analytical services cheaper and more accessible to researchers.

The IAEA chief also visited the Centralized Medical Cyclotron Facility at the National Kidney and Transplant Institute. The facility, which is the second cyclotron to be established in the country, will help make PET radiopharmaceuticals more available in nuclear medicine centers throughout the country. With technical assistance from the IAEA, PNRI coordinated a task force composed of the private and government sectors to facilitate the establishment of this facility.

Amano also interacted with the students, teachers and officials of Quezon City Science High School and San Francisco High School, the two pilot schools implementing an IAEA outreach program for encouraging high school students to engage in Science, Technology, Engineering, and Mathematics (STEM) courses and careers, particularly on nuclear science and technology.

The IAEA has selected the Philippines as one of the pilot countries, along with Indonesia, Malaysia and the United Arab Emirates, in launching an outreach program on nuclear science and technology for secondary schools.

The outreach project is being undertaken through the collaboration of PNRI and the Quezon City Division of City Schools of the Department of Education.

DOST Secretary Montejo extended the invitation for Director General Amano to be the guest speaker at the 3rd Philippine Nuclear Congress to be held on 7-9 December 2015.

This STARBOOKS, or Science and Technology Academic and Research-Based Openly Operated Kiosk Stations, unit is beefed up with nuclear technology materials in addition to its science and technology content. Installed at the San Francisco National High School in Quezon City and the Quezon City Science High School libraries, two STARBOOKS pods provided the two schools' combined 7,000-student population with a variety of S&T information materials, including Encyclopedia Britannica and IAEA produced resources. With Dr Amano is the school librarian (left) and Usec. Amelia Guevara.

Amano with the students of the San Francisco High School, one of the two pilot schools implementing IAEA's outreach program.

STARBOOKS boosts Las Piñas HS studes' science research

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

STUDENTS OF University of Perpetual Help System Dalta (UPHSD) in Las Piñas City now have a modern, up-to-date, and comprehensive reference tool for their science and technology (S&T) projects and reports with the unveiling of the Department of Science and Technology's (DOST) STARBOOKS unit last February 3, 2015 at the UPSHD high school library.

A flagship project of DOST's Science and Technology Information Institute (STII), STARBOOKS stands for Science and Technology Academic and Research-Based Openly Operated Kiosk, a user-friendly digital library of science and technology (S&T) information which does not require Internet connection. It is the first science digital library in the Philippines.

STARBOOKS contains S&T information in various formats –text, video, and audio – from local and international sources.

Among its contents is Britannica Ultimate Encyclopaedia which features Encyclopaedia Britannica, Britannica World Atlas, Merriam-Webster Dictionary and Thesaurus, e-magazines, fiction and non-fiction books, and royalty-free photos, drawings, and videos.

Also available in STARBOOKS are videos on livelihood for individuals seeking business opportunities, journals, and investigatory materials.

"STARBOOKS is STII's way of bringing (DOST-STII library's) science collection closer to the students," said STARBOOKS focal person Louise Ian delos Reyes of DOST-STII in her presentation during the launch.

The DOST-STII library collection has around 80,000 titles in print and non-print formats covering a vast range of S&T fields – from chemistry, physics, and math to computer science and information technology.

University Librarian Aniline A. Vidal decided to have STARBOOKS installed after seeing one such unit at a university in Davao. "I found it interesting. I told myself I will avail STARBOOKS to have additional resources for the students and the faculty. The more collection you have, the more it will cater to the needs of the students," she said.

STARBOOKS MAKES ITS WAY TO UPHSD. High school students at the University of Perpetual Help System Dalta (UPHSD) in Pamplona, Las Piñas City excitedly try their library's newly installed STARBOOKS unit from the Department of Science and Technology - Science and Technology Information Institute (DOST-STII) during the launching last February 3, 2015. STARBOOKS (Science and Technology Academic and Research-Based Openly Operated Kiosk) is a user-friendly stand-alone digital library of science and technology (S&T) materials in text, video, and audio formats. These include Britannica Ultimate Encyclopedia which features, among others, reference materials, e-magazines, fiction and non-fiction books, and royalty-free photos, drawings, and videos. STARBOOKS does not require Internet connection and provides students, scientists, technopreneurs, S&T professionals, and science buffs with a complete and updated research tool. For more information about STARBOOKS, email dost.starbooks@gmail.com or starbooks@stii.dost.gov.ph. (S&T Media Service)

"It is also customizable," de los Reyes added. This means that the contents of UPHSD's own library may be digitized and added to the collection in their STARBOOKS unit.

STARBOOKS is also useful for scientists, technopreneurs, S&T professionals, and science buffs. Aside from academic institutions, also identified as STARBOOKS sites are government offices, NGOs, and LGUs. At present, STARBOOKS kiosks are already available in various sites across the country's 17 regions.

For more information about STARBOOKS, email dost.starbooks@gmail.com or starbooks@stii.dost.gov.ph. (S&T Media Service)

She is one of the brightest and most competent experts who seamlessly moved from the academe to DOST. From her track record, we are confident that she will be one of those who will push the Department forward to the level where it will be most relevant to the people and most significant in the ASEAN. Meet Dr. Rowena Cristina Guevara, DOST's new Undersecretary for S&T services.

Dr. Rowena Cristina L. Guevara

DOST's new Undersecretary for S&T Services

By MARIA LUISA S, LUMIOAN
S&T Media Service, *DOST-STII*

Dr. Rowena Cristina L. Guevara takes her oath as the new Undersecretary for Scientific and Technological Services of the DOST before Secretary Mario G. Montejo.

She used to get attention not because of her talent and skills, but because she was a female in a male-dominated field. But soon the emphasis on gender faded out as people saw she was more than apt for the job. And she may even be better than her male counterparts.

From the academe, she stepped into another challenging field but not a totally strange one. As an engineer, she belonged here. She headed the Department of Science and Technology–Philippine Council for Industry, Energy and Emerging Technology Research and Development for three years since July 2, 2012.

And just last March, Dr. Rowena Cristina L. Guevara became the new Undersecretary for Scientific and Technological (S&T) Services of the DOST. She took her oath of office before Secretary Mario G. Montejo last March 5, 2015 at the DOST Central Office, Taguig City.

Dr. Guevara is concurrently PCIEERD's executive director. As the Undersecretary for S&T services, she is responsible for the concerns about formulation of policies, planning, and programming for S&T development; DOST's technology transfer program; and DOST system capability building program. Her position also makes her the chair of the Human Resource Development program committee, among other tasks in the Department.

Prior to her stint at the DOST, Dr. Guevara has devoted much of her life as an educator at the University of the Philippines Diliman. She started as an instructor in 1985 and moved up the ladder to become a full-fledged professor in 1995.

For her effective and creative teaching methods in sharing her knowledge to students, she was chosen as the Best Teacher of the Year by Electrical & Electronics Engineering Representatives of Engineering Student Council on February 4, 2005. Her excellence and dedication in teaching shone even further when she was adjudged winner in the 2010 Metrobank Foundation's Search for Outstanding Teachers for the tertiary level.

From 2004 to 2010, she served as Dean of the UP Diliman – College of Engineering and was Executive Director of the UP National Engineering Center (NEC). Under her helm, the NEC received the Exemplary Leadership – Institutional Category Award of the 2nd Gawad LIDER for its outstanding and meritorious contribution in the development of science education in the country in 2010.

She was also instrumental in the establishment of the Engineering Research and Development for Technology (ERDT) Consortium (of eight universities in the country) through the ERDT Project of the DOST. Started in 2007, the ERDT aims to upgrade the qualifications of local engineers and to increase the number of MS and PhD graduates in Engineering through scholarships, Visiting Professor Program, Faculty Research Dissemination Grant among others.

A DOST scholar herself, Dr. Guevara completed her secondary education at the Philippine Science High School and earned her Bachelor's Degree (National Science Development Board [now DOST] Scholar) and Master's Degree in Electrical Engineering in UP Diliman. She finished her PhD in the University of Michigan under DOST-Engineering and Science Education Project scholarship

He is so DOST, and he's back. Dr. Reynaldo V. Ebora is the only DOST exec who was able to head two councils.

Dr. Reynaldo V. Ebora is the new PCAARRD head

By EDEL MARY G. MADRIDEJOS
S&T Media Service, *DOST-PCAARRD*

Dr. Reynaldo V. Ebora, an entomologist and biotechnologist, is the newly appointed Acting Executive Director of the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) effective February 16, 2015.

He obtained his BS Agriculture degree major in Entomology and MS in Entomology (Insect Pathology and Microbial Control) at the University of the Philippines Los Baños (UPLB). He later pursued his PhD in Entomology at Michigan State University, Michigan, USA, as a Rockefeller Foundation Fellow on rice biotechnology. Dr. Ebora also trained on microbiology and biotechnology from Osaka University, Japan and was an Intellectual Property Management/ Technology Transfer Fellow of the ISAAA AmeriCenter, Cornell University, New York, USA.

Dr. Ebora began his outstanding government service at the National Institute of Molecular Biology and Biotechnology (BIOTECH)-UPLB as a research assistant in 1982 and later served as its deputy director from 1996 to 1999 and acting director from 1999 to 2000. In 2010, he was appointed by the UP Board of Regents as director of BIOTECH. Dr. Ebora was on his second term (2013- 2016) as BIOTECH Director when he was selected as the new head of PCAARRD. His commitment to BIOTECH has led the agency in the commercialization and technology transfer of BIOTECH products and services including biofertilizer and detection kits for food and feed contaminants.

During his stint in BIOTECH, he conducted researches on microbial control, plant transformation, and molecular cloning and handled trainings and capacity building on biosafety and intellectual property management and technology transfer. Dr. Ebora was one of the developers of the patented *E. coli* DNA Amplification System (DAS) kit for the rapid detection of *E. coli* in food, feed, water, and other beverages. He authored and co-authored various scientific and technical publications.

These efforts earned him various recognitions, one of which is the Outstanding Science Administrator Award given by the National Academy of Science and Technology (NAST) and DOST last July 2014 during the National Science and Technology Week celebration.

Dr. Ebora is not new to the DOST system. He previously served as the Executive Director of the Philippine Council for Advanced Science and Technology Research and Development (PCASTRD) now part of the Philippine Council for Industry, Energy and Emerging Technology Research and Development, from November 2005 to July 2010.

Dr. Ebora also served as the Philippine coordinator of the Program for Biosafety Systems (PBS), a USAID funded initiative facilitated by the International Food Policy Research Institute. It integrates research, capacity development, and outreach programs to effectively address biosafety concerns. Before becoming the PBS Philippines coordinator, he was the PBS Southeast Asia regional coordinator from 2004 to 2010.

As the new PCAARRD head, Dr. Ebora envisions the Council to forge stronger and active collaborations with local and foreign partners, and aggressively pursue the capacity and capability building of PCAARRD and its implementing institutions. He considers capability enhancement of the PCAARRD staff a priority, and thus, they are encouraged to pursue advanced degrees and trainings in specialized fields related to PCAARRD's areas of concern.

Dr. Ebora's experiences and accomplishments have prepared him enough to perform the challenge of achieving the vision and mission of the Council. With the strong support of the PCAARRD Directorate and staff, he believes that the Council shall continue to provide strong and dynamic leadership in S&T innovation in the AANR sectors, specifically in the development of new, appropriate, and advanced technologies.

Dir. Frederick Amores takes his job seriously.
This vision is guided by his heart and will

New ICT Office RD eyes IT-BPM success in the countryside

By ALLAN MAURO V. MARFAL
S&T Media Service, *DOST-STII*

Spreading the opportunities of Information Technology-Business Process Management (IT-BPM) to the countryside and help the local residents on how to become successful in various fields are some of the top priorities of Frederick B. Amores, the newly appointed regional director of Department of Science and Technology-Information and Communications Technology (DOST-ICT) Office for Visayas.(Photo by Joie Cruz, DOST-ICT Office)

The newly appointed regional director of Department of Science and Technology-Information and Communications Technology (DOST-ICT) Office for Visayas Frederick B. Amores is ready to take on the challenge in spreading the opportunities of Information Technology-Business Process Management (IT-BPM) to the countryside.

Amores is now handling different programs of DOST-ICT Office in Visayas Cluster I, composed of Iloilo, Capiz, Antique, Aklan, Guimaras, Negros Occidental and Oriental, and Siquijor.

He has previously served as program manager of e-Innovation Group of the ICT Office where he was involved in the promotion of countryside as ideal IT-BPM destination, increasing awareness about IT-BPM career opportunities, and encouraging technopreneurship among the youth.

He finished his Bachelor's Degree in Computer Science in 1994 at University of San Carlos. He later obtained his MSc Global Information and Telecommunications Studies degree at Waseda University in Japan in 2009 and his Masters in Public Administration at Southwestern University in Cebu City in 2013.

Pushing online jobs and technopreneurship in rural areas

As he assumes his new post, Amores hopes to contribute to the achievement of ICT Office's goal of making the Philippines a global leader in IT-BPM services generating minimum direct employment of 1.3M by 2016, wherein 520,000 will come from provinces.

While recognizing that there is still a number of challenges being faced in the IT-BPM industry particularly in the countryside such as lack of skilled manpower and tech infrastructure in some rural areas, he believes that this can be addressed via ICT Office's programs such as Rural Impact Sourcing.

"This (Rural Impact Resourcing) is our answer to the challenge of bringing technology jobs to areas that currently may not have many opportunities for local jobs in the tech sector due to local challenges such as environmental conditions like typhoons, volcanoes, earthquakes; peace and order issues; geographic location like distance from major urban areas," Amores said. "By conducting Rural Impact Sourcing Seminars and Workshops, we raise the awareness among the public particularly the young and unemployed that they can tap the global online jobs market."

For Amores, promoting online jobs in the provinces is very important as this can be a mechanism for individuals to earn well without leaving the country. By bringing jobs to the country instead of exporting workers, families stay together without sacrificing economic opportunities.

The Philippines is now in the top 10 in the world in terms of the number of people doing online jobs. We have also seen more and more cities in the Philippines joining the Global 100 Top Cities for ICT.

In 2014, the number of IT-BPM workers in the provinces has increased from 63,000 to more than 300, 000 in 2010.

ITDI becomes her

Having embedded herself in the industrial and manufacturing sector, Dr. Maria Patricia V. Azanza brings with her important tools in leading ITDI to better serve its clients.

By VIOLETA B. CONOZA
S&T Media Service, *DOST-ITDI*

Coming from a long and productive career in the academe and R&D, Dr. Maria Patricia V. Azanza or MPV Azanza assumed office as ITDI director on January 12, 2015. Her track record shows she had been deeply immersed in the industrial/ manufacturing sector. With that, she truly embodies the leader deserving to be at the helm of ITDI.

MPV Azanza has the rank of Professor 9 at the Department of Food Science and Nutrition, College of Home Economics, University of the Philippines Diliman (UPD).

She is a PhD in Food Science and obtained her degree in 1996 from the Department of Food Science and Technology, University of New South Wales, Sydney, Australia. Her MS degree is in the same field while her BS degree is in Fish Processing Technology from the University of the Philippines Diliman.

She started her career as an assistant biologist at Philippine Bullfrog Industries in San Mateo Rizal in 1980, then as senior biologist at the National Bullfrog Development Program, Ministry of Natural Resources; and as Farm Manager at P.T. Indonesia Bullfrog Industries, Inc., Surabaya, Indonesia from 1983 to 1985.

In 1987 she moved to UP Diliman as research assistant at the Office of Research Coordination. From Instructor 2 in 1988 at UPD's Department of Food Science and Nutrition, College of Home Economics; she rose from the ranks and is now holding the position of Professor 9 in the same college since January of this year.

Her stint in the manufacturing industry started when she joined the private sector in 2007 as Vice President for Research and Development of Foodflow, Inc. in Paranaque until March 2010.

MPV Azanza's career is heavily dotted with awards, honors, and other forms of recognition both of national and international caliber. Her various works in food safety and quality of foods and materials, HACCP, food toxins, RTE, and street foods (among others), also bagged UPD's *International Publication Award - The President's Award for Academic Distinction* in 2005-2006.

Aside from these awards, her exemplary work saw print in local and international refereed (ISI) journals that brought her to different places here and abroad for various engagements like scientific conferences, presentations, exhibitions, and the like.

Even with her busy schedule, MPVA doesn't stop doing R&D. Some of her current researches include: the validation of pasteurization treatments against microbial spoilage and pathogenic indices of liquid egg products, microwave blanching and food coatings for discoloration control in minimally-processed local allium bulbs, and use of natural antioxidants to control rancidity in pasteurized cooked RTE (ready-to-eat) noodles.

To date, MPV Azanza (along with co-authors) has to her credit a number of ongoing patent applications with the Philippine Bureau of Patents-Intellectual Property Office.

Extension work and other noteworthy endeavors also keep her busy, even as she provides services in various capacities to some organizations like the Bureau of Product Standards, Philippine National Standards, and others.

Alongside her R&D work, MPVA also held administrative positions such as Chair, Office of Research and Publication at the College of Home Economics, UPD; and as Faculty-in-Charge in its Pilot Food Plant.

From her line of work, it is evident that MPV Azanza is a champion of technologies for a social cause. In the aftermath of Typhoon Yolanda that devastated Tacloban and nearby areas, she led the UPD [with the help of volunteers], in producing RTE rice and bihonat the UP Pilot Food Plant in Nov-Dec 2013. The RTE products, developed by Azanza, required neither water nor heating prior to consumption, and could last for a month, even without refrigeration. The RTEs were distributed to victims, and, later, to dorms within UPD and other communities.

Indeed, MPV Azanza is fit for the job at DOST-ITDI. And with her at the helm, ITDI is indeed in good hands!

In living colors: Tela gets back to life

By MA. LUISA S. LUMIOAN
S&T Media Service, *DOST-STII*

"Our products will find their own niches to effectively compete in the high-value added sector." This was the fearless forecast of Department of Science and Technology Secretary Mario G. Montejo's fearless on the country's textile industry.

Calling for stronger partnerships to revitalize the industry during the "TELA Serye" textile stakeholders' conference last year, Sec. Montejo said that the union of traditions and scientific technologies will certainly help bring back the industry into life.

Montejo revealed that DOST-Philippine Textile Research (PTRI) Institute is developing various technologies including smart textiles with self-cleaning, UV protection and anti-microbial properties, and abaca-reinforced nonwoven composites among others in a bid to boost the textile industry.

He added that DOST has committed P52 million to rehabilitate PTRI's Pilot Facility that will provide indigenous yarn supply to various textile communities.

PTRI is also establishing handloom weaving innovation centers to enhance handloom productivity for rural development.

Organized by the DOST-PTRI, "TELA-Serye" gathered industry stakeholders, advocates, enthusiasts and researchers to exchange ideas and perspectives in textile industry development. "TELA" means Textiles Empowering Lives Anew which signifies that the textile industry is a time-tested impetus for economic development.

PTRI-stakeholder partnerships help empower communities

Meanwhile, Atty. Leo Lagon, CEO of Power Fashion which is behind the brands Vice Versa, Unica Hija, and Bayo, shared in the said conference how Power Fashion kept up with the fashion industry amidst the influx of foreign brands in the local market.

He was not against the entry of foreign brands in the country, he said but it was indeed a challenge for the local players to compete with the foreign brands.

Atty. Leo T. Lagon, CEO of Power Fashion Inc., shares the company's struggle to stay competitive in the local fashion scene during the TELA Serye Stakeholders Conference

The company's approach to survive the stiff competition may seem counterintuitive at first.

"We shifted our focus from price or affordability to quality," disclosed Atty. Lagon. He said that most global brands are not so focused on quality since they are considered disposable fashion. Prevailing corporate strategy nowadays is mass production so sometimes quality suffers.

Also, the company went against the tide of sourcing all merchandise abroad. "We closed our factory in China and transferred it here in the Philippines," Atty. Lagon revealed. "Today, I am happy to tell you that it was the best decision we have ever made."

Despite higher wages, and other factors such as high power rates and red tape, Power Fashion opted to relocate because of their belief that Philippine workmanship is world class. "Our desire to reinvest in the Philippine labor, far outweigh the increase in cost," Atty. Lagon said.

"Not only did we generate employment here in the Philippines, which our country urgently needs, but we also helped to start anew and revive the dying garment industry," he added.

> **"If we can assure the weavers a stable market, we can encourage them to continue weaving and pass the extraordinary talent to the next generations."**
> - Atty. Leo Lagon, CEO Power Fashion

One of the things that the company still intends to do is to source fabrics from within the country. But Atty. Lagon admitted that they cannot fully do this now.

However, they did the next best thing which is to partner with PTRI to empower native weavers to continue making good fabric that the company can sell commercially.

"If we can assure the weavers a stable market, we can encourage them to continue weaving and pass the extraordinary talent to the next generations," related Atty. Lagon.

"We have generously committed to PTRI our three brands for the exclusive use of our sponsored communities in order to showcase their produce. On our end, we will recommend to them to weave patterns and colors that we can sell commercially and we will make clothes using their fabrics to showcase their world class craftsmanship," he explained.

On the other hand, PTRI will help the communities to acquire machines and provide necessary research to develop and exploit the indigenous materials in the country.

"This for us best exemplifies perfect collaboration between government and private enterprises that will not only benefit the communities but all stakeholders as well," he remarked.

The conference coincided with this year's celebration of the PTRI's foundation as well as the Philippine Tropical Fabric Month which is celebrated every January to promote the use of indigenous fibers in the country such as piña, banana, abaca, and Philippine silk and sustain the increased interest on local tropical fibers.

DOST celebrates Girl Power in S&T

By RODOLFO P. DE GUZMAN
S&T Media Service, *DOST-STII*

As the whole nation celebrates the National Women's Month this March 2015, the Department of Science and Technology (DOST) rallies everyone, including its employees in different attached agencies, to be conscious of women's concerns and promote gender development.

"Our women scientists, engineers and inventors play a very important role in using science and technology as tools to improve our lives and contribute in nation building," said DOST Secretary Mario G. Montejo during a forum conducted by the department.

This year's theme, "Juana, Desisyon Mo Ay Mahalaga sa Kinabukasan ng Bawa't Isa. Ikaw Na!" gives importance to contributions of women in all sectors of society particularly in the fields of science and technology.

The main event of the celebration is the Forum on Women's Leadership held at the DOST Executive Lounge with special guest speaker Dr. Estrella F. Alabastro, dean of the College of Engineering of the National University and former DOST secretary.

Dr. Alabastro shared her experiences on how it is to be a leader in both government service and in the private sector as well as the many challenges she encountered and how she was able to overcome them.

"Our women like Dr. Alabastro, among many others, have, for so many years, contributed a lot to the advancement of science and technology in the country, not to mention the significant contributions that made a difference in the fields of medicine and healthcare, education, government service, industry, entrepreneurship, social development and the arts," stated Montejo.

The Pinggang Pinoy (Pilipino Plate) program of the DOST's Food and Nutrition Research Institute (FNRI) is also featured with a presentation by Ma. Jovina A. Sandoval, a licensed nutritionist-dietician of the institute.

Pinggang Pinoy was developed by FNRI in collaboration with the World Health Organization, Department of Health and the National Nutrition Council of the Philippines. It gives our consumers, particularly our homemakers, information on the recommended proportion of various food groups to have a healthy and balanced meal.

"Pinggang Pinoy is one of the many DOST technologies developed to improve the lives of Mang Juan and Aling Maria by using science-based approaches backed by scientific evidence and formative research, technical consultations and pre-testing," revealed Montejo.

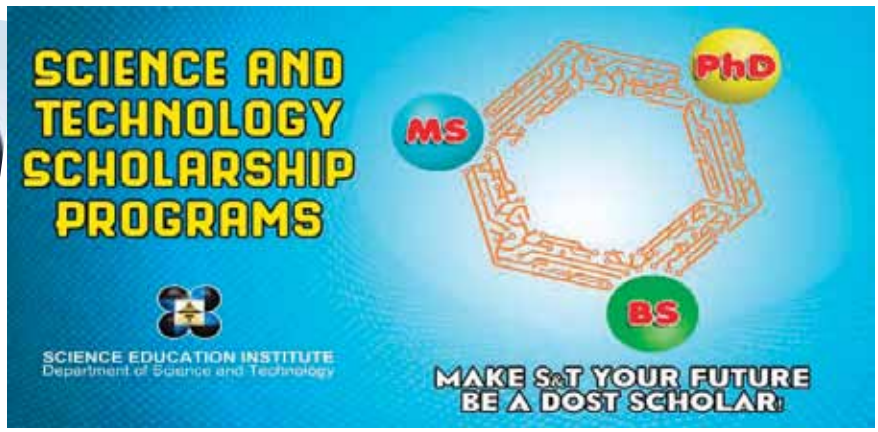
Montejo further stated that the program compliments and supplements the Food Guide Pyramid developed by DOST. It shows the whole day food intake recommendation for Filipinos and recommends eating more vegetables and whole grains [which take up the bottom part of the pyramid] and less red meat, sugar, fats, and oils that take up the topmost portion.

Other activities that marked the celebration were a dance marathon participated in by DOST officers and employees, free haircutting courtesy of the Ricky Reyes Learning Institute. Foods stalls were also available around the central office, offering a variety of goods and treats. (S&T Media Service)

ON THE MENU

Beefing up scientists and technologists

S&T human resources are a vital component of any country's economic development. As such, DOST invests much to create and develop its S&T human resources. This article will give an idea of how we beef up our country's S&T muscles via scholarship.



By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

For science and technology (S&T) to fully take off and keep a nation on the path toward progress – much more fast-track the climb to the top rungs of the ladder – S&T resources must be sustained.

One of these is human resources. The Philippines should assure itself of a steady crop of experts – educated, well-trained, and dedicated to use their knowledge to help move the country forward. S&T in the country will not run in the right direction without capable people manning the steering wheel.

To make sure the right people are tapped, the Department of Science and Technology (DOST) established several scholarship programs both in the undergraduate and graduate levels which seek to cover every region of the country in order to select the best minds for S&T among its human resources.

Among these programs are the following:

SCIENCE AND TECHNOLOGY UNDERGRADUATE SCHOLARSHIPS

The S&T undergraduate scholarships is designed to stimulate and entice talented Filipino youths to pursue lifetime productive careers in science and technology and to ensure a steady, adequate supply of qualified S&T human resources which can stir the country towards national progress.

A. RA 7687:The Science and Technology Scholarship Act of 1994

The program is geared toward poor but deserving youngsters who want to take up science and technology courses. RA 7687 awardees may enroll in S&T priority courses in the University of the Philippines System, other state universities and colleges (SUC) or tertiary institutions identified by CHED as Centers of Excellence or Centers of Development (COE/COD) for the DOST-SEI priority S&T courses.

B. Merit Scholarship Program

The DOST-SEI Merit Scholarship Program, formerly known as the NSDB or NSTA Scholarship, begun in 1958. The scholarship program aims to identify and recognize the country's youth with very high aptitude in science and mathematics. Merit awardees may pursue a baccalaureate degree in any DOST-SEI priority S&T courses which are deemed crucial to national development in any DOST-SEI identified institutions.

C. Project Grant for Educational Assistance on Technology and Science Teaching Courses in Mindanao (GREAT-M)

Youth in the provinces and the ethnic groups have found hope for access to education – and thus a better life – in the GrEAT-M Scholarship. Launched in 2003, Project GrEAT-M has given marginalized Muslim youth an opportunity to take up courses in science and technology.

D. Junior Level Science Scholarship (RA 10612: Fast-tracked Science and Technology Scholarship Act of 2013)

No matter how many scholars are enrolled, they wouldn't amount to excellent professionals later on if excellent teachers aren't around to develop their skills and equip them with adequate knowledge. Thus, this program aims to strengthen the country's science and technology education by fast tracking graduates in the sciences, mathematics and engineering through provision of scholarships to third year college students enrolled in any of the priority S&T courses identified by the DOST-SEI and are willing to teach in

science, technology, engineering agri-fisheries and mathematics (STEAM) subjects after graduation in private or public high schools.

SCIENCE AND TECHNOLOGY GRADUATE SCHOLARSHIP PROGRAMS

The S&T graduate scholarship programs aim to produce technically competent Master's and Doctoral degree holders who will man the country's R&D activities and mobilize the country's resources towards attainment of sustainable economic growth and development. These programs include the following: Accelerated Science and Technology Human Resource Development Program (ASTHRDP), Engineering Research and Development for Technology (ERDT) and the Capacity Building in Science Education. Awardees of the scholarship programs are entitled to the following scholarship benefits: free tuition and other school fees, stipends, book allowances, group accident insurance, thesis or dissertation allowance, research grant and transportation allowance in cases when students will study at universities located outside their provinces.

A. Accelerated Science and Technology Human Resource Development Program (ASTHRDP)

ASTHRDP awards MS and PhD scholarship grants to eligible individuals in identified S&T areas. The program is implemented by DOST-SEI in partnership with the DOST Councils (Philippine Council for Agriculture Aquatic and Natural Resources Research and Development, Philippine council for Health Research and Development, and Philippine Council for Industry, Energy and Emerging Technology Research and Development) and the National Science Consortium (NSC). The NSC aims to develop, support and coordinate national programs to accelerate the development of high level human resources in basic, applied sciences and mathematics for the country's sustainability and competitiveness. The NSC is composed of the following universities: UP Diliman, UP Manila, UP Los Baños, UP Visayas, Ateneo de Manila University (ADMU), De La Salle University (DLSU), University of Santo Tomas, Central Luzon State University (CLSU), Visayas State University (VSU) and Mindanao State University-Iligan Institute of Technology (MSU-IIT). Other components of the ASTHRDP include the following: Sandwich Program, Thesis/Dissertation Grant, Scholars Research Support Fund, Visiting Professors, PhD by Research and Graduate Scholars Career Incentive Program.

B. Engineering Research and Development for Technology (ERDT)

Scholarship is one of four components of ERDT which is a consortium of eight universities, namely UP Diliman, UP Los Baños, ADMU, CLSU, DLSU, Mapua Institute of Technology, MSU-IIT, and University of San Carlos (USC). The ERDT was created to: implement high-impact research agenda that is aligned with the National Science and Technology Plan (NSTP) and Medium Term Philippine Development Plan (MTPDP); attain critical mass of graduates with Master's and PhD degrees; upgrade the qualifications of practicing engineers; upgrade the quality of engineering colleges and make engineering graduate education accessible; and develop a culture of research and development (R&D). Aside from the regular MS and PhD slots offered by ERDT, the program also includes other scholarship components such as Sandwich Program, Faculty Research Dissemination Grant, Foreign PhD, Visiting Professors, Post-Doctoral, Online Research Resources, Conference and Summit, and Graduate Scholars Career Incentive Program.

C. Capacity Building in Science Education

This program intends to increase the number and improve the quality of S&T faculty members in Teacher Education Institutions so they can be in better capacity to mold the young people to be the future leaders in science and technology. The scholarship program is being implemented by DOST-SEI in collaboration with the National Consortium in Graduate Science and Mathematics Education (NCGSME). The NCGSME aims to establish a common quality graduate program and accelerate the development of a critical mass of experts in SME. The member-universities of the Consortium are: ADMU, Bicol University, CLSU, DLSU, Mariano Marcos State University, MSU-Marawi, Philippine Normal University, USC, Western Mindanao State University, and West Visayas State University.

Philippine Science High School System

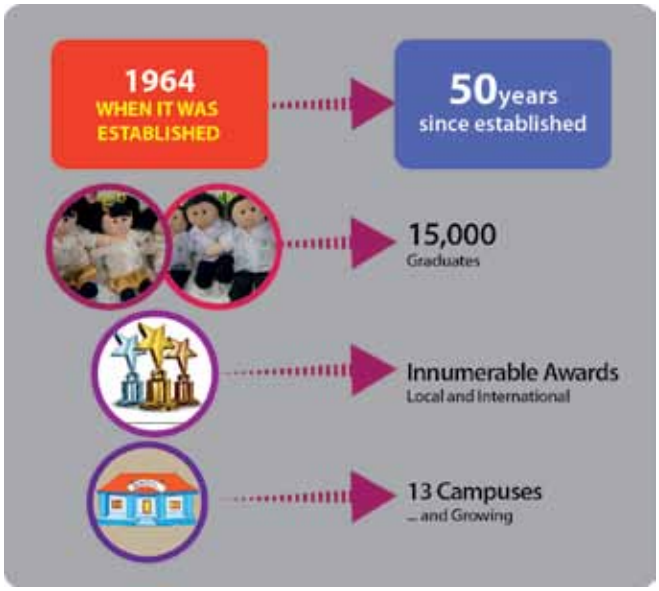
The Philippine Science High School (PSHS) is the country's premier institution for science learning, with 13 campuses scattered all over the Philippines, specifically in the following locations: National Capital Region, Ilocos, Cagayan Valley, Cordillera, Central Luzon, Bicol, Western Visayas, Eastern Visayas, Central Visayas, Central Mindanao, Southern Mindanao, SOCCSKSARGEN, and CARAGA. The first campus was established in 1964 by virtue of Republic Act 3661 which states that PSHS shall "offer on a free scholarship basis a secondary course with special emphasis on subjects pertaining to the sciences with the end in view of pertaining its students for a science career." PSHS has kept its mandate by tapping as many talents from all over the country as possible and molding them to become the next generation of S&T specialists, reaping honors here and abroad with their achievements and high-value products that impact the different sectors of society.

A BUFFET OF SELECTION?

Choose "Pisay"

By FRAMELIA V. ANONAS
S&T Media Service, *DOSt-STII*

Want to excel in S&T education and training? Choose Pisay.



Science chief Mario Montejo assures parents and teachers of graduating elementary students that, in order for these students to be competitive and receive the best S&T education and training in the country, they should choose no less than the Philippine Science High School (PSHS) for their students' secondary education.

The 13-campus PSHS system, endearingly called "Pisay", is geared to produce graduates who are well-versed in science and mathematics in an integrative way. Thus, Pisay students receive intensive and extensive knowledge and training in science, mathematics and technology, including research.

Because of their special training, Pisay graduates are required to take college courses in the areas of science, mathematics, and engineering. After graduating in college, Pisay alumni are expected to contribute to the country's development being part of the country's pool of S&T experts.

But Pisay life is not all academics as students are equally engaged in the humanities, arts, and sports.

"Pisay arms its students with the foundations for learning throughout life, the competence to work and be productive, " said Secretary Montejo. "Moreover, Pisay graduates learn in school how to coexist in fruitful harmony with local and global communities. They are likewise trained to engage in critical thinking, and being open to change."

Student achievements

Pisay has a long record of student achievements as proof of its world-class standard. Last year alone, the main campus had 21 international awards, including awards in the areas of social innovation and taekwondo. Most of its 12 regional campuses likewise brought home various international awards and recognitions.

Scholarship

Pisay scholars, in addition to free tuition and loan of available textbooks, get a monthly stipend that ranges from P500 to P4,000 depending on the financial status of the students. Some also receive uniform and transportation allowances depending on financial need and distance of residence to the campus.

Poor but deserving students

This year, the Pisay system management intends to broaden its applicants and qualifiers to include "more poor but deserving students" and break from its former mold of having 60 percent of its students from well-to-do families. "We want to increase the ratio to accommodate more qualifiers from less fortunate families," said Dr. Larry Cabatic, executive director of the PSHS system.

According to Cabatic, a number of qualifiers from well-off families prefer to enroll in more expensive schools anyway, so the new Pisay management intends to focus on students that really need – and deserve – to study in Pisay.

"We will give more attention to promoting Pisay-Main in Metro Manila," revealed Cabatic. "As of now, I have the impression that only those who have connections with Pisay-Main know the campus. We want to introduce Pisay to students and schools who do not know about it. We want to reach out to more applicants."

"We also want people to know and recognize that Pisay is under the DOST," Cabatic told. "We are proud to say that we are under DOST and we have the most sound S&T curriculum in the country."

Pisay system

As of 2015, the Pisay system has 13 campuses which produced about 15,000 graduates since it was established in 1964. This July, PSHS-Calabarzon will open in Batangas City. Other campuses expected to open soon include PSHS-Mimaropa and PSHS-Zamboanga Peninsula.

THIS IS NOT A KIDDIE MEAL

Robert John P. Pecayo
From public school valedictorian to Pisay Isko

Robert John P. Pecayo, Grade 7 at Pisay-Main, is one current proof that public school students can actually make it to the country's top S&T secondary institution. Indeed, gone are those days when Pisay mostly had well-to-do students in its fold. It is now turning to public schools to get the best and the brightest.

By FRAMELIA V. ANONAS
S&T Media Service, *DOSt-STII*

"I just live across Pisay," he said as he introduced himself as Robert John P. Pecayo, Grade 7, and a resident of an urban poor community along Agham Road. He describes his residence as "maraming beses nang nasunog (a place that got burned many times)." His father is unemployed due to epilepsy, while his mother sells balut (duck egg with developed chick) and other items to provide for the family's needs.

His elder siblings – a sister who is in high school and a brother who is in college – are separately sent to school by two aunts, he said.

"I didn't know much about Pisay although it's just across our place. It was not very open and I didn't hear much about it in the media," he admitted.

"When my classmates told me they were taking Pisay's entrance exam, I told myself, 'Why don't I try it too?'"

It was worth the try. Robert John belongs to the 40 percent of public school graduates who passed Pisay's National Competitive Exam (NCE), a scholastic aptitude test designed to measure the scientific ability, quantitative ability, abstract reasoning, and verbal aptitude of applicants. This may not be a real surprise as Robert John is the class valedictorian and had shown strength in Science subjects.

Iskolar ng Bayan

"Batang matalino" – this is how his neighbors described Robert John, especially now that he is in Pisay. Indeed, Pisay scholars are not just intelligent students. They should be excellent in science, math and engineering to help them cope with Pisay's academic standard.

Dr. Larry L. Cabatic, Philippine Science High School System executive director, explained how difficult it is to qualify for Pisay scholarship, making one appreciate Pisay's P140,000 per student spending per year. According to Cabatic, one should have an above average score in all of the four exam categories. For example, in one category, if the average score of all 23,000 applicants is 60, then one has to get an above 60 score, Cabatic explained. "Even if one gets 100 percent in one category, but gets a below average score in another category, the applicant is automatically disqualified," disclosed Cabatic.

Qualifiers get ranked-- the main campus in Diliman, Quezon City gets the top 240 qualifiers among its applicants; and each regional Pisay campus admits the top 90 qualifiers in their respective areas.

Such stringent qualification requirement is just the beginning. All throughout the schooling of Pisay students, they get immersed in science, mathematics, and research. But this is not to say that they are all

academics. They also get very good grounding in humanities, arts, social sciences, and sports.

Awards are just a foretaste

Last school year, Pisay students shone in various competitions here and abroad. But the awards are just a "bonus", quipped Cabatic.

"Hindi naming intention na purhagin sila sa awards (We don't intend to immerse them into getting awards)," he said. "We just want them to have a taste on how it is to have S&T projects. We want them to fully bloom when they go to college."

It may be a surprise that Pisay also gets awards outside of curricular activites. In 2014, Pisay students also received awards for social innovation and taekwondo.

Coping with Pisay life

Robert John admits that it's not easy to stay in Pisay. "I had a hard time," he admitted when asked how he coped with Pisay life.

"Dati mabagal ang pacing sa dating school ko (Pacing of lessons was

Left photo: Dr. Larry L. Cabatic (middle), executive director of the Department of Science and Technology-Philippine Science High School System (DOST-PSHSS), encourages more students from public schools to apply for Pisay scholarship. "We train our students not only towards careers in science, mathematics and engineering but also for future leadership," he said. From left: Dr. Rod Allan de Lara, deputy executive director; Robert John Pecayo, Pisay Grade 7 and graduated from a public school; Engr. Roman Buenafe, Pisay alumni and MRT system general manager; and Ma. Concepcion Sacay, chief finance officer. (Photos by Gerry Palad, S&T Media Service)

quite slow in my former school), he recalled. "We used to discuss one lesson in one week. Now, we take up a lesson in two to three days only."

Used to being on top of the class when he was in elementary, Robert John realized that everyone in class is intelligent.

"Nahirapan ako nung una, pero nakakapag-adjust na din (I had a hard time at the start, but now I am adjusting)," he admitted.

Alaskado!

Engr. Roman Buenafe, a Pisay-Main alumnus and now the general manager of MRT Sytems, recalled that during his time, a student who gets 99 in the National College Entrance Examinations (NCEE) would be the butt of jokes ("alaskado") because almost everyone gets 99+. A 99 percent score means that the taker got a score that is higher than the scores of 99 percent of all NCEE takers for that year. Thus a 99+ score would mean that the taker got a score higher than the scores of 99.5 percent of NCEE takers for that year.

Investment actually

When he found out that he passed the NCE, Robert John thought it was just "swerte" (good luck) that he can continue schooling and be called "Iskolar ng Bayan."How much does the country pay for the "Iskolars ng Bayan?"

According to Ma. Concepcion Sacay, finance chief of the Pisay system, the 13 campuses as a whole have a budget of P1,439,431,000 in 2015. A big chunk of the budget goes to the students who receive monthly stipends worth P500 to P4,000, depending on financial need.

"But rich or not, they are all given free books to be returned at the end of the school year," said Sacay. Other benefits include the annual P1,800 uniform allowance and one-time round-trip transportation allowance to those eligible.

"We are looking at these spendings not as gastos (expenses) but as an investment," said Cabatic. "We are investing for the future of these students. It is the future of future leaders we are talking about here."

"We prepare our students to be leaders, though not necessarily in politics," shared Cabatic.

"I always tell our students that if you will be good, for example, in medicine, leaders will come to you for medical treatment. In that way, you become a leader yourself because you influence those who are on the top," he added.

"Pisay scholars are the leaders of tomorrow and they can influence the future of our country."

The PSHS system is composed of science-oriented secondary schools operating under the DOST. It offers scholarship for high school students who will be trained towards careers in science and engineering. PSHSS currently has 13 campuses all over the country, with three additional campuses to be opened by 2016. The newest campus, PSHS-CALABARZON in Batangas City, will open in June this year.

Sec. Montejo and the current Pisay management want to "accommodate more qualifiers from less fortunate families." According to Pisay Executive Director Larry L. Cabatic, a number of qualifiers from well-off families prefer to enroll in more expensive schools anyway. Thus the new PSHSS management intends to focus on students who really need and deserve to study in the country's premier S&T (science and technology) secondary school.

Ten years ago, it was reported that 90 percent of Pisay qualifiers were from private schools. Until recently, Cabatic said, the percentage went down to 60 percent for qualifiers from privileged families

Students interested to apply to any Pisay campus can log on to http://www.pshs.edu.ph/ or the PSHS Facebook page for more information. Pisay's NCE is usually held every August and applications are accepted starting May.

HER MAIN COURSE

Achieving Excellence, Inspiring Others

By DR. MARIE PAZ E. MORALES
Philippine Normal University

Igniting academic excellence and pursuing success has been the trademark of the Department of Science and Technology-Science Education Institute as it walks to its path to contribute to nation building. It has been the country's vehicle in its maneuver to development and global competitiveness by producing hundreds of "science scholars of the people" who are expected not only to complete their programs but also to pursue excellence in their respective fields in science and technology, and become part of the human resource capacity. These scholars are tasked to make demand driven outputs that would eventually meet the global standards - a tough responsibility, a difficult quest, and a bumpy path. But, in the end, there is certainly a promise of fulfillment and contentment.

The real voyage consists not in seeking new landscapes, but in having new eyes."

—inspired by Marcel Proust

I set foot at the De La Salle University as a doctorate student in May 2010. I was not yet part of the "science scholars of the people" at that time. I had three things in mind back then which I wanted to realize after three years of schooling. I wanted to learn new things, build connections and professionally develop not just as a teacher but also as an educator who would make a difference in students' lives, touching their minds and hearts to be humane and excellent science teachers as well. At the back of my mind was the thought that my students are getting younger while I was getting wiser and a little bit older.

I was on my second term at DLSU when I started to enjoy being a DOST-SEI grantee. Free tuition, reasonable amount of allowance, and being a full-time student on study leave with pay were just few of the many benefits of being a grantee.

But the journey towards excellence is not an easy path. Trials and hardships come in: difficult exams, long formulas, tons of reading assignments, critique papers. And the one true hurdle each doctorate student has to overcome: dissertation.

But truly, there's always a rainbow after the rain. I completed the degree in less than three years with academic excellence. Yet, the gold at the end of my rainbow is not the award I received. It is the wisdom from all the experiences I had. It is the recognition of my yin and improving it, boosting my yang and further enhancing it; making a good blend and match of my yin and yang, and making them complement each other rather than oppose one another.

The blend formed the force that made a dynamic and fluid system in which the whole is made greater and of higher form than the sum of its parts. This led to making big ideas, developing frameworks, thinking big but working hard on the details. Thinking big is so tough; working hard on detail is equally rough. But along the journey, every detail is cherished, every little

thing is valued, every situation is remembered, and every memory is priced whether good or bad, positive or negative, light or shadow. It is the recognition of the facet of this journey and the feel of being human capable of enjoying, having fun, hurting, failing, rising from the fall and loving.

This was my recipe for success - hard work and a vision of what lies ahead but down on the ground for whatever trials met during the journey. After all, it is the journey that really matters and not just the destination. It's how we sailed and not just where we are headed. It is what lies in between the initial and the final point that we should cherish, ponder, and use as life's experience that taught me - recognizing the whole involvement in a different perspective so as to see the beauty of the landscape while embracing the entirety of the journey.

In the end, success is not defined by completing the program or getting an excellence award, but by facing the new challenges of 21st century learning with certainty and definiteness. It is seeking a

renewed commitment to educate the digital natives using the modern and contemporary lingo and to help preserve and conserve the cultural uniqueness of the Filipinos as well.

To create technical and analytical minds but with consoling and compassionate hearts instilling in them that learning science is not about making meaning for one's consumption alone. Rather, it is about helping build scientific and technological literacy in the country while preserving and sustaining Filipino students' unique and distinct traditions, practices, beliefs, rich natural resources and natural habitat which have been attracting people of other countries and promoting tourism.

To inspire and arouse in them the thirst for knowledge and hunger for excellence believing that being one and at par with other countries is not after all impossible with a learned society. They may not take the same path as I did, but we may cherish a meaningful experience during the voyage and end up with the same goal – certainly achieving excellence and with certainty inspiring others to do the same.

Editor's Note:
This article will appear on the initial edition of the upcoming compendium of research narratives to be launched by DOST during the 2015 National Science and Technology Week. The first edition of the still-to-be-titled compendium will feature the Top 32 stories on DOST-supported researches and scholars. Written by researchers and scholars themselves, the narratives shall bring to light the personal experiences and thoughts of the researchers while doing their studies. The series of compendiums shall feature researches from 2010 to 2015.

Want to be an Isko/Iska?

By FRAMELIA V. ANONAS
S&T Media Service, *DOST-STII*

If you are aspiring to be part of the country's S&T workforce by being a DOST scholar, here are DOST's priority courses and recognized institutions where you may take your degree:

1. Agriculture
2. Agricultural Biotechnology*
3. Agricultural Chemistry
4. Agricultural Engineering
5. Agricultural and Biosystems Engineering*
6. Applied Mathematics
7. Applied Physics
8. Biochemistry
9. Biology
10. Ceramics Engineering
11. Chemistry with Applied Computer System
12. Chemistry with Materials Science & Engineering
13. Chemical Engineering
14. Chemistry
15. Civil Engineering*
16. Computer Engineering
17. Computer Science
18. Electrical Engineering
19. Electronics & Communications Engineering
20. Environmental Science
21. Fisheries
22. Food Technology
23. Forestry
24. Geodetic Engineering
25. Geology
26. Industrial Engineering
27. Industrial Management Engineering-Information Technology**
28. Information Technology
29. Manufacturing Engineering Management-Biomedical Engineering**
30. Manufacturing Engineering Management-Mechatronics and Robotics**
31. Manufacturing Engineering
32. Materials Engineering
33. Mathematics
34. Mathematics Teaching
35. Mechanical Engineering
36. Metallurgical Engineering
37. Mining Engineering
38. Molecular Biology and Biotechnology
39. Physics
40. Applied Physics with Applied Computer System
41. Applied Physics with Materials Science & Engineering
42. Science Teaching (Bio, Chem, Physics,Physical Science)
43. Statistics

RA 7687

You may enroll at the University of the Philippines or any state college/university or other tertiary institutions identified by the Commission on Higher Education as Centers of Excellence and Centers of Development (COE/COD) for the following DOST-SEI priority courses:

1. Adamson University		ChE, IE, CoE, EE, CerE, ME, ECE
2. Aquinas University		CoE
3. Ateneo de Davao University	Chemistry	ME, EE, ChE
4. Ateneo de Manila University	Chem, Math, Physics	Environmental Science, CS, ECE, CoE, Chem with ACS, Chem with MSE, Physics with ACS, Physics with MSE
5. Batangas State University		EE, ME
6. Bulacan State University		EE, ME
7. Cagayan State University		CoE, EE
8. Central Philippines University		ME, ChE
9. De La Salle University	Chem, Math, Physics	ME, ChE, ECE, IE, EE, MfgE, CS, IME-IT, MEM-BE, MEM-R
10. Don Bosco Technical College		ME, ECE, CoE
11. Holy Angel University		EE, IE, ECE
12. Mapua Institute of Technology		ChE, EE, IE, MetE, ECE, Geological Science & Engg
13. Mariano Marcos State University		CerE
14. MSU-IIT	Chem, Math, Physics	ME, EE, MetE, ECE, CerE
15. Philippine Normal University		Physics Teaching
16. Rizal Tech. University		EE
17. Siliman University		ME
18. St. Louis University		ChE, IE, MiningE, ECE, EE, ME
19. Tarlac State University		EE
20. TUP-Manila		ME, ECE, EE
21. University of the East		ME
22. University of Mindanao		ME, EE
23. UNO-Recoletos		ME
24. University of the Philippines	Bilogy, Chem, Math, Physics	ME, EE, IE, MEtE, ChE, Biochem, MBB, MiningE, CS, ECE, CoE, Geology, MaterialsE, Science Teaching, CivilE, Math Teaching, Forestry, Agriculture, Agricultural Biotechnology, Agricultural Chem, AgriculturalE, Statistics, GeodeticE, Fisheries, Food Tech.
25. University of San Carlos	Chem, Math, Physics	ChE, CoE, ECE, EE, Physic-Chem Teaching, Physics-Math Teaching
26. University of South Eastern Philippines		EE, ECE
27. University of Sto. Tomas	Chem, Math	ECE, IE, ChE, EE, Biochem, ME
28. University of St. La Salle		ChE, CoE, ECE
29. Xavier University	Chem, Math	ChE, ME, EE
30. Wesleyan University		ECE
31. Western Institute of Technology		EE, ME
31. Western Mindanao State University		Science Teaching (Bio, Chem, Physics)

Meteorologist: The job for all seasons

Who says that meteorologists are needed only during rains and typhoons? In seasons when the sun is at its fiercest, the mets study how hot the days would be and how long the humid or dry days would last. They explain why we sometimes get a bloody moon and a haloed sun; how tsunami is different from storm surge; and why we need to prepare for the weather. Yes, they are there for all seasons, whatever weather. It's their job.

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

It could be a career that is off the radar, but a meteorologist could somehow be a worthwhile job after all.

In the Philippines, pounded by an average of 20 tropical cyclones every year, there will always be job openings for meteorologists whether in the government, military, or private sector. Even media outfits have vacancies for the job.

In 2009, America Online (AOL) ran an article on the topic, stating that atmospheric scientists, better known as meteorologists or mets, are among the top 10 jobs in science. AOL ranked meteorologist at number six among the hottest jobs in the coming years as the work is "gaining more visibility as mets learn more about global warming, which has become a media and political focal point." The website also revealed that in 2016, the demand for these professionals is projected to grow by 11 percent, with individual salaries reaching more than $77,000.

True enough, the global climate will become more erratic as the world experiences hotter summers, more freezing winters, and relentless monsoons. While these climate conditions are predicted not to let up anytime soon, meteorologists are more widely needed now than they were a few years back.

Indeed, the demand for meteorologists worldwide is not seasonal; instead, it is a responsibility that cuts through borders and seasons.

What is a meteorologist?

A meteorologist observes and interprets the earth's atmospheric patterns and phenomena using scientific principles. With these data, meteorologists are tasked to develop the necessary weather forecasts for the rest of the week. If they are lucky enough, they could even be hogging the TV limelight, delivering the weather news.

One prime example is Dr. Nathaniel Cruz, popularly known as Mang Tani, who made the jump from being a DOST-PAGASA meteorologist to being a TV sensation who delivers the weather reports on the boob tube. Mang Tani, who used to work as PAGASA spokesperson during inclement weather, is the heir to Dr. Amado Pineda, a well-known meteorologist in the '70s and '80s. Like Mang Tani, Dr. Pineda's appearances as a weather reporter on TV endeared him to the public.

What does it take to be a met?

"Not everyone can qualify as a met," points out Alvin Pura, a weather specialist at PAGASA. He says that due to the stringent skills requirements, not everyone is cut out for the job. According to him, the aspiring meteorologist should be highly analytical because the job involves a lot of numerical data to come up with weather models. A meteorologist should also have spatial skills or the knowledge of space. Pura says that, aside from his innate love for nature, gazing at the skies and looking at the objects above is a daily habit for him while on duty at the PAGASA weather command center.

He adds that a student should have an engineering or science background to qualify as a met. A degree in mathematics can also suffice.

Educational and training opportunities

Some of PAGASA's meteorologists went through rigorous diploma training in meteorology and other related specializations while others pursued graduate and post-graduate studies either locally or abroad. Locally, mets specialize at the Institute for Environment Science and Meteorology at the University of the Philippines-Diliman, the university component of PAGASA.

Actually, the country has been producing topnotch mets for more than four decades now as the Philippines, through PAGASA, serves as the regional meteorological training center for the South West Pacific (Region V) designated by the World Meteorological Organization (WMO).

In addition, PAGASA also conducts rigorous training

courses for individuals who are currently employed in sectors related to national security, disaster management and the like, including PAGASA personnel engaged in meteorology and operational hydrology.

One of these courses is the Meteorologist Training Course (MTC), pioneered in 1961. MTC offers courses on physical, dynamic, and synoptic meteorology and usually requires a full academic year. It covers climatology and includes elective fields of specialization on aeronautical and agricultural meteorology and weather forecasting among others.

Foreign participants from the 21 member countries of Region V of the WMO can also join the training course. Once a participant finishes the training, he is given a diploma as a met after which he may pursue graduate and post-grad specialization. To date, MTC has produced 26 trainings with 468 graduates.

Career options

Belonging to the most sought after professionals in the face of global climate change, our local atmospheric scientists have so much in store for them as far as career opportunities are concerned. Many companies pay substantially for the job.

Pura describes PAGASA's mets as highly esteemed in the tropical region despite PAGASA's lack of cutting-edge technologies. They can also do well in countries situated at the middle and higher latitudes which are characterized by arid deserts and snow-filled climates respectively, he says. In these countries, industries are highly affected by climate disruptions, and thus eye Filipino meteorologists to do the hard research and development projects for them.

In the United States, a big chunk of the job vacancies for meteorologists are found in the National Oceanic and Atmospheric Administration and National Aeronautics and Space Administration. In recent years, there has been a growing need in the US for private sector meteorologists. They provide a variety of services to industries and other organizations such as consulting services and development of specialized weather data and displays.

Locally, mets are mostly employed by weather bureaus like PAGASA. Moreover, the military - Philippine Air Force, Navy, and Army – also have their own climatology research staff while big agricultural companies may require atmospheric scientists in their agriculture and energy departments.

Climate experts are also recruited by radio and television networks to present weather information to their viewers and listeners. This trend has caught up in the Philippines and is becoming the normal practice by local broadcast networks as in the case of Mang Tani.

A Reader's Digest online article reveals that, "meteorologists are the highest-paid persons on the broadcast, because weather is one of the top reasons why people watch local news." Whether this one might be true or not, it underscores the importance of meteorologists in today's lifestyle.

Most importantly however, working as a meteorologist is considered a vocation because it involves saving human lives via information.

Raising the number of mets

Surely, mets are among the rare breed of public servants in the country as the lure of big buck offers overseas drastically reduces the pool of weather experts in the Philippines. With the flight of many of our meteorologists, we could be seeing darker days ahead.

That is why in 2012, DOST announced the establishment of the first undergraduate program in meteorology facilitated by PAGASA. Secretary Mario G. Montejo declares that he wants the country to be the center of excellence in meteorology. But more importantly, the move serves as the midterm solution to stop the exodus of experts outside the country.

The initiative was conceived through the Consortium for Meteorology Education and Training (COMET) which convinced five universities to offer BS programs in meteorology. These universities are Mariano Marcos State University (MMSU), Bicol University, Rizal Technological University, Western Visayas State University, and Central Luzon State University.

Currently, the program accepts junior students taking up science, mathematics and engineering courses. Once qualified, they are automatically considered as scholars and their tuition fees and other miscellaneous fees are shouldered by the government. Last year, two met students from MMSU graduated.

The lack of undergrad programs for mets is a major concern for the science community since this might lead to more adverse effects in the future as global climate change intensifies. But with the available training and education opportunities on the field, the Philippines is assured that the government is leaving no stone unturned for a sustained crop of highly skilled meteorologists who will continue studying the atmosphere, informing the public, and saving lives - whatever the season.

Finding the perfect balance The forester's way

How is it like to be a forester? Quite interesting, if we base it on the experiences of an Outstanding Filipino in 2013, Forester Arsenio B. Ella. Let's find out the verdant challenges and opportunities in loving and taking care of the woods.

By ARJAY C. ESCONDO
S&T Media Service, *DOST-STII*

It is common notion that progress equates to industrialization, thus, modern infrastructure and high-tech environment leads to a better life. For Forester Arsenio B. Ella, somehow, somewhere it is the other way around.

Recognized as the Outstanding Filipino in 2013 under the Environmental Conservation and Sustainable Development category, he was cited for developing scientific and sustainable techniques in resin tapping that have not only prolonged the tree's life, but also helped create livelihood for indigenous communities all over the country.

As a leading wood expert, Forester Ella focuses on the study and promotion of proper tapping of trees such as Almaciga and Pili to optimize resin production without damaging the tree. These works are geared towards promoting livelihood programs among indigenous communities through lectures and hands-on training on proper tapping of trees.

Paving the way

Asked how he became one of the leading experts in his field today, Forester Ella goes way back to his high school days and tells the story of how one thing led to another.

"In our senior year in high school, we had a career guidance course orientation conducted by our then district forester now called CENRO. During that time, nobody took forestry in our province. According to him, forestry is a sure job; you do not have to compete in other professions just to be in, either in government or private.

"Right after graduation, I was recruited by my boss then landlord to join FPRDI, formerly FPRD Commission. Before that, I was hesitant to join FPRDI because I wanted to be in the DENR in our province. But in 1973, the Bureau of Forest Development was under reorganization, so they cannot hire new foresters.

"I started to love forestry when I took Dendrology classes. This is when I discovered my fondness for wood science and wood identification. Then the rest is history."

Ella finished his BS in Forestry in 1973 and his MS in Forestry in 1983 at the University of the Philippines Los Baños.

His exemplary works on Manila elemi and Manila copal have provided various livelihood opportunities to local communities. Manila elemi, the international trade name for Pili resin, is mainly used by perfume manufacturers due to its unique essential oil — lemonin.

On the other hand, resin from Almaciga trees called Manila copal, is being used in the manufacture of textile paints, varnish, pesticides and wax among others.

He was conferred the rank of Scientist III in the DOST Scientific Career System in 2001 and has received many honors such as the UPLB-CFNR Most Outstanding Alumnus (Mancono) Award, UPLB-CFNR Outstanding Alumnus (Institutional Service Award), and National Research Council of the Philippines (NRCP) Research Achievement Award. He has also won in various technical paper competitions, both local and international.

Rollercoaster ride

"As a researcher or scientist, God has instilled in me a deep sense of love to indigenous people," he says. "The experiences I have shared with them are invaluable."

Travelling has been a major part of Ella's work. A well-known wood anatomy expert, he has traveled to the highlands of Mindoro, Palawan, Samar, Sierra Madre, Davao and the Cordilleras, as well as lowlands of Ilocos, Bicol and Quezon, spreading to the local communities his expertise and knowledge on resin tapping of Pili, Almaciga, Balaw and Benguet pine among others.

Travelling to the remotest of places have given him unique experiences and appreciation of the indigenous peoples of the Philippines, including the Mangyans, Dumagats, Tagbanuas, Maranaos, Palau-ans, Manobos, and many others.

"We had a project in ComVal (Compostela Valley) and I stayed there for two months. Basically, I eat, talk, and work with them, practically living with them. There's something in you na kapag nagtagal ka sa ganung lugar ayaw mo nang umalis.Na-adopt ka, napapamahal na sa 'yo (…when you've stayed a long time in a certain place, you don't want to leave. You learn to love it"), he shares.

Aside from the fun memories shared with the local groups, Forester Ella had his share of unpleasant experiences as well.

"There was this time that one of our data collection studies fell during the rainy season in Hinabangan, Samar," he narrates. "The caretaker said that it's risky due to weather, but I insisted, since time was critical for the study. I was confident then, since I was a swimmer back in the day. So we hired a small boat and started crossing the river when my RA (Research Assistant) stood to take a picture and in an instant, the boat capsized. When panic ensued, ako yung napahiwalay sa group namin dahil sa alon (… I was the one who got separated from our group because of the waves"). One thing I learned in this experience is presence of mind. It was what saved me from that ordeal. I just swam (toward) and swam until I reached the riverbank.

"Also in the same site, we rode a 6x6 truck going to our experiment station, when in the middle of the trip, the truck lost its brake system. We were going too fast so what the driver did, isinadsad nya sa gilid (lupa) yung sasakyan (….the driver suddenly ground the truck to a halt"). The passengers were thrown forward due to the sudden stop. Thankfully no one was seriously hurt. I consider this as my worst case experience in a research trip."

Ella related another story which took place in Cagayan Valley.

"I was dared to walk from early morning up to 2 o'clock in the afternoon - a 20-km walk just to get there. My director got mad at me because I was risking my life there.But for me, although I'm not young anymore, there is the challenge and I enjoy it.

"So when asked, why I'm still doing field works given my age (63yo), all I can say is I love it and I'm enjoying it," Ella proudly says.

Science, youth and the common folks

"For young people, it is not advisable to go into forestry. First, let's face the reality, our forests are depleted. Those left in the mountain areas are just reforested species only, and we are now relying on the Industrial Tree Plantation Species. Wala na yung mga natural stand ng kahoy natin, like Apitong, Balaw etc," he explains. What Ella means is that most of our trees now are reforested.

He adds, "However, for science in general, to entice more people to go into science, we have to demonstrate and let them feel the advantages of science, not only teaching and showing them. For example, to mitigate climate change, lectures are not enough. For me, my approach is, for example, pag pinutol mo yung kahoy, automatic madaling magbaha, so yung mga bata, magkakaroon sila ng knowledge na ganito pala yun (… if you cut the trees, flooding will easily occur, so children will have this knowledge and they will understand").

"We have to make them understand the underlying reasons for this phenomenon," he continues, "They will appreciate science even more."

Hard work, commitment and value of time are Forester Ella's secret to success that our young ones can emulate. "Be alert and be proactive in your communities and take part for the improvement of the whole," he adds.

CEOs in the making

Young Pinoys start their own company after winning in ICT tilt

The country's S&T workforce is not only composed of scientists in laboratories or in the field. They may be in the garage or in the sala, tinkering on something over the computer. After a short while, they come out smiling. They just developed an app that helps make things easier or better. Here is a group of young people who are inspired by technology, and are trying to make a difference in the world through ICT.

By ALLAN MAURO V. MARFAL
S&T Media Service, *DOST-STII*

"We were inspired by how technology is right now. Technology has the power to inspire, to change and to make a difference in our world, as cliché as it may sound," said Noel Magulta, an Information Technology (IT) student from Ateneo de Davao University (ADDU).

For Noel, career opportunities nowadays are all over the place, especially if Information and Communications Technology (ICT) is involved. He thinks that the only thing that separates him from achieving success will depend on what kind of ideas and products he develops.

Noel has a valid point. Affordable mobile phones and internet services are now available in the market. Majority of the population in the world have sufficient knowledge on different internet-based applications and the transfer of ideas, resources, and opportunities around the world is now much easier and less expensive.

ICT provides the infrastructure for people to be globally competitive as long as these are used and managed properly. It could facilitate the exchange of knowledge and success of one area to another without requiring too much financial investment.

Places on demand

Last year, Noel, together with his classmates, joined the Philippine Startup Challenge 2014, a competition that gave opportunities for college students to pitch their ideas and present their products such as mobile applications or other software to potential investors.

Organized by Department of Science and Technology-Information and Communications Technology (DOST-ICT Office), the Challenge is in collaboration with the Philippine Software Industry Association (PSIA), IdeaSpace, and Vibal Foundation. Conducting this kind of competition as well as trainings on ICT is just among the commitments of DOST-ICT Office in encouraging young students, particularly those in the provinces, to put up their own companies through ICT-enabled products.

In this competition, Noel's team introduced "Places on Demand", a cross platform mobile application which can provide service request tracking, tenant profiling and automated notification system for residential buildings. It is a centralized system that creates a community between the tenants and the building administrators to make their residential building a good place to live in.

(from right) Justin Mearn, Noel Magulta, and Marielle Banawan, all are fresh Information Technology (IT) graduates at Ateneo de Davao University (ADDU), holding the trophies that they received during the Philippine Startup Challenge 2014. (Photo from Noel Magulta)

According to Noel, initially, POD is a listing site/app for dorms and apartments. However, they changed their idea because after talking to their advisers, mentors and their target market, they realized that the world does not need another listing site or applications.

"We have rent.ph, airbnb.com, zipmatch.com, and many other sites, so why should they choose ours over those established ones? So we made an adjustment," Noel said.
" The main problem that POD

addresses now is how we can create a community within the building, which is to harmonize the tenants and building administrations to work together to make their residential building a place worth staying."

Who lives here?

Noel shared that one of the pains that building administrators felt, specifically in the Philippines, is the very scant or no information at all on who is residing in their building. The only information they have on their tenants are obtained only during the turn over of the unit or from the moving-in form. Getting the tenant history is done the traditional way which makes it hard to trace records.

On the tenant's side, one of the difficulties is requesting for specific services. Since the number of staff in the building to cater to tenants is limited, there may form a long queue which results in delayed services and lengthy waiting time for responses to requests.

The winners will have the opportunity to be mentored by ICT Office experts and other start-up community partners.

The team also entered their idea in the Idea Space competition and got into the Top 20, which got them initial seed funding for their start-up.

Noel and his team lauded the efforts of ICT Office, together with their industry partners in giving aspiring technopreneurs like them quality exposure to enhance their skills and knowledge on developing software products.

"Workshops on pitching, validation, marketing, and business greatly helped us since those are the fields that the IT curriculum lacks," Noel said.

Building up their own company, bringing in employment

After winning the competition and finishing their studies two months ago, Noel and his teammates are now building their own start-up company and looking to generate employment in their area someday.

"Our teachers in our university really promote technopreneurship to the students. Maybe because they see that nowadays, students must not settle for employment – they must change their mind set," said Marielle Banawan, teammate of Noel.

"We think of starting our own business and expanding it so that one day, we may contribute to the industry by providing jobs for more people. We should not settle in achieving our own success, we must also help other people succeed," she added.

Monchito Ibrahim, deputy executive director of ICT Office, said in a separate interview that the importance of promoting technopreneurship among college students is emphasized in some rural areas that are not attractive enough for industry investments due to security, infrastructures, economic stability, and geographical location.

For Noel, Marielle, and other members of their team, they are willing to take the risks just to be able to create opportunities in their communities.

"We have been rejected and demotivated. Yet, in the end, our heart calls for this and we have to act upon it. We have to continue what we started and realize the potential that the others who believe in us may have seen. We get inspired by a lot of successful people and we plan to become one soon," Marielle ended.

Pinoy PWD kids bag major awards in 2014 Global IT Challenge

By ROY E. ESPIRITU
S&T Media Service, *DOST-ICTO*

The Philippine delegation pose with their medals and prizes, from left: Mary Ann Rollon and Wawel Quidoles (Visually Impaired), Jonathan Co, Nathaniel Dimalanta, Janielle Salvador and Rhold Michael Fernandez (Hearing Impaired)

SIX FILIPINO youth delegates bagged major awards at the 2014 Global IT Challenge in Busan Exchange Convention, Busan, South Korea from December 9 – 13, 2014 which coincided with the ASEAN–ROK Commemorative Summit.

Nathaniel Edward Q. Dimalanta from the Philippine School for the Deaf (PSD) won the gold award in "eLifeMap Challenge" while Janielle Alonzo Salvador also from PSD got the bronze award in "eTool Challenge".

The Philippines also captured the bronze award in team category for "eCreative Challenge" that showcased the team's creativity in doing animation using Scratch online program. The team was composed of Nathaniel and Janielle together with Jonathan Jumuad Co and Rhold Michael Fernandez Jr., both hearing-impaired and studying at the Manila Christian Computer Institute for the Deaf College of Technology (MCCID); Mary Ann Medura Rollon, a graduate of STI College; and Wawel Acabado Quidoles from the Philippine National School for the Blind. Rollon and Quidoles are both visually impaired.

Dimalanta, aside from receiving medals and certificates, also got a brand new 15" laptop. The bronze medalists, meanwhile, received a digital camera and 1 terabyte external hard drives.

A total of 104 contestants and 80 government personnel and professionals from 10 countries of the Association of South East Asian Nations (ASEAN) together with the host Republic of Korea participated in this year's event.

Held since 2011, this activity is organized by the Korean Society for the Rehabilitation of Persons with Disabilities (KSRPD) in partnership with the government of Korea. Its main objective is to solve the digital divide and use ICT as a window to communicate with the world for Persons with Disabilities as well as improve their accessibility and quality of life.

This year's occasion is special because it became part of the summit, which was attended by leaders from all countries held at the same venue from 11-12 December. First ladies from Thailand and Laos graced the affair together with top officials from UN-ESCAP and the host country.

Coaches of the Philippine Team include Remberto I. Esposa Jr. of MCCID, Marietta C. Regala of the Resources for the Blind and Dandy C. Victa of the National Council on Disability Affairs who served as the head of the Philippine Delegation. Victa also presented the "National Strategy on the Accessibility for Persons with Disabilities" during the IT Forum as part of the event. The Philippine participation to the annual GITC is supported by the DOST-ICT Office and the National Council on Disability Affairs.

UP prof gets award for research on disease-causing microbes

By GEORGE ROBERT E. VALENCIA III
S&T Media Service, *DOST-NRCP*

DR. WINDELL L. Rivera, associate professor of microbiology of the University of the Philippines (UP) Diliman, won the 2014 National Research Council of the Philippines (NRCP) Eusebio Y. Garcia Recognition Award for Molecular Biology and Molecular Pathology. Dr. Rivera received the award during the NRCP's "Symposium on Dengue Researches and 81st Founding Anniversary" held last month at the Bayleaf Hotel in Intramuros, Manila. This conferment also earned him the NRCP Medallion and Plaque of Excellence and a cash prize of P25,000.

Dr. Rivera ranks among the most celebrated local medical scientists and experts on molecular biology of various disease-causing microorganisms. His pioneering work in parasitology significantly augmented limited information on a variety of pathogens, in particular, the locally abundant swine-derived *Balantidium coli,* a harmful protozoan which Dr. Rivera successfully characterized at ultra structural and molecular levels.

Another of Dr. Rivera's earliest and most significant works was his molecular differentiation of pathogenic and non-pathogenic species of Entamoeba, a microbe morphologically indistinguishable under the microscope that has caused many misdiagnoses in the Philippines, especially in rural areas.

Dr. Rivera's subsequent researches on other pathogens, such as *Blastocystis hominis, Trichomonas vaginalis, Salmonella spp, Cryptosporidium spp*., among several others, have likewise provided useful baseline data and paved the way for future medical studies.

Now serving as director of the UP Natural Sciences Research Institute, Dr. Rivera has published, so far, an impressive roster of 49 foreign-indexed researches, particularly in Thomson Reuters and Scopus. He also published eight research notes in several high-impact international journals, exemplifying Filipino ingenuity in S&T and research. This feat also recently earned the professor distinction as the "most cited author in the whole UP System."

Dr. Windell Rivera, associate professor of microbiology at the University of the Philippines, won this year's Eusebio Y. Garcia Recognition Award for Molecular Biology and Molecular Pathology by the National Research Council of the Philippines. (Photo by Henry de Leon, S&T Media Service)

A true educator, Dr. Rivera has ensured that his researches are effectively communicated to students. In UP, he continues to inspire a new line of young scientists to tread on with their careers and likewise help them produce quality researches. It is no surprise that he is now a favorite thesis adviser of undergraduate and graduate students at the UP College of Science.

"Yearly we honor exemplary Filipino scientists and researchers—mostly members of NRCP—because awards like the Eusebio Y. Garcia Award impress on our country's gems that society looks up to them and their achievements," said Dr. Carina G. Lao, NRCP executive director.

"More than to just say 'keep up the good work', we also want to inspire and encourage the next line of researchers to push on in their pursuit of academic and research excellence," Dr. Lao added.

"I am deeply honored and my sincerest gratitude to the NRCP. I did not make the journey here alone because I share this with my graduate students and research associates who supported my curiosities in understanding the molecular biology of protozoan parasites common in the Philippines," said Dr. Rivera.

"While awards are wonderful to receive, just knowing that the hard work I'm doing in the lab has an impact to the society is truly reward enough. Receiving the 2014 Eusebio Y. Garcia Award somehow validated the value of our work in the laboratory," he added.

Since 1989, a total of 12 individuals who excelled and gave outstanding contribution to molecular biology and pathology have been awarded by NRCP. The Philippines' premier collegial advisory body in basic research named the said award after a distinguished Filipino scientist who was among the pioneering medical researchers in the country. Dr. Eusebio Y. Garcia is also known as "the first Asian Winner" of the International A. Cressy-Morrison Prize for Natural Science in 1947, the highest award of the New York Academy of Sciences at that time.

Mang Tani, other science achievers, honored for achievements

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

THE DEPARTMENT of Science and Technology's National Research Council of the Philippines (DOST-NRCP) honored outstanding Filipino scientists, technologists, and researchers including TV weather man Nathaniel A. Cruz, more popularly known as "Mang Tani," during the 82nd NRCP General Membership Assembly and Scientific Conference held last March 11, 2015 at the Philippine International Convention Center.

The 2014 NRCP Achievement Award is bestowed on individuals in various fields of basic and applied sciences including social science and humanities, for their pioneering efforts and sterling contributions to community development and to the advancement of their field of specialization.

As Mang Tani, Cruz has captured the attention of TV viewers with his effective method of weather reporting, allowing the general public to clearly understand scientific and technical information and disaster preparedness tips on typhoons. Further, he is engaged in various activities in relation to climate change, climatology, vulnerability assessment, and applied meteorology which have helped enrich the field and further improve practitioners' knowledge and skills. Some of his research-based recommendations have been adopted and used by both the government and the private sectors in their program designs for disaster preparedness and mitigation.

A former chief weather forecaster of DOST-PAGASA, Cruz is now an active member-researcher of NRCP's Division of Earth and Space Sciences.

Philippine television Mang Tani is joined by 10 equally brilliant scientists and researchers in the roster of honorees for the NRCP Achievement Award. They are Belinda V. de Castro for her studies on shadow education in the Philippines, Roberto B. Corcino for his publications in local and international journals as well as his contributions to math education and development, Cynthia I. Valencia for promotion of good clinical practice in the country, Judilynn N. Solidum for her outstanding research on dengue management, Teresita H. Borromeo for her contribution to crop/plant genetic resources and gene bank management, Allan N. Soriano for his sterling works on thermodynamic characterization of novel carbon dioxide capture solvents, Maria Ela L. Atienza for her outstanding performance in her undergraduate and graduate degrees, Percival F. Almoro for his research works and contributions in holography and optical metrology, Gerardo C. Janairo for his breakthrough in organic synthesis, and Carmencita D. Mateo for her accomplishments in animal nutrition and health.

NRCP also handed out the National Institution Award to the National Institute of Physics of the College of Science in UP Diliman for being the country's leading hub of physics research and education.

Other awardees were Wilson O. Garcia, Felix P. Muga II, and Jose S. Buenconsejo for the Service Award; as well as Domingo B. Nunez, Leopoldo V. Abis, Leoncio A. Amadore, and Mariano A. Estoque for the Member Emeritus Award.

NRCP is the government arm for basic research, the oldest collegial research body in the country with 3,800 members in the Philippines and abroad. (With reports from Joselito A. Carteciano, DOST-NRCP)

(Top) Dr. Capanzana makes his acceptance speech which promoted DOST-FNRI's latest campaign, the Pinggang Pinoy - a guide as to the proper amount of specific food to be included in the daily diet of Filipinos. (Right photo) Dr. Capanzana receives the award from H&L Editor-in-Chief Dr. Rafael Castillo. (Photo by Framelia V. Anonas, S&T Media Service)

DOST-FNRI bags healthy lifestyle exemplar award

By MARIA LUISA S. LUMIOAN
S&T Media Service, *DOST-STII*

FOR ITS role in providing relevant technologies and scientific information on food and nutrition, the Department of Science and Technology-Food and Nutrition Research Institute (DOST-FNRI) was recognized as one of the Healthy Lifestyle Exemplars in a ceremony held last March 11, 2015 at the One Esplanade, Pasay City.

The popular Health and Lifestyle magazine accorded the award, with the panel of judges comprised by the magazine's medical advisory board.

Among the DOST-FNRI's achievements cited by the magazine were the conduct of periodic national nutrition surveys, development of analytical food quality and safety assurance system, and pursuing programs to address malnutrition problems.

Dr. Rafael Castillo, editor-in-chief and founder of Health and Lifestyle magazine said that "we need champions and advocates of healthy lifestyle" especially now that we are living in this modern society.

The Healthy Lifestyle Exemplar award was established two years ago to recognize individuals, institutions, government, and non-government organizations that have effectively carried out programs promoting specific aspects of a healthy lifestyle.

Other awardees include the Philippine Center for Diabetes Education Foundation; Dr. Melecia A. Velmonte, for her active involvement in drafting the Standards on Infection Control in Healthcare Facilities and National Policy on Infection Control; and Engr. Emerito L. Rojas, the founding president of New Vois Association of the Philippines—a non profit, non-government advocacy group against smoking, composed mainly of cancer survivors.

Pinoy innovation rules in the ASEAN ICT Award

By ARLYN JOY P. AMATA
S&T Media Service, *DOST-PCIEERD*

FOR SUCCESSFULLY building intuitive 3D gestures to manipulate 3D objects in a mobile game, the 3D Gestures on 2D Screen for User Interface Project helmed by Dr. Rowel Atienza under the auspices of the University of the Philippines Diliman and the Department of Science and Technology was highly recognized by judges and won the Gold Award for the Research and Development Category of the recently concluded 3rd ASEAN ICT Award.

Dr. Rowel Atienza, project leader and associate professor from UP, together with DOST Secretary Mario G. Montejo, received the plaque of recognition and trophy at the awarding ceremony during the ASEAN Telecommunication and IT Ministers Meeting 14 (TELMIN 14) held at the Thai Royal Navy Convention Center on January 22, 2014.

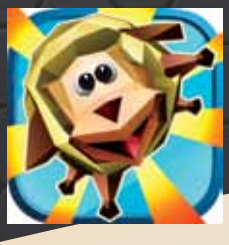
The ASEAN ICT Award or AICTA recognizes the best ICT achievement among entrepreneurs across the ASEAN Region. AICTA aims to be the benchmark for success in terms of innovation and creativity, uplifting the strength of ICT and community awareness in the local and international region. It is being led by Brunei Darussalam since its inception in 2012.

As an award giving body, AICTA desires to promote creativity and encourage innovation, and provide incentives for R&D efforts through acknowledging and rewarding ICT Innovators in six categories, namely: The Public Sector, The Private Sector, Corporate Social Responsibility, Digital Content, Start-Up Company, and Research and Development.

Around 90 participants from the 10 member states of the ASEAN vie for the award every year. However, only shortlisted participants (the top three for each category) is invited to do a presentation in front of the ASEAN Telecommunications Senior Officials Meeting (TELSOM) Leaders and respective AICTA Judges.

Dr. Atienza presented the 3D Gestures on 2D Screen for User Interface Project at the Impiana Hotel in Kuala Lumpur, Malaysia on September 14, 2014. It was judged based on its effectiveness, commerciality, and its being well-defined.

Enhancing mobile user experience on mobile applications is what the project aimed to achieve. The ability of mobile devices to



realistically depict 3D objects and environments has paved the need for a way to successfully interact with the 3D environment. But, even if these devices support the display of 3D objects, user input is still limited to the 2D multi-touch screen. This is why current mobile games and applications make use of toolbars to interact with the 3D environment, which is counter-intuitive and can be time consuming.

Dr. Atienza's team developed three mobile games where game objects can be easily controlled in 3D. In popular 3D games played on 2D screens such as Temple Run, Subway Surfers, and Infinity Blade, players are provided with pre-programmed 2D gestures for 3D interaction. Every user gesture, tap, touch, and swipe, activates the nearest pre-programmed action. The problem with pre-programed responses is that it cannot execute all user-intended action. A pre-programmed action may look accurate on a 2D screen but its 3D path is inaccurate resulting to missing the target. The desired user movement is not successfully executed on screen.

In developing the mobile games which they named Slash the Fruit, Alien Antics and Holy Sheep, Dr. Atienza's team first focused on studying the 3D gestures algorithm that would eliminate the use of pre-programmed actions. They determined the control scenarios or user interactions that would be supported by this algorithm. Development of initial prototypes for each multi touch gesture then followed. The team studied the intuitiveness of the gestures with respect to the action the mobile device user wants to perform.

Through the 3D algorithm that Dr. Atienza's team developed, local mobile developers can now have an edge over other foreign app developers. The project is a bold response towards the move by mobile game developers to provide a unified 3D gestures standard that is focused on intuitiveness and effectivity. With consumers focusing more on iOS and Android games, having a unified 3D vocabulary will significantly boost local mobile app development to taking part of the estimated USD11.4 Billion Mobile Gaming Worldwide Revenue market.

Slash the Fruit, Alien Antics, and Holy Sheep are available on the App Store for iOs users and can also be downloaded from Google Play for Android users.

SCIENCE AMBASSADORS

Cauyan City, Isabela Smarter City and Juan Time advocate

By HAZIEL MAY C. NATORILLA
S&T Media Service, *DOST-STII*

Cauayan City Mayor Bernard Faustino M. Dy (left), receives a trophy from DOST Secretary Mario G. Montejo that names the city as the first local government unit in Region 2 to adopt Juan Time. Photo also shows DOST Region II Director Dr. Urdujah A. Tejada (rightmost, front) and the 65 barangay chairpersons of Cauayan City. (Photo by Gerardo Palad, S&T Media Service, DOST-STII)

THE DEPARTMENT of Science and Technology (DOST) Secretary Mario Montejo declared Cauayan in Isabela, Cagayan Valley as the first Smarter City in the region and the first among 144 cities in the country. Sec. Montejo made the pronouncement during the recent Region 2 leg of DOST's "Science Nation: Agham na Ramdam" nationwide roadshow.

Cauayan City is also the first local government unit in the region to unite all its barangays in implementing Juan Time – a DOST campaign for the synchronization of all watches, clocks, and time setting devices in the country, including office bundy clocks, to abide with the Philippine standard time. Juan Time likewise aims to promote a culture of punctuality among Filipinos.

Under the DOST Smarter Philippines Program, a smarter city means that a city has put in place enough ICT (information communication technology) infrastructure that are "instrumented" through the merging of data, "interconnected" through networks, and "intelligent" through data trends.

Among Cauayan City's ICT-based technologies are the Electronic Government Application System or eGAPS, a mobile app for iOS or android-based phones containing tourist information, and the Cauayan City Patrol, the Cauayan City Identification System which serves as a valid government ID, a systematic and computerized police clearance process, a mobile library with laptops and internet connection among others, and an interactive government website (http://cityofcauayan.gov.ph/) featuring e-services.

According to Sec. Montejo, an ICT-based, interactive system can help empower people as it aims to enhance comfort, productivity, profitability, and innovation. Achieving these goals result in synchronized action, which means faster, real-time response to present situations such as monitoring of abnormal situations, maintaining peace and order, and the like. In this scenario a city is considered "smarter."

The Smarter City of Cauayan focuses on eight key areas: Smarter Farming, Smarter Micro, Small, and Medium Enterprises or MSMEs, Smarter Industries, Smarter Jobs, Smarter Government, Smarter Climate Change Adaptation, Smarter Scientists and Engineers, and Smarter Healthcare.

Meanwhile, DOST also awarded Cauayan with a trophy and a certificate of appreciation for being the first LGU in Region II to adopt the Juan Time campaign and for being the first city in the Philippines to install all its 65 barangays with precision timepieces synchronized with the Philippine Standard Time as prescribed under Republic Act No. 10535.

"We also use Juan Time as a means of information dissemination," said Raena Consorcia M. Santos, information analyst of Cauayan City. What Santos means is that placed below the clock in all Cauayan barangay halls are DOST weather updates and other important information that people can read as they look to the clock for time.

For more information on how to become a Smarter City, please contact or visit your nearest DOST regional office.

Montejo names science ambassadors in Davao, Cagayan Valley

By FRAMELIA V. ANONAS
S&T Media Service, *DOST-STII*

SCIENCE AMBASSADORS OF CAGAYAN VALLEY Dept. of Science and Technology Secretary Mario G. Montejo (4th from left), joined by Cagayan State University (CSU) President Dr. Romeo R. Quilang (2nd from right) and DOST Region II Director Dr. Urdujah A. Tejada (leftmost), awards S&T Ambassadors during the Science Nation Tour last March 24, 2015 at the CSU Red Eagle Gymnasium, Carig Sur, Tuguegarao City, Cagayan. The S&T Ambassadors are (from left) Presidential Adviser on Legislative Affairs and Head of the Presidential Legislative Liaison Office Hon. Manuel N. Mamba, M.D., Dept. of Justice Secretary Leila M. De Lima, Representative of the Lone District of Nueva Vizcaya Hon. Carlos M. Padilla, Cauayan City Mayor Hon. Bernard Faustino M. Dy, Northern Luzon IP Operations Unit of IPO Philippines' Area Manager Engr. Emmanuel M. Mendoza, Balik Scientist Dr. Maria Nilda M. Muñoz, Hon. Cynthia A. Villar (not in photo, represented by Atty. Rhaegee Tamaña, Chief of Staff, Office of Sen. Cynthia Villar. Also in photo is Dr. Aristotle P. Carandang, Chief, Communication Resources and Production Division, DOST Science and Technology Information Institute. (Text by Haziel May C. Natorilla / Photo by Gerry Palad, S&T Media Service, DOST-STII)

DEPARTMENT OF Science and Technology (DOST) Sec. Mario Montejo officially named Science and Technology (S&T) Ambassadors from the Cagayan Valley and Davao regions recently to champion S&T programs and make the benefits of S&T known to all Filipinos.

The announcement of S&T Ambassadors is part of DOST's nationwide campaign called "Science Nation: Agham na Ramdam" which aims to highlight the outputs of relevant S&T programs in the country's 17 regions that help boost the local economy.

Named as Science and Technology Ambassadors in the Davao Region were Senator Paulo Benigno "Bam" Aquino IV, chair of the Senate Committee on Youth; Representative Mario U. Piamonte, senior vice chair of the Committee on Science and Technology of the House of Representatives; Maria Belen Sunga-Acosta and Marissa S. Abella, Davao City councilors; Joey Ayala and Ronulfo "Popong" Landero, both Davao-based singers-songwriters.

Sen. Aquino, the youngest senator of the 16th Congress, is a member of the Senate Committee on Science and Technology. He authored the S.B. 1091: Magna Carta for Philippine Internet Freedom which includes provisions on security and privacy of data and information, establishment of an executive department for information and communications technology, and penalties for cybercrimes and other prohibited acts, among others.

Moreover, in 2013, Aquino was unanimously adopted by all the ten tribes of Davao City as "Datu Matulangod", meaning "the dependable, sincere and trusted leader."

"This DOST plaque is very special to me," announced Compostela Vallley Vice Governor Manuel "Way Kurat" Zamora. "When I get home, I can throw away all of my awards and keep this one."

Way Kurat was not kidding 100 percent. His humble beginnings had him

(next page please)

SCIENCE AMBASSADORS

SCIENCE AMBASSADORS OF DAVAO Leading the Davao Region Science Ambassadors were Sen. Bam Aquino IV and Vice Governor Manuel "Way Kurat" Zamora.

Councilor Marissa Abella (2nd from right)

working as a farmer and an agriculturist who relied on science and technology to be more productive. In fact, he even invented a bicycle pedal-powered peanut sheller that won him third prize at an inventor's contest in Mindanao in the early 1980s.

Meanwhile, Rep. Mario U. Piamonte of the A-Teacher Party List is considered as a true advocate of science in the House. Among the bills he authored or co-authored include House Bill 3512, which mandates the provision of computer laboratory in every school campus, the computerization of teaching modules and the equipping of teachers through training programs.

Other named S&T ambassadors include Davao City Councilors Maria Belen Acosta and Marissa Salvador Abella, as well as Joey Ayala and Ronulfo "Popong" Landero, both Davao-based performer-song writers and environmental advocates.

Ronulfo "Popong" Landero (middle)

Hon. Mariano Piamonte Jr.

The S&T ambassadors were awarded with plaques and officially charged with their envoy duties during the ScienceJam concert recently at the University of Southeastern Philippines Gymnasium - Obrero Campus, Davao City.

Meanwhile, the rest of Cagayan Valley's Science Ambassadors are Manuel N. Mamba, M.D, presidential adviser on legislative affairs and head of the presidential legislative liaison office; Cong. Carlos M. Padilla of the lone district of Nueva Vizcaya; Cauayan City Mayor Bernard Faustino M. Dy; Engr. Emmanuel M. Mendoza, area manager of Northern Luzon IP Operations Unit, IPO Philippines; Balik Scientist Dr. Maria Nilda M. Muñoz; and Dr. Aristotle P. Carandang, chief of the Communication Resources and Production Division of DOST's Science and Technology Information Institute.

The Davao and Cagayan region legs of "Science Nation: Agham na Ramdam" were the first and second stops respectively of the roadshow which will eventually tour the rest of the Philippine regions. Science Nation will make its next stop in Caraga Region in May. (S&T Media Service)

RDC MEETING AND PRESSCON

Clockwise, from left, top: Sec. Montejo and Asec. Liboro sign up for the Regional Development Council meeting attended by key local government officials. Photos below show the press conference attended by DOST-XI Regional Director Anthony Sales (second from left), Philippine Communication Office Secretary Herminio Coloma, Sec. Montejo, Davao Governor Rodolfo P. del Rosario and Congressman Emmanuel "Way Kurat" Zamora (hidden), and friends from the media.

PROJECT VISITS

BLAST FROZEN FRUITS FOR EXPORT | Department of Science and Technology Secretary Mario G. Montejo (center) and DOST Assistant Secretary Raymund E. Liboro (left) observe the fresh frozen durian product as shown by Mr. Candelario B. Miculob, owner of D' Farmer's Market Seafood Grill and Restaurant during the Science Nation Tour project visit in Davao City on March 6. Miculob availed of the DOST's Small Enterprise Technology Upgrading Program (SETUP) which enabled him to establish a cold storage facility that prolongs the shelf life of fresh fruits such as durian, banana and papaya, among others, and enabled him to export his products to Japan.dempor as sus.

Secretary Montejo, Asec. Liboro, STII-CRPD Chief Dr. Aristotle Carandang, and Melvin Calimag of Newsbytes.ph did a walk through at the Davao Beta Spring, Inc. that received SETUP support for technology upgrading.

SCIENCE JAM

The audience clamors for more

The DOST-STII Team, the happy and proud organizers, with Asec. Raymund Liboro, TAPI Director Edgar Garcia, and host DOST-XI Director Anthony Sales.

Manila-based upcoming band called BOB Band rocked the stage at the USEP gymnasium,

Lloyd Edisonne Montebon, World Championships of Performing Arts - Grand Junior Performer of the World, performs at the Science Jam at the Southeastern Philippines Gymnasium — Obrero Campus in Davao City.

Jose Inigo Homer "Joey" Ayala

ZUMBA FEST People's Park, Davao City

Music, fun and fitness filled the People's Park in Davao City during Zumba Fest, one of the activities at the Region 11 leg of "Science Nation:Agham na Ramdam." Smarty, DOST's official mascot, joined the activity

A group hug for the night's success- a fusion of science and music.

The Science Nation Tour, in its aim to make Filipinos "feel" science and technology, integrated many elements in its region-to-region hop. Aside from special meetings with Regional Development Councils to find out how the Department can help in driving the local government economy, the Tour also fused S&T in music and fitness. ScienceJam and Zumbafest indeed attracted many participants who were curious on how science can be integrated in supercharged events that catered to the youth and physical activities that attract the health buffs.

DOST ROADSHOW HIGHLIGHTS SCIENCE IN LIVELIHOOD | Woven bags and other products such as those made by The Sarakat Women Weavers of Cagayan and Loom Weavers Association of Kayapa in Nueva Vizcaya, were among those on exhibit during the Cagayan Valley leg of the Department of Science and Technology (DOST) nationwide roadshow dubbed "Science Nation Tour: Agham na Ramdam" held in Tuguegarao City from March 24-26, 2015. The said weavers associations are beneficiaries of the DOST program called CEST or Community Empowerment through Science and Technology. CEST assists small enterprises by providing technology and innovation support, training, and consultancy to boost production and efficiency. Held at the Cagayan State University-Carig Campus' Red Eagle Gymnasium, the exhibit was one of several activities during the roadshow which aims to highlight the fruits of the various DOST programs in every region of the country and showcase the key role of science and technology in livelihood and poverty alleviation. "Science Nation: Agham na Ramdam" makes its third and next stop in Butuan City, CARAGA region in May. *(Text by Espie Angelica A. de Leon/Photos by Henry A. de Leon, S&T Media Service, DOST-STII)*

ZUMBA FEST Cagayan City

ZUMBA CAPS DOST CAGAYAN ROADSHOW. Smarty, a mascot of the Department of Science and Technology (DOST) joins in the zumba session dubbed "Zumba–Zest" - one of the finale activities in the second leg of the Department's nationwide roadshow billed as Science Nation:Agham na Ramdam, in Tuguegarao City, Cagayan Valley Region from March 24-26, 2015. The roadshow will travel around the country's 17 regions to highlight DOST's programs and how S&T impacts the daily lives of ordinary Filipinos. Held on the third and final day of the event at the Isabela State University Cauayan City Grounds in Isabela, the zumba session was one of several activities during the roadshow. Among the other activities were exhibits of DOST assisted products, S&T fora, science film showings, concert, and the conferment of S&T Ambassadors to distinguished individuals from the region. *(Text by Espie Angelica A. de Leon / Photos by Gerardo Palad, S&T Media Service, DOST-STII).*

One, two, go!

DOST to launch micro-satellites into space

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

> "But, rather, let us look at how it will give us development capabilities. "

THE DEPARTMENT of Science and Technology (DOST) is launching not just one, but two micro-satellites as the country's ambitious plan of sending its own satellites into space formally rolls out.

This development was announced recently by newly installed DOST Undersecretary for S&T Services and concurrent Philippine Council for Industry, Energy and Emerging Technology Research and Development Executive Director Rowena Cristina Guevara during the formal media launch of the country's venture into the space technology at the University of the Philippines-Diliman Electrical and Electronics Engineering Institute in Quezon City.

Through the Philippine Scientific Earth Observation Micro-Satellite Program (Phil-Microsat), the country will launching its micro-satellite, called Diwata, in 2016, while the other satellite will be set off in 2017. The two micro-satellites are expected to hugely help improve and strengthen the country's capability in disaster management, weather forecasting, agriculture, mining, fisheries, and forestry.

DOST is now collaborating with two Japanese universities, the Tohoku University and Hokkaido University, in building its capabilities in micro-satellite technology. Presently, project staff from UPD-EEEI are having hands-on training in developing the micro-satellite called Diwata.

According to DOST Undersecretary Guevara, it's time for the country to invest on its space technology as it relies heavily on commercial satellite data on some of its programs such as the Nationwide Operational Assessment of Hazards or Project NOAH.

Along with the micro-satellites, the DOST will also establish its ground receiving station called Philippine Earth Data Resources Observation, or PEDRO, in Subic Bay Satellite Service Facility.

Satellite data and images are vital tools in studying various weather patterns, agricultural conditions, marine behavior, and forest degradation which is needed to make important decisions especially in the field of disaster risk management. Currently, the country uses cutting-edge sensor technologies to improve weather forecasting to mitigate the loss of lives and properties during typhoons.

Other immediate possible uses of satellite data can be seen in the mining industry, territorial border surveillance, and national security.

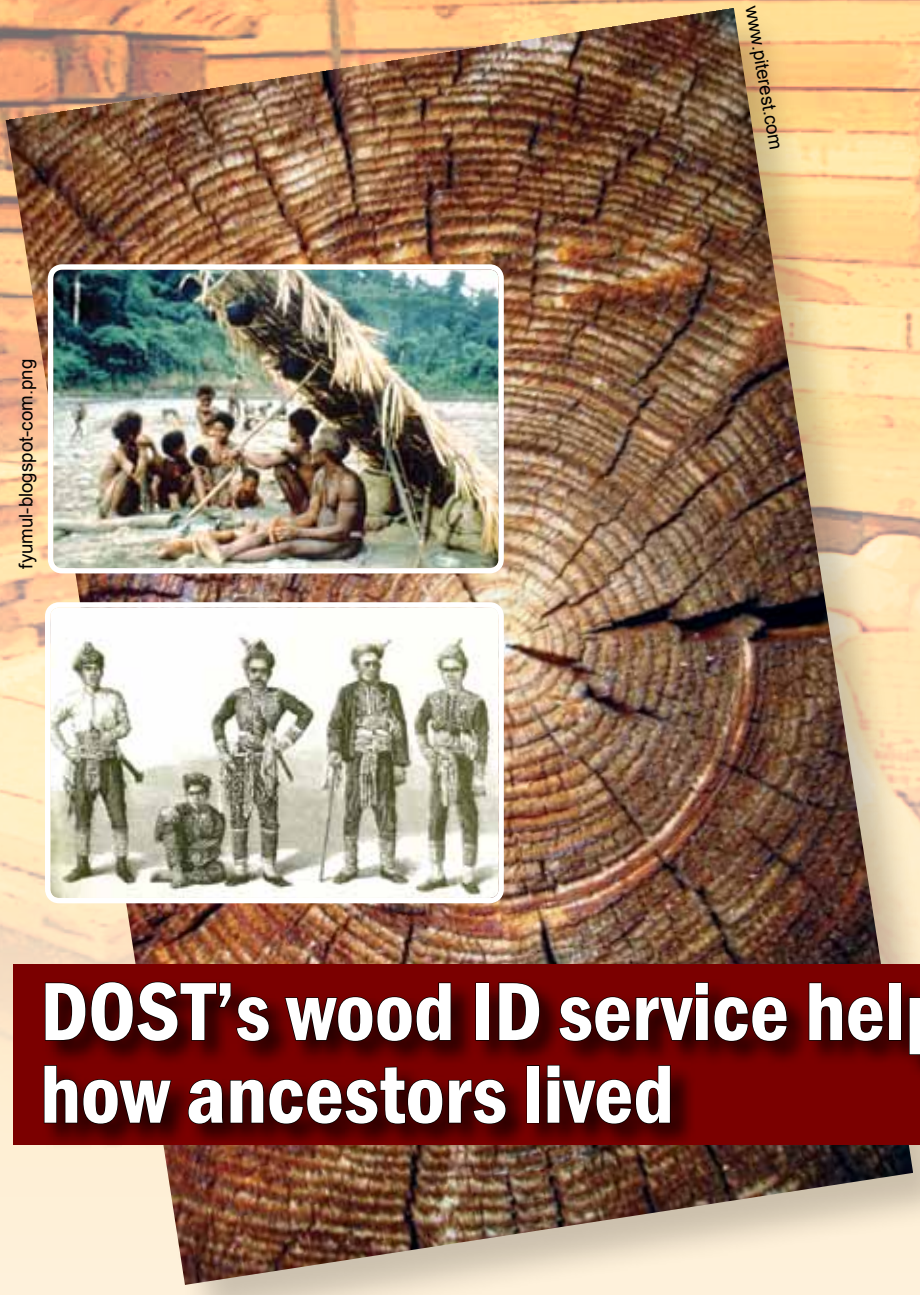
Moreover, Guevara added that the country's venture into micro-satellite technology will not only save billions of public money but will also help local experts develop high level capabilities in space technology.

"Let us not look too much on the cost of our investments in space technologies," explains Usec Guevara. "But, rather, let us look at how it will give us development capabilities."

The first micro-satellite will be orbiting the Earth for a year with an altitude of 400 kilometers from the ground. It has a diameter of 550x550x350 millimeters and will be passing the Philippine islands four times a day with a duration ofsix minutes per pass. It can capture 900 images per pass. Diwata belongs to the 50-kilogram classification of micro-satellites.

The second installment of the twin micro-satellite program is now undergoing development studies in UP and is expected to hover into space at a much longer time due to its higher altitude flight.

Micro-satellites are small artificial satellites with low mass and size and usually weigh under 500 kgs. This type of satellite is much cheaper to develop and mass produce. Micro-satellites cost around US$3-5 million while larger satellites would cost US$100 million to develop. This cost does not include the launcher that costs around Ph50 million. Micro-satellites are advantageous these can be sent in missions that larger satellites could not accomplish, such as constellations for low data rate communications, using formations to gather data from multiple points, in-orbit inspection of larger satellites, and enables university-related research.



DOST's wood ID service helps us learn how ancestors lived

By RIZALINA K. ARARAL
S&T Media Service, *DOST-FPRDI*

FOR 54 years now, DOST's Forest Products Research and Development Institute (FPRDI) - thru its wood identification service – has been helping both local and foreign archaeologists in establishing the identity of wood specimens recovered from their study sites.

Explains wood anatomist Dr. Ramiro P. Escobin, "Our clients are mostly researchers from the National Museum and the University of the Philippines Archaeological Studies Program who bring to us for identification either charred, desiccated, or waterlogged wooden artifacts."

He relates, "The oldest wood specimen I have examined was an 800,000-year-old sample from Cagayan Valley submitted by a French researcher, while the most recent were the remains of a Spanish galleon ship."

"We always couple the results of our identification with the field notes gathered by our clients to get a more accurate picture about how our ancestors lived."

"For instance, we had identified a fuel wood species (Rhizophora) that, according to our client's notes, were found inside a cave, and a species (Aquilaria) found near a temple which yields a resin used for making incense, and a construction species (Intsia) which was excavated from a known settlement area."

"All these suggest that our ancestors knew how to make use of the diverse plant resources in their environment to satisfy their day-to-day needs," Dr. Escobin concludes.

As the study of the material culture left behind by past societies, especially pre-historic ones, archaeology helps people understand how their ancestors lived and why their cultures changed.

Photo by Dreamstime.com

DOST's free Wi-Fi to bridge digital divide in PH

By ALLAN MAURO V. MARFAL
S&T Media Service, *DOST-STII*

FAR-FLUNG RURAL communities will soon have more opportunities for learning and livelihood plus online access to the government's e-services.Thanks to the free Wi-Fi project of the Department of Science and Technology, rural areas out of the loop are now connected to the rest of the world via the Internet.

Originally envisioned to cover primarily town plazas of 4th to 6th class municipalities, the free Wi-Fi project received additional budget and will now include public primary and secondary central schools; public libraries; state universities and colleges; parks, rural health units and government hospitals;MRT and LRT stations;airports and seaports;city and municipal halls; and national government offices.

Undersecretary Louis Casambre of the DOST-ICT Office noted that "any increase in Internet connectivity through *Free Wi-Fi Internet Access in Public Places* will jump start economic development by giving access to e-Commerce, e-Learning, and e-Government tools to beneficiaries."

Promoting online commerce in the countryside is one of the programs that the DOS- ICT Office has been pushing for. The free Wi-Fi project will surely help in achieving this goal. Beneficiaries of the project can engage in online jobs or online selling to help them to get decent income while they stay with their families at home.

Meanwhile, DOST Assistant Secretary Raymund E. Liboro pointed out that with this project, residents from underserved communities will have access to different government websites such as PAGASA or Project NOAH, and be updated on upcoming weather disturbances.

Internet connectivity and Wi-Fi hotspots to most municipalities for the project will be sourced from the country's Internet Service Providers (ISP). In areas that do not have broadband connectivity/infrastructure, the DOST-ICT Office intends to use TV White Space (TVWS) Technologies. TVWS refers to the frequencies unused by TV channels. These vacant frequencies can be tapped to provide wireless data connectivity.

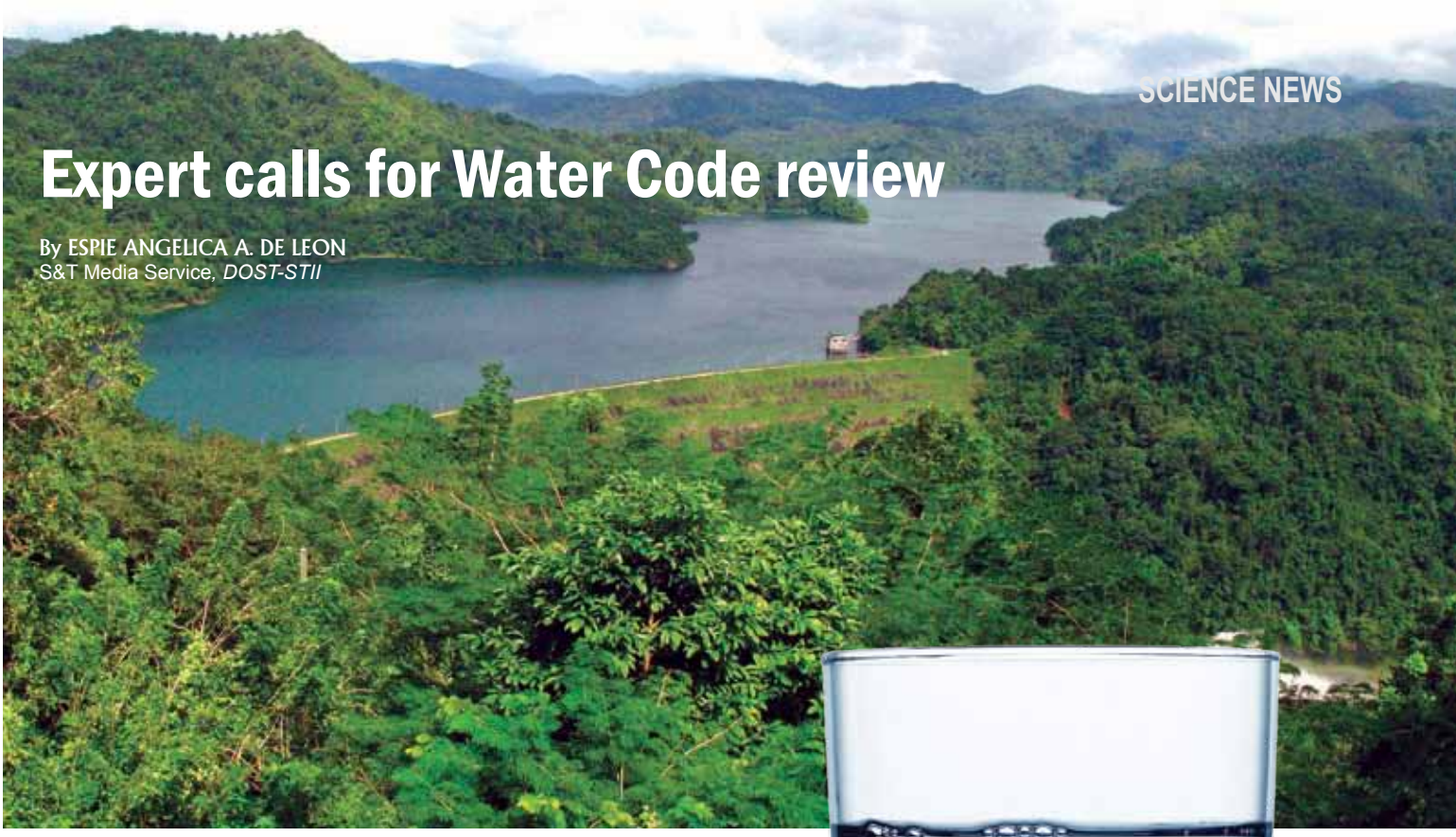
Residents of Tubigon and Talibon in Bohol, pilot sites of the Wi-Fi project and TVWS initiative, are now benefitting from the free Internet access.

Besides using the Internet for educational purposes and communications, the Wi-Fi project in the pilot sites is being used to support other government programs such as the telehealth initiatives which seek to maximize ICT in facilitating health care services, disease-surveillance, and research, among others. In addition, these pilot sites were instrumental in coordinating the relief efforts after the Bohol earthquake in 2013.

After the full deployment, the project is expected to serve 105,000 concurrent users with 256 kbps each, the lowest prevailing speed requirement for broadband service. However, DOST-ICT Office will implement a data volume-based fair usage policy to promote an equitable distribution of the public service. (With reports from ICT Office)

Expert calls for Water Code review

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*



ebonph.wordpress.com

UNIVERSITY OF the Philippines-Visayas Political Science Professor Dr. Rosalie A. Hall is pushing for a review of the Philippine Water Code, among others. "Water is not a free good," Dr. Hall said in her talk in a recently held legislative forum. Emphasizing that water is technically owned by the state, Dr. Hall said that people can use and develop water resources through permits or concessions.

Among other things, the Water Code of the Philippines laid down the basic principles and framework relating to the appropriation, control and conservation of water resources. This leads to the optimum development and rational use of these resources. This Code also defined the extent of the rights and obligations of water users.

The Code is in effect a basic law that covers the ownership, appropriation, use, development, conservation and protection of water resources and rights to land and other related matters.

In connection with the Water Code, Dr. Hall recommended the establishment of water data, and the holding of public consultation prior to issuance of water permits or conclusion of contracts for water transfers.

"There should also be a platform to tackle water-transfer cases," she said. "Moreover, local level water actors or players should also be educated on the rules regarding bulk water sale and market trade of water permits."

Another speaker, Dr. Sevillo D. David, Jr., executive director of the National Water Resources Board (NWRB), lamented the lack of knowledge on the authority and power of NWRB in terms of exercising its mandates in regulating water resources and resolving various water-related conflicts.

The upside is that the government, according to Dr. David, is now considering the issuance of an executive order that seeks to strengthen the NWRB by expanding its manpower and addressing its lack of science-based decision-making power.

Meanwhile, Engr. Virgilio L. Bombeta, division manager of the Water Resources Development Division of the Local Water Utilities Administration, suggested that authorities should also look into the possible introduction of invasive species in water basins as this would destroy biodiversity.

www.wisegeekhealth.com

In addition, Engr. Bombeta introduced the concept of "safe yield" which refers to the quantity of water used to recharge the water system. Said quantity of water should be the only quantity to be extracted to avoid degradation of water quality, said Engr. Bombeta.

Organized by DOST-NAST and the University of the Philippines in partnership with the House of Representatives Committee on Science and Technology, the legislative forum was attended by congressmen led by Hon. Victor J. Yu, chair of the House of Representatives Committee on Science and Technology, and staff members of various House Committees.

Disaster preparedness forum takes Congress, Senate, DepEd by storm

By RYAN KESTER MANSION
S&T Media Service, *DOST-STII*

TYPHOON YOLANDA and other natural calamities wrecked many lives and properties, including the hopes and dreams of many families. But much of the damage should not have happened. Thus the Department of Science and Technology (DOST) took on a mission to educate Juan Dela Cruz on disaster preparedness via Iba na ang Panahon: Science For Safer Communities (INAP:S4SC).

INAP:S4SC is an education and information campaign which aims to enjoin community leaders and disaster risk reduction managers on responding before, during, and after disaster using the most up-to-date available information. This includes tools and technologies such as DOST's Project NOAH (Nationwide Operational Assessment of Hazards) and the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) website.

Teaming up with the Department of Interior and Local Government and Office of Civil Defense, DOST journeyed all 17 regions of the country from March to May 2014 to spread the campaign's guiding principle – early warning equates to early action.

To highlight the importance of teachers and proper disaster awareness and knowledge, Department of Science and Technology (DOST) conducted Iba na ang Panahon: Science for Safer Communities (INAP:S4SC) forum at the Department of Education (DepEd) office, Pasig City last March 30. DepEd Assistant Secretary Reynaldo Antonio D. Laguda (leftmost) seated with the forum speakers DOST Asst. Sec. Raymund E. Liboro (middle) and Philippine Institute for Volcanology and Seismology (PHIVOLCS) Director Dr. Renato Solidum. The forum is part of the information and education campaign of DOST which aims to provide Filipinos with the most up-to-date available information, tools, and technologies for disaster preparedness and loss mitigation.

After the nationwide campaign, INAP: S4SC returned to the Metro and made three landfalls: in the House of Representatives, the Senate, and Department of Education (DepEd), respectively.

Last February 26, members of the House of Representatives and respective committee secretaries found themselves under the table ▶

WEATHER FORECASTS NOT ABSOLUTE

DOST exec says knowing uncertainty of typhoons will help prepare

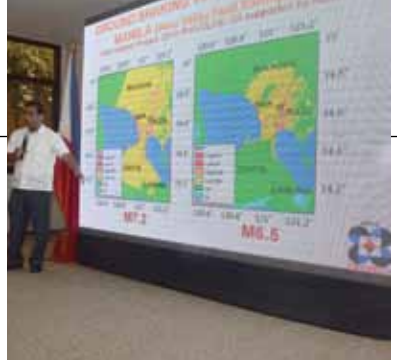
DOST Assistant Secretary Raymund E. Liboro at the Final Seminar on DRRM Capacity Enhancement Project organized by the Office of Civil Defense and Japan International Cooperation Agency. Also in picture are (L-R) Director Edgar Allan Tabel of the Department of Interior and Local Government, Assistant Secretary Myrna Cabrera of the Department of Social Welfare and Development, and Director RemediosEdencia of the National Economic Development Authority. *(S&T Media Service)*

By RODOLFO P. DE GUZMAN
S&T Media Service, *DOST-STII*

DEPARTMENT OF Science and Technology Assistant Secretary Raymund E. Liboro, acknowledging that weather forecasts are "not absolute", advised disaster management agencies to focus more on "communicating uncertainty" in understanding and appreciating the science behind weather forecasts and typhoon warnings issued by DOST-PAGASA.

Speaking at a panel discussion in a seminar hosted by the Office of Civil Defense (OCD) and Japan International Cooperating Agency (JICA) at Discovery Suites Ortigas, Liboro underscored that laymanizing weather updates involved more than their translation into the vernacular.

Members of the police and Congress Legislative Staff listen to speakers, along with DOST officials.



Dr. Solidum shows sites of past earthquakes in Metro Manila.

Sec. Raymund Liboro leads the STII team in the S4SC at the Lower House. With him are (from left): Dr. Alumanda dela Rosa, director of DOST-Philippine Nuclear Research Institute, Ms. Remy Birondo of the S&T Committee Secretariat, and Dr. Renato Solidum, director of DOST-Philippine Institute of Volcanology and Seismology.

for disasters better

"The key to communicating typhoon warnings is communicating uncertainty. And the most essential part there is the implicit understanding that forecasts are not absolute and cast in stone. This time, for Typhoon Ruby, DOST-PAGASA presented a variety of scenarios to impress upon the public the many possible ways a typhoon can move, like it has a mind of its own," he explained.

Assistant Secretary Liboro also discussed the urgency to come up with ingenious and creative approaches in dealing with emergency situations such as rescue and recovery operations. He recounted the experience in Japan after the great earthquake of 2011, wherein road-clearing crews were accompanied by deputized audit personnel to hasten the process of issuing fuel vouchers for their trucks and heavy equipment.

"Nowhere is it more crucial to be able to think out-of-the-box than in disaster risk reduction and management. Buhay kasi ang nakataya dito,(Lives are at stake) and this ability quite literally spells the difference between life and death," he said.

The Final Seminar on Disaster Risk Reduction and Management Capacity Enhancement Project was organized by OCD and JICA to share to stakeholders the final outputs of the three-year project, designed to boost the conduct of DRRM planning and implementation activities along the four thematic areas of prevention and mitigation, preparedness, response, and recovery/ reconstruction.

as Philippine Institute of Volcanology and Seismology (PHIVOLCS) Director Dr. Renato U. Solidum called out "Drop, cover, and hold!" This is part of his talk on geologic risks faced by the country on the forum held at the Congress.

The INAP: S4SC forum featured discussions on the S4SC campaign, geologic hazards, radiation and nuclear safety program, and also the issues on Bataan Nuclear Power Plant (BNPP).

"The Philippines is blessed with many hazards... There is nothing we can do to reduce the hazards, but we can reduce exposure and vulnerability to reduce disaster risk through disaster imagination," Dr. Solidum stressed.

Meanwhile, to assist senators and lawmakers in devising appropriate policies on disaster preparedness, the forum stormed the Senate of the Philippines last March 4.

Senate Deputy Secretary for Legislation Atty. Edwin B. Bellen said that the task of formulating rules and strategies to bolster the country's disaster preparedness program is difficult but "it can be done."

Further, the INAP: S4SC forum had its DepEd-leg to highlight the role of educators on imparting disaster awareness and information to students and to the whole community.

"Dahil sa paiba-iba na ang panahon, mahalaga sa mga institusyon kagaya ng mga paaralan na maging matibay ang pundasyon nila pagdating sa mga bagong impormasyon hinggil sa mga posibleng sakuna na maidudulot ng mga bagyo at lindol sa ating mga buhay (Due to today's unpredictable weather conditions, it is important for institutions like schools to have a solid foundation on the latest information on possible hazards caused by typhoons and earthquakes)," said DOST Assistant Secretary Raymund E. Liboro in his discussion on the S4SC campaign last March 30.

Alongside Asst. Dir. Liboro and Dr. Solidum, speakers of the said forum included Philippine Nuclear and Research Institute (PNRI) Director Dr. Alumanda M. Dela Rosa and PNRI – Nuclear Regulatory Division Chief Teofilo V. Leonin who discussed the radiation and nuclear safety program of the institute, and Engr. Mauro L. Marcelo Jr., Asset Preservation Department Manager of National Power Corporation, who steered clear of the controversies surrounding the BNPP.

Mark Christhian Villarin, one of the founders of RedRoot Artists Cooperative. *(Photos by Ceajay Valerio, S&T Media Service, DOST-STII)*

Photos by Ceajay N. Valerio, S&T Media Service, DOST-STII

SETUP raises passion of artist's coop

By ROMELIE JANELLE MARANAN
S&T Media Service, *DOST-STII*

REDROOT ARTISTS Cooperative evidently has gone to higher grounds. A growing name in the web industry and the world of cooperatives, RedRoot has a distinct business mantra – "Passion from the Ground Up."

As such, the coop continuously offersdiverse fields of expertise such as cutting-edge design, audio-visual communication, and marketing strategies.

Located in Teacher's Village, Quezon City, RedRoot Artists Cooperative is the first artists' cooperative in the Philippines, producing marketing and advertising-related outputs with social consciousness.

Mark Christhian Villarin and his 14 other friends who have different artistic skills made a difference six years ago when they decided to open this kind of business.

They started from scratch, with only P15, 000 asinitial capital. RedRoot used plain but useful equipment to meet the demands of their first project,a communication planning video for the former Governor of Bulacan.

However, to have higher productivity they needed modern and faster technologies, and these are the very things that RedRoot lacks. Rendering their work is time and energy consuming yet the demands of their clients are getting bigger and broader. Over time, the client were already asking not only for digital by-products, but also for printed digital proofs which are very costly on their part. This situation forced them to find new alternatives.

One such option was the Department of Science and Technology's (DOST) Enterprise Technology Upgrading Program (SETUP). The program aims to boost the competitiveness of micro, small and medium enterprises by providing collateral and interest-free loans for technology innovations. The loans must be repaid in three years.

Introduced to SETUP by their fellow SETUP beneficiary KAAKBAY Cooperative, RedRoot availed about P700,000 financial assistance from the program in 2012 to acquire newequipment.

"We thought it's practical. Most of the equipmentthat we needed cost too much and we're just a small business," said Villarin.

Among the acquired equipment through the SETUP intervention are new customized computers, digital proof printer, and a tarpaulin printer. These tools did not only help increase the company's productivity and efficiency; these also brought in more clients and higher proceeds.

RedRoot has also upgraded from producing videos and layouts to making more andbetter educational videos, audio-visual presentations, 3D animation, interactive 3D terminals, advertisements, brand campaigns, multimedia designs, print designs, and website development. They've even ventured into digital proofing and tarpaulin printing for their regular clients. The workers' capacities are constantly evolving, becoming more skilled as they continue to grow.

The estimated gross income of RedRoot rose between P 3,000,000 and P 7, 000,000 after availing the SETUP assistance.

Indeed, SETUP has been a big help to RedRoot, not only in the business aspect, but also in terms of personal lives. Faster and higher production provides more clients with higher profit and more self-time and family time.

"Since the hardware or the technology is now faster, there is less overtime, and therefore we have more time to do other things, to engage in our other hobbies. You have time to go out and you can do a lot of things to improve yourself," said Teresa Paula Gile, general manager of RedRoot.

After completing the refund to SETUP this year, RedRoot aims to avail the 5S Program, which is part of SETUP's consultancy services, to make their workplace more organized, especially that they are planning to expand and move to a bigger place.

Some of RedRoot's clients include big companies like Mitsubishi, Phil-Nippon College, Charter Incorporated (Figlia), Picar Development, Socland, Forte Realty, Prima Residences, and Sunlight Foods Corporation. Also included in their clientele are government bodies such as the municipality of Mercedes in Camarines Norte, National Historical Commission of the Philippines, PhilGEPS, Philippine Postal Corporation, DENR, DOST- Science Education Institute, DOST-NCR, DOST IV-A, Bangko Sentral ng Pilipinas, DSWD, PhilHealth, as well as state agencies and NGOs such as The World Bank, Greenpeace, and Philippine Society for Quality, Inc.

Members/ employees of RedRoot Artists Cooperative

Artists at work

RedRoot artists are also behind the animated videos on the life of Apolinario Mabini and Andres Bonifacio which were shown on GMA News TV, the Baha, Lindol, Tsunami, and Bagyo Emergency Preparedness Video series, as well as the infomercial of the Light Railway Transit Authority.

"Iilan lang kami sa electronics/ ICT cluster. Walang ibang tumutulong sa maliliit na businesses katulad namin kaya naman we're very greatful to DOST SETUP (We're among the few players in the electronics/ICT cluster. There is no other body that is helping small businesses like us, thus we are very grateful to DOST SETUP)," said Villarin.

Together we stand, united we succeed

KAAKBAY sa Tagumpay

"Don't walk behind me;
I may not lead.
Don't walk in front of me;
I may not follow.
Just walk beside me and be
my friend."

By RYAN KESTER MANSION
S&T Media Service, *DOST-STII*

IN FILIPINO, *kaakbay* means a good company, someone who can be trusted, a companion, and somebody one walks with.

Living up to its name, Kaakbay Entre-Worker Cooperative (EWC) walks hand in hand with people from different paths of life on the road to self-development and success.

Sixteen women on May 8, 1998 cemented their stand on being on their own – their own bosses in their own business. After quitting their jobs in a private company, they concentrated their fervor and determination to the establishment of Kaakbay EWC.

"Kaakbay EWC is a primary cooperative engaged in the manufacturing of filing system products. Basically, a cooperative aims to help yourself and others," said Cielo A. Bueno, Managing Director and one of the founders of Kaakbay EWC.

Kaakbay EWC is a venture for employment to people belonging to the marginalized sector of the community such as out-of-school youth, women, and senior citizens who "voluntarily grouped themselves together to have continuous employment."

More important than profit, Kaakbay EWC aims to boost its members' and co-owners' personal development. "Members of Kaakbay EWC are friends of mine. Kaakbay gives them an alternative to work and dignity to work," worded Bueno.

SETUP's helping hand

Today's market has never been this competitive. And to cope with the fast-paced demand, Kaakbay EWC realized the need to upgrade its operations. It was 2009 when the Department of Science and Technology - Small Enterprise Technology Upgrading Program (DOST-SETUP) lent a hand to Kaakbay EWC to adopt technological innovation on its production.

Kaakbay EWC bid goodbye to unpaid overtime of its workers and manual labor. Through the P300,000 SETUP assistance grant, Kaakbay EWC acquired several machines that played significant role in the production of Kaakbay's major products like arch-file binders, boxes, and flexi-fillers.

"Through the machines from SETUP, we now have better product quality and fast operations," beamed Bueno.

Together to triumph

For 17 years now, Kaakbay EWC has established itself as a trusted brand to many multinational corporations such as Nestlé, Coca-Cola, Toyota, Mead Johnson Nutritionals, and McDonald's.

Kaakbay EWC is also encouraging social investment from people who have "sleeping" money stuck in banks. "Invest us your money where interest is higher than in banks," said Bueno.

With its members' and co-owners' hard work and fortitude, Kaakbay EWC is headstrong to reach its full potential and organize its success.

KAAKBAY ENTER-WORKER COOPERATIVE

Ms. Cielo A. Bueno, Managing Director of KEWP

Graduate of Univ of Asia and the Pacific (COOP course)

Q: Ano po ang KEWP?
A: KEWP is a primary cooperative engaged in the manufacturing of filing systems products. For the following obj: to create job, to sustain operation(s), and to help (develop) self-development for its members and to help the community.

Q: What is the meaning of KAAKBAY?
A: Basically, a cooperative aims to help yourself and others. We have to be together.
KEWP gives them an alternative to work and dignity to work.
KEWP voluntarily grouped themselves together to have continous employment to their selves.
Members of KEWP are friends of mine.
Ang tawag nga dito (COOP) ngayon ay social enterprise. We're after not the profit, but for the sake of the coop mismo.
Pinattern namin ito sa Mondragon Cooperative sa Basque, Spain 1988 doing stove but they were assisted by priests.
Samin walang nag-assist . For years, funding ang problema.Kasi we have no capital.

We aim for social investment, pag may pera ka sa bangko na di mo ginagamit, pwede mong iinvest samin.

We have 5 Board of Directors, we have Treasurer, we have General Assembly (highest policy making body).

May 8, 1998 – KEWP establishment
June 2, 1998 – CDA certification

We have corporate clientele. Multi-national

Pwede tong lumaki if we have big capital.
Generally, ang coop dito savings and credit.

25 members. All in all, almost 60 because we have associates.

Q: Products
A: Marami. Binders, boxes, folders, customized to clients, customs

Q: Why use paper as the base product of the filing system product
A: Unang-una kasi pinoprotect moang environment. Second, yun ang expertise namin. Kasi mula kami sa corporate na ganitorin ang product. Tsaka consumable kasisiya (paper). Unlike na iba ang produkto na sandali lang, at least kami tumagal. Nagtagal lang kami because of our determination and hardwork. Dito usapan nalang, may pera ka dito, bakit kaaalis?

Pinag-trabahuhan naming an gaming multinational clients.
We can't reason out that we cannot do that (product) to our clients.

Di pa kami stable kasi kulang kami sa profit. Puro loans.
Ang market di mahitrap, kaya naming.

How we produce it, kaya naming. Pero ang funding and pamamahala, problem ko yun. Dapat may skill and knowledge din.

Kailangan ang lakas ng loob. Flexible ka at may determinasyon kana ipagpatuloy ang iyong inumpisahan. Malaking tulong yung pag tulong samin ng DOST sa mga gamit namin.

Q: How did you learn about SETUP?
A: QC government referred us to DOST kasi kami lang coop na may product. Malaking bagay.
2009 namin inavail yung SETUP.

Q: Why avail SETUP
A: Inquire DOST-SETUP to purchase machines from China. P300,000 assistance from SETUP.

Q: Improvements due to SETUP
A: Better product quality and bilis.

Q: Income before SETUP
A: Actually maliit lang kasi meron kaming loans.

Q: Income after SETUP
A: Maliit lang pero at least yung bilis at quality ng product, maganda.

Q: SETUP effect on personal life
A: Magaan siya, siyempre.
Because of limited human resources and finance, we cannot afford return of products, Especially, custom-made products.
Major contribution niya (SETUP) ay mabilis.

"Kaya ko yun, kaya kong gawin yun!"on the market demand.

Uses loans to buy raw materials.
Invest us your money where interest is higher than in banks.

Takot na takot sila sa ganitong uring coop kasi di nila ang ganitong type ng coop na with product.

This coop can address poverty.
MIRDC and PCHRD – DOST clients

Q: Future plans of KAAKBAY
A: Nakalagay saming 5-year plan na last year ginawa.
Naglagay na kami ng capital na dapat ibigay sa amin ng federation na affiliated sa amin for us to be able to pay for our existing loans, She knows well the cycle of money in business. Strategic in administering business.
Federation of People's Sustainable Development Cooperative
Kilala tayo ng CICOPA from Hague, The Netherlands. Kilala na kami sa labas.

Q: Quantity of product after SETUP intervention
A: Oo, dumam italaga dahil sa machinery.
Ring, lock - SETUP
Slide rail not included.

Q: Improvement on manpower
A: Nung manual, marami kaming tao at madalas mag-overtime.
Before June, they go back to QC.

Q: Achievement of KAAKBAY
A: Kami lang ata ang coop na nirerecognize ng CDA (Cooperative Development Authority).
Kami lang ang institution na gumagawa ng produkto.
Kaya sanatalaga ma-maximize.

Sana nga Makita natin na maging successful ang coop na to after three years.

Dapat ma-maximize yung gamit (from SETUP)

Mas mabuti yung pagsasamahan kaysa sa profit. Yan ang pagkakaiba naming sa mga businessman.

Frux Peanut Butter
Going nuts on biz success

By ALLAN MAURO V. MARFAL
S&T Media Service, *DOST-STII*

Mrs. Fructoso Lana, owner of Frux Peanut Butter in Tagum City, explains how they make their best-selling peanut butter products using upgraded equipment and by practicing food safety procedures.

A Frux Peanut Butter staff demonstrates how this packaging machine helps their daily production. The machine was acquired through the assistance of DOST-SETUP.

MRS. FRUCTOSO Lana, owner of Frux Peanut Butter, is going nuts. It's almost incredible that technology intervention worth P541,600 has spread her income base to yummy figures.

According to Lana, Frux has increased its production by 136 percent and sales by 142 percent as the company is now able to produce quality peanut butter in different sizes such as 300g, 250g, 200g bottles and 50g that are widely distributed to established local markets. Among Frux Peanut Butter's clients is Manolette Bakeshop with 200 branches all over the country.

At the closing ceremony of 2014 Mindanao DOST Science and Technology Fair at SMX Convention Center of SM Lanang in Davao City last year, Frux Peanut Butter was recognized for successfully implementing SETUP.

Lana said that aside from financial assistance, her company was able to receive extensive consultancy trainings on Food Safety from DOST. Aside from providing financial assistance to Micro, Small, Medium Entrepreneurs (MSMEs) like them, DOST also promotes safety practices among food manufacturers through various trainings that they are initiating, she said.

She hailed DOST's efforts in always reminding them about their responsibility to deliver products that are beneficial to the health of customers as well as to the environment. "With these trainings, DOST explained to us that following requirements related to food safety practices will enable us to penetrate into a larger market," she said.

Lana is referring to Good Manufacturing Practice Training for improvement of production process and Technical Consultancy on Management Productivity Extension Program, both conducted by DOST regional offices.

Looking for a financing opportunity?

You may find it at DOST-TAPI

By MARIA LUISA S. LUMIOAN
S&T Media Service, *DOST-STII*

THANKS TO the assistance of the Department of Science and Technology-Technology Application and Promotion Institute (DOST-TAPI), Alan B. Lastimosa and his wife Wellcie, owners of A&S Handcrafted Arts, are confident that they will be able to fulfill their clients' purchase orders on time.

Their company recently received P618,554 under DOST-TAPI's Venture Financing Program-Purchase Order Financing Facility which provides funding assistance to qualified Micro, Small, and Medium Enterprises for the purchase of raw materials needed to meet their customers' orders.

This is actually the second time that A&S Handcrafted Arts received such type of financing from DOST-TAPI.

For the first assistance, TAPI provided P804,167.07 to A&S Handcrafted Arts to cover the cost of raw materials needed to serve the required Purchase Orders of the company's clients from United Kingdom. "Malaking bagay (It's a big thing for us)," Wellcie said of their first experience with the program. "Ang kalakaran kasi kailangang bayaran muna ang suppliers bago sila magdeliver sa amin. Dahil sa financial assistance na natanggap namin nung 2012, nabili agad namin ang mga materyales at nagawa agad namin ang mga order (We have to pay our suppliers upfront before they deliver. With the financial assistance we received back in 2012, we were able to acquire our materials right away so we were able to immediately produce our goods)," she explained.

The financial assistance provided by TAPI also helped boost the profitability margin of the company by 50 percent and generated an income increase of 15 percent.

In addition, the company was able to develop three more new products and hire additional staff.With a higher production capacity, the company easily met its delivery schedule.

Alan and Wellcie Lastimosa of A&S Handcrafted Arts Inc. receive Php 618,554 financial assistance from DOST-TAPI represented by Jovito Rey Gonzalez (middle), chief of Investments and Business Operations Division during the MOA Signing/Orientation and Awarding of Check activity held last 11 February 2015.

Alan mentioned in the submitted completion report for the project that "the DOST-TAPI PO Financing Project is a laudable one."

Meanwhile, Wellcie added that compared with getting financing from banks, which they had also tried before, DOST's program is lighter for small entrepreneurs like them because of the reasonable payment scheme plus the fact that the loan is interest-free.

The couple's business started out as a manufacturer and exporter of Christmas and Easter decors and other accessories. Later renamed as A&S Handcrafted Arts, the company evolved by creating new lines of design from old crafts using all natural materials portraying ethnicity and exoticness in abaca mache sculptures and figures, lamps, candleholders, votives, vases and other seasonal accessories.

The process of making the laminated abaca mache was developed by Alan himself and had won him awards locally and internationally.

Filipino-owned companies that are involved in manufacturing goods in line with DOST priority sectors namely food processing; furniture; gifts, housewares, and decors; marine and aquatic resources; horticulture and agriculture; metals and engineering; health products and pharmaceuticals; and information communications technology and electronics may avail of TAPI's Purchase Orders Financing Program. In addition, the proponent must have valid purchase order/s for local and foreign markets.

On the other hand, qualified MSMEs must cover the production and labor costs as well as other expenses. Likewise, they must refund the financial assistance to DOST-TAPI after a specified period and satisfy other requirements.

Interested parties may inquire at the nearest DOST regional office or provincial science and technology centers or log on to http://tapi.dost.gov.ph, or email tapi.dost@yahoo.com for more information.

DOST-PCHRD names new Tuklas Lunas Centers

By ESPIE ANGELICA A. DE LEON
S&T Media Service, *DOST-STII*

UNIVERSITY OF the Philippines Los Baños (UPLB), Ateneo de Manila University, University of Santo Tomas (UST), and Cagayan State University (CSU) are the newest additions to the Department of Science and Technology-Philippine Council for Health Research and Development's (DOST-PCHRD) roster of Tuklas Lunas Development Centers.

The four universities were named by PCHRD in awarding rites held during the Council's 33rd Anniversary celebration with the theme "ASEAN Integration: Challenges and Opportunities for Health Research and Innovation" last March 17, 2015 at Dusit Thani Manila Hotel.

Tuklas Lunas Centers are research hubs for developing drugs out of natural substances, with the term "tuklas lunas" meaning "cure discovery." The selection of Tuklas Lunas Centers among the country's universities is a component of DOST-PCHRD's blueprint for the acceleration of drug discovery initiatives in the country, including those for the cure of cancer illnesses.

"They're expected to be at the forefront of research for the discovery of new products from natural sources," said Dr. Antonio D. Ligsay, chief of PCHRD's research and development management division as he spoke of the four newly named Tuklas Lunas Centers during the awarding ceremony.

Cagayan State University is planning to propose a study of bioactivity screening of plants in the Sierra Madre and Batanes. UPLB is planning a similar research but involving plants in Mt. Makiling and Southern Luzon. On the other hand, Ateneo is looking into standardization of herbal medicines while UST is considering to propose a research on the determination of bioactive compounds, synthesis, and derivatization.

The four universities will each receive research grants and new equipment from DOST-PCHRD which is now gearing up for the upcoming ASEAN integration via programs, events, and partnerships with regional and global implications.

Among these is the ASEAN-Network for Drugs, Diagnostics, Vaccines and Traditional Medicines Innovation program (ASEAN-NDI) and the 2015 COHRED Global Forum on Research and Innovation for Health which the Philippines, through DOST-PCHRD, will host on August 24-27, 2015. ASEAN-NDI, which DOST-PCHRD pioneered, aims to develop programs and projects that will help solve public health issues in the region.

Serving safe food on Filipino plate
DOST hastens Food Safety Program

By RYAN KESTER MANSION
S&T Media Service, *DOST-STII*

SAFE, HEALTHY, and easily accessible food is the country's responsibility. To ensure this, President Benigno Aquino III signed Republic Act No. 10611, also known as the Food Safety Act of 2013.

"Food safety is the assurance that the food supply does not pose an unacceptable risk to human health," notes Dr. Ma. Concepcion C. Lizada on her study discussing problems and issues on food safety in the country.

The Consumer Act of 1992 boosts food safety vigilance on food producers and consumers through inter-agency cooperation and programs.

Working hand in hand with key agencies on serving safe food on Filipino table is the Department of Science and Technology (DOST) thru its Food Safety Program.

DOST provides proven researches and evidences on the nutritional value of food available in the market. The department also keeps an intent eye on the Good Manufacturing Practices (GMP) and Hazard Analysis Critical Control Points (HACCP).

GMP points out custom and procedures implemented by authorized agencies for the manufacture and sale of food, drug products, and active pharmaceutical goods.

HACCP, based on FAO, is "a system of food safety control based on a systematic approach to the identification and assessment of hazard associated with food operations and the definition of means for their control."

To fortify its Food Safety Program, DOST conducted a National Planning Workshop last year in Cebu City. Teaming up with the department for the workshop was AFOS Foundation for Entrepreneurial Development Cooperation, its long-time and trusted partner in the advocacy of promoting food safety awareness all over the Philippines.

The workshop commenced with accomplishment reports from 2012-2014 of Food Safety Team (FST) per region. It revealed that Regions VI, VII, X, and XI ,which organized an average of 30 food safety-related trainings to DOST-SETUP (Small Enterprise Technology Upgrading Program) beneficiaries and NON-SETUP clients, profited more than the other regions.

Moreover, the number of members per FST serves as an integral part for the team. AFOS' Long Term Expert Didi Speckmaier cited that 25 percent of the total number of members per FST are inactive in performing services for the clients and will only participate when needed.

DOST pushes for bio garden-iron fortified rice combi to improve kids' health

By MARIA LUISA S. LUMIOAN
S&T Media Service, *DOST-STII*

FOR A more effective school feeding program, BIG and fortified is the way to go, according to Department of Science and Technology-Food and Nutrition Research Institute (DOST-FNRI).

BIG refers to bio-intensive garden which, when paired with iron fortified rice, helps improve the nutritional status of kids. This is actually what the joint study of DOST-FNRI, International Institute for Rural Reconstruction (IIRR) and Department of Education (DepEd) found out.

As the joint study consisting of a school-based feeding program that tapped bio-intensive garden (BIG) and used iron fortified rice resulted in a significant improvement in the nutritional status of the participants, DOST-FNRI now recommends the BI and fortified rice approach.

Bio-intensive gardening is an organic planting method that uses diversified cropping and deep bed preparation of plots. Meanwhile, iron fortified rice, developed by experts of DOST-FNRI, is a blend of pre-mixed iron-fortified rice grains with ordinary rice.

Participants of the joint study were more than 200 underweight and/or anemic children from three schools. Two schools served as intervention group and the third was the control group which received the usual feeding program of DepEd. All participating schools were located in Cavite.

Participants from Felipe Calderon Elementary School were served iron fortified rice (IFR group), while Gen. Aloño Memorial Elementary School students were served ordinary rice (OR group). Both schools however used the same meal plans prepared by FNRI and used produce from their gardens in making their meals.

Felipe Calderon Elementary School posted the highest reduction in wasting (low weight for height) and a significant decrease in underweight children among the three groups.

The study also indicated a significant reduction in anemia prevalence from 20.8 percent down to 4.2 percent in the group that consumed iron-fortified rice compared with the control group and the group that ate ordinary rice.

In addition, consuming school-grown vegetables also generated some P8,851.53 savings compared with the usual school feeding program.

The school lunch feeding lasted for 120 days, and was complemented with nutrition education among school children and parents. IIRR meanwhile provided the training for bio-intensive gardening to the teachers and students of the schools involved.

The Department of Education plans to replicate the program in other schools for the next school year.

Dr. Ella Cecilla Naliponguit, director of Health and Nutrition Center of DepEd noted that both school feeding and school gardens are already part of DepEd's program, but this joint project with DOST-FNRI and IIRR is the first serious attempt to integrate the two.

The National Nutrition Survey (NNS) conducted by DOST-FNRI in 2008 reported that about four million children were undernourished.

Hence, to cope with the needs of regional FSTs including trainings, income generation scheme, and membership, the workshop crafted the following resolutions:

- all regulatory agencies and every DOST staff to be members of the FSTs;
- operation manual, fees, audio and video presentation and other promotional materials of all regional FST should be harmonized;
- training modules should be standardized;
- Food Safety National Program should be implemented;
- annual food safety conference should be conducted; and,
- an advisory board comprised of Research and Development Institute representatives, National Program Management and Office, and the Philippine Council for Industry and Energy Research and Development should be implemented.

The government and the food manufacturers shall work together in ensuring food safety which instills confidence in the food supply. On the other hand, the consumers shall also be heedful and critical on what's on the racks. In the Food Safety Forum of DOST's National Science and Technology Week in 2014, Dr. Maria Victoria Pinion of the Philippine Food and Drug Administration forewarned the Filipinos, "Don't just buy, you should read well."

Consequently, healthy and exultant citizens equate to a hale and hearty country.

Abaca is alive again

DOST –VIII, Sogod town partner to revive the Manila hemp

Mano Turing of Brgy. Maac carries his share of abaca planting materials early in the morning.

By: ENGR. RAMIL T. UY
S&T Media Service, *DOST-VIII*

MANO TURING, 70, is a regular morning sight in his barangay. Everyday, even before the sun rises, he walks the street carrying a big wicker made of woven rattan. When he comes back, the basket will be full of healthy abaca plantlets to be transplanted in his farm. To nourish the plants, Mang Turing gets organic fertilizer from a nearby poultry in the area.

"Among the farmer beneficiaries, Mang Turing is the most dedicated and really tends his plants with utmost care," observed Evelyn Tablante, SRS I of DOST-VIII.

Mang Turing, whose family has been into abaca farming since the time of his forefathers, is one of the 150 abaca farmers who will benefits from the project "Rehabilitation of Abaca Production in Brgys. Maac and Mahayahay in Sogod, Southern Leyte."

This project was conceptualized when DOST-VIII Director, Engr. Edgardo M. Esperancilla joined WorldFish and the LGU-Sogod, Southern Leyte in identifying possible livelihood project for the four poorest barangays in the municipality. Dir. Esperancilla committed funding for this project in his hope that the abaca industry in the said area will be rehabilitated. Fortunately, DOST-VIII found a partner in the person of Mayor Imelda Uy-Tan.

Mang Turing's abaca plants monitored by DOST 8 and NARC

The project received an initial assistance of P150,000.00 from Mayor Tan for the purchase of 6,000 pieces of the Inosa variety distributed to 77 abaca farmers.

And early this year, Mayor Tan, together with Vice Mayor Rufo Olo, greeted with much enthusiasm the DOST-VIII staff and

Provincial Director Dr. Dominador A. Clavejo of DOST Southern Leyte during the turn-over of project financial assistance for the project.

DOST's financial assistance of P200.000.00 will be used to buy tissue cultured abaca seedlings from the Visayas State University in Baybay, Leyte. There will be 150 farmers who will benefit from the project, all from barangays Maac and Mahayahay, just two of the barangays in Sogod, Southern Leyte known for abaca.

Reviving the abaca

Abaca, internationally known as Manila hemp, is a primary commodity in the said barangays and many farmers depend on this commodity as their means of livelihood.

The infestation of the abaca bunchy top virus (ABTV) essentially killed the industry in Bicol region, and also the majority of Region 8, specifically the province of Southern Leyte. Many affected farmers looked for alternative livelihood but to no avail. They still went back to abaca.

Records show that there was a 75 percent sink of abaca production in the province in 2011. From 8,491 metric tons in 2005, abaca production was only 2,074 in 2011, according to a report.

The ABTV virus is claimed to be carried by the umbak, the outer coating of abaca plant. Fiber Industry Development Authority (FIDA) Regional Director Jeffrey G. Espina made a directive to stop the harvest of umbak because it carries the bunchy top aphids. Through the project, the abaca industry in the area shall be revived using the Inosa variety from VSU.

Hope for abaca farmers

A farmer with a hectare of land planted with abaca will have a harvest of 1.3 MT (1,300 kilos) of abaca fiber per year at three harvests a year. This is worth P68,900.00 at the current buying price of P53.00 per kilo.

For the sustainability of the project, each farmer beneficiary will pay the planting material provided to them through replenishment equivalent to the number of planting materials they received. This planting materials then will be reared in the nursery and will be distributed to new beneficiaries in the area or in nearby barangays within the municipality.

The project is in partnership with the National Abaca Research Center and the Department of Agriculture-FIDA 8.

Through the project, abaca farmers like Mano Turing raise their hope for abaca despite the occurrence of ABTV. The project's ocular monitoring showed that one of the best grown abaca plants were in Mano Turing's field. Indeed, his passion and dedication reflect on how his abaca plants grow. This is also true with the other abaca farmers whose hope remain strong and firm, just like the abaca, despite the challenges they face.

DOST-VIII turns over P200,000 project assistance to LGU-Sogod. L-R: Evelyn Tablante, Brgy. Mahahay Councilor, Mr. Jaime Butad, Vice Mayor Rufo Olo, Mayor Imelda Uy-Tan, Dr. Dominador Calvejo, PSTD-So. Leyte and Engr. Ramil T. Uy, DOST-VIII CEST Coordinator.

A representative of Aqua Home Water Station receives, in behalf of the company, the (2nd from left) DOST SETUP assistance from Marinduque Gov. Carmencita O. Reyes (leftmost), Rep. Regina O. Reyes (center), DOST-MIMAROPA Regional Director Dr. Ma. Josefina P. Abilay, and Marinduque State College OIC Dr. Leodegario M. Jalos, Jr.

RD Abilay and Gov. Reyes check out Marinduque-made DOST-assisted products.

DOST awards SETUP adoptors in Marinduque

By CYD FRANCIS D. RECIDORO
S&T Media Service, DOST-MIMAROPA

BOAC, MARINDUQUE—The Department of Science and Technology-MIMAROPA Regional Office, through its Provincial Science and Technology Center in Marinduque, awarded outstanding SETUP adoptors in the region. The awarding was held late last year in partnership with the Provincial Government of Marinduque and the office of the province's lone district representative.

The awarding activity aims to encourage micro-, small-, and medium-scale enterprises (MSMEs) and community-based organizations to avail of DOST's programs and services.

Awarded were 11 MSMEs who have recently availed of DOST's Small Enterprise Technology Upgrading Program (SETUP), and two community-based organizations assisted through DOST's Grants-in-Aid (GIA).

These were Aqua Home Water Station, AZ Glass Aluminum and General Merchandise, Malberg Trading, Choscemkyn Garments, Collen's Homemade Pure Peanut Butter, Dinkidio Food Express, Jgelbee Bakeshop, Joaquin Auto-diesel and Repair Shop, Kusina sa Plaza, Lea's Arrowroot Cookies, and Monsanto Sign and Prints.

Meanwhile, community-based clients who received assistance through the GIA were Batayang Pamayanang Kristiyano (Mogpog Chapter), makers of malunggay (moringa) crackers, and the Association of Start-up MSMEs, represented by Angela Jinao of Ilang-Ilang's Atsara and Pastries.

Rejano's Bakery and Tanikala ng Pagkakaisa Multi-Purpose Cooperative shared their experience on how their companies gained so much from DOST's intervention.

Tanikala ng Pagkakaisa MPC, whose business is the manufacture of abaca-based footwear and novelty items, recounted how very grateful the coop is, despite being in a remote barangay in the municipality of Boac. DOST helped the coop in acquiring much needed equipment and provided training on bleaching and dyeing. This further improved the quality of the coop's products.

The coop proudly told the audience that it won first place in the DOST-MIMAROPA 2014 Best Technopreneur Awards (Non-Core Category) in the awarding ceremonies held in Calapan City, Oriental Mindoro last August.

The spokesperson said, "Hindi po naming sukat akalain na (maliban) doon po sa tulong na ibinigay nila ay bibigyan pa ho kami nila ng award." (We could not believe that they will give us an award after they helped us.)

Rejano's Bakery, on the other hand, recounted those days when its packaging was so bad that the bigger and better markets in Metro Manila rejected Rejano's products. DOST's assistance enabled its arrowroot cookies to get lined up on the shelves of major malls such as Trinoma in Quezon

City, and even penetrated markets as far as Pampanga.

The bakery has also won various awards such as the Most Innovative Product Packaging from DTI in March 2014 and the Pres. Ramon Magsaysay Regional Trophy of Excellence in 2008, among many others. Last year, the bakery won first place in the first DOST-MIMAROPA Best Technopreneur Awards (Core Category).

Present at the ceremonial awarding were Marinduque Gov. Carmencita O. Reyes, Lone District Rep. Regina O. Reyes, DOST-MIMAROPA Regional Director Dr. Ma. Josefina P. Abilay, and Marinduque State College Officer-in-Charge Dr. Leodegario M. Jalos Jr. Also present were representatives from partner agencies and local government units, DOST-assisted beneficiaries from previous years, and the local media.

Participants sample the products at the event

Rep. Reyes emphasizes the importance of working together for the benefit of the province and of the region

Dr. Abilay explained that SETUP is a strategy "to enhance productivity and competitiveness of MSMEs through technological innovations and upgrading of products and processes towards progress and growth in the countryside." It means that the program greatly helps enterprises through the application of accepted standards in manufacturing processes, as well as adoption of appropriate technologies to improve productivity and product quality. This will translate to more markets and more profits for businesses, she said.

The program is open to any business, wholly owned by Filipino citizens, based in the Philippines, and willing to apply technological innovations to their existing operations. It is also open to associations, cooperatives, LGUs, or communities with a common goal of adopting and applying appropriate technologies to enhance productivity.

Marinduque Gov. Carmencita O. Reyes, manwhile, said that while other provinces have their trademark products such as cashew in Palawan, for instance, Marinduque seems to have none. With the ceremonial awarding, however, she said, "Ako'y tuwang-tuwa dahil nakita ko ngayon mayroon na tayong ipagmamalaki." (I am very happy because now I see that we have products that we can be proud of.) The governor then thanked DOST for its efforts in helping products in the province go "a thousand steps forward."

Marinduque Lone District Rep. Regina O. Reyes candidly told the audience how, during Christmas parties at the House of Representatives, lawmakers would exchange gifts, and that she would always gift her colleagues with Marinduque's well-known arrowroot cookies made by Rejano's Bakery, a DOST-assisted enterprise in the municipality of Sta. Cruz. She then narrated that, just recently, a colleague commended the improved packaging of the product which was part of DOST's assistance to the firm. Rep. Reyes then congratulated everyone; emphasizing the importance of the strong partnerships between the government, its agencies, and the private sector, for progress. And this is not just in the province but in the region as a whole.

Online jobs to fuel employment growth in Mindanao

By DOST-ICT OFFICE

A speaker at the Rural Impact Sourcing workshop in Kapatagan, Lanao del Norte answer questions of the participants during the panel discussion at a recent Digital Jobs seminar. (S&T Media Service)

NOW THIS is one of the best things that will happen in Mindanao for the next few months. Employment in the area will soon get its needed boost via online jobs.

To promote online jobs in Mindanao, the Department of Science and Technology-Information and Communications Technology Office (DOST-ICT Office), in partnership with online job platforms Freelancer.com and Online Jobs University, has initiated a workshop on Rural Impact Sourcing (RIS) in Kapatagan, Lanao del Norte.

"Most of our well-known companies in the Information Technology Business Process Management (IT-BPM) industry are hesitant to locate in Mindanao," said ICT Office Deputy Executive Director Mon Ibrahim. "The government, however, realizes the potential of impact sourcing or online jobs to provide alternative means of employment in these areas."

Conducted last February, the workshop, which featured ways on how Filipinos can earn competitive income even in the comfort of their homes through online jobs, was attended by at least 200 students and young professionals.

With the support of the local government of Kapatagan, the workshop has been re-echoed to more than six schools in Lanao del Norte.

"Mindanao is so blessed with resources. And most importantly, we also have a great pool of talents," Kapatagan Councilor Paul Lagura said. "We will be helping the ICT office conduct and re-echo workshops to other local governments about digital employment as an innovative opportunity for socio-economic growth."

The number of online job workers in various cities in Mindanao has been increasing over the years. In fact, the cities of Davao, Cagayan de Oro, and Iligan are included in Freelancer.com's Top 20 Philippine cities with the most number of freelancers.

Freelancer.com Regional Director for South East Asia Evan Tan says that as the world's largest freelancing and outsourcing marketplace, "Freelancer believes that everyone deserves an equal opportunity to work, wherever and whoever they may be."

Serving as an economic platform for people in rural communities like Kapatagan in Lanao del Norte, he said Freelancer, through their partnership with DOST-ICT

Power up your gadgets at DOST-VII's solar charger

By YVETTE HOPE P. LABUS
S&T Media Service, *DOST-VII*

An employee of the Department of Science and Technology tries for the first time the effectiveness of charging her mobile phone using the solar-powered charging system set-up at the entrance of her workplace at DOST-VII. (Photo by DOST-VII)

THE DEPARTMENT of Science and Technology in Region VII (DOST -VII) recently installed a Solar Power Charging Kiosk at the entrance of its office in Sudlon, Lahug, Cebu City.

"This will enable our clients visiting the office to really appreciate science and technology," Department of Science and Technology Regional Director Engr. Edilberto L. Paradela said.

"This is a simple technology that may be very useful for them with or without the existence of electricity. It works like a mobile phone power bank built with a socket to plug the charger of a device, only that it has a bigger capacity and makes use of solar power to charge its batteries," he added.

The same kiosk was first deployed in Leyte to provide temporary power source in the aftermath of Super Typhoon Yolanda. These kiosks are still currently available at the Philippine Science High School-Eastern Visayas Campus in Palo, Leyte; Sogod, Southern Leyte; and Brgy. Mancilang, Madridejos, Cebu.

This equipment is really a perfect match during disasters just like how it helped residents in Leyte after the devastation brought about by Super Typhoon Yolanda. During typhoons and storms, we cannot determine when power will be restored.

This way, DOST 7 has the chance to showcase the use of renewable energy in greening the environment for lesser carbon dioxide (CO2) emission, reduce energy consumption and may contribute in disaster risk reduction", added Paradela.

The Solar Power Charging System has a 200W capacity which comprises a 2 x 100W solar panel; 2 x 70 Ampere-hour solar battery; 1 unit 300W inverter; and 1 unit 20 Ampere-hour charge controller. This can accommodate charging simultaneously 20 units mobile phones/10 units rechargeable flashlights/2 units laptop.

Office, is committed to uplifting the lives of Filipinos.

Scholarship and training programs were also awarded by Online Jobs University during the impact sourcing workshop. A Filipino founded web-based online training site, Online Jobs University serves as a capability development platform for those who want to build a career as an online professional.

"By encouraging our kababayans to consider doing online work for clients locally and abroad, we hope they will not leave their hometowns and families just to look for jobs that will fit their skills and competencies. Having an online career opens big doors of opportunities and possibilities for them and their hometowns," said Online Jobs University founder Genesis Reonico.

According to the National Statistics Coordination Board, as of 2014, 10 of the 16 poorest provinces of the country are in Mindanao. It has an estimated 10 million labor force with an unemployment rate of 4.5 percent. In spite of this, Mindanao produces at least 700,000 college graduates a year, which specializes in various fields such as computer science, information technology, and engineering.

The recently concluded Rural Impact Sourcing Workshop is part of the digitalPH initiative of the ICT Office, which aims to generate at least 1.6 million direct IT-BPM jobs for Filipinos by 2016 with at least 40 percent of this coming from the countryside.

For more information about this government initiative, visit www.icto.dost.gov.ph or like us on Facebook: www.facebook.com/digitalPH2015

Black Pepper: From pan to pain

From the dish pan, the "King of Spice" moves up to the medicine cabinet. Researchers from Urdaneta City University formulated a pain reliever out of black pepper fruit. It is as effective as other liniments, but safer and more efficient.

By DOREEN R. ORIBADO
The University Scribe, *Urdaneta City University*

The pepper fruits were pulverized.

The finished product.

EVERYONE EXPERIENCES pain caused by various activities that strain the muscles. A group of student researchers from the Urdaneta City University sought to find treatment to muscle pain in consideration of the hazardous effects of non-steroidal anti-inflammatory drugs (NSAIDs). These drugs are analgesic (pain-killing) and antipyretic (fever-reducing), and, given in higher doses, are also anti-inflammatory. Some common NSAIDs that we buy from the corner drug store to reduce pain include celecoxib, naproxen, ibuprofen, and aspirin.

However, recent studies show that NSAIDs could intensify malaria, cancer, neuralgia, dizziness, nausea, diarrhea, constipation, liver disease, and ulcer. These drugs also decrease appetite. Further, NSAIDs are toxic to people with asthma because these drugs intensify shortness of breath.

Thus the researchers formulated a liniment from black pepper (locally known as paminta) that is as effective as the common NSAID but counteracts the hazards caused by said drugs. According to the group, the treatment comes from the alkaloids present in pepper.

Many findings have shown the power of the black pepper to heal, earning its nickname as "King of Spices". Such studies prove that pepper prevents or inhibits rheumatism, stomach ache, and fever. The pepper is also anti-bacterial and anti-microbial. Further, it cures nerve pain, bronchitis, cancer, and malaria. Supplementary studies likewise show that the fruit could act as counter irritant and mouthwash to alleviate tooth ache.

How the researchers did it

The researchers dried the berries under the sun then pulverized them. Afterwards, the powdered pepper was mixed with 95 percent ethanol. Then the team performed Soxhlet extraction process to the mixture in order to remove impurities. To remove more unwanted particles, the team did filtration, followed by a vacuum water bath.

Then researchers constantly stirred the extract with 10 percent alcoholic potassium hydroxide. Finally, the researchers filtered the mixture again.

Effective and convenient

The research has found that liniment from pepper is effective and a good alternative way of treating pain. Moreover, unlike other medicines, the liniment does not promote edema or swelling of feet, ankle or heels; and erythema referring to rash.Also, the liniment does not give off a foul smell.

Thus, aside from having pepper in your kitchen to spice up your adobo and other favorite dishes, it will be helpful to have pepper liniment in your medicine cabinet to ease up that pain.

The research group from UCU's College of Pharmacy who made this study on pepper as liniment includes Ginalyn B. Fajardo, Frencine Gia S. Abdon, Shirley Joy M. Giron, Julie Ann V. Raquino and Iana Marie T. Velasco.

(L-R) .Julie Ann Raquino RPh; ,Ginalyn Fajardo RPh; UCU- College of Pharmacy Dean June Louise Tan-Gaerlan RPh; Iana Marie Velasco; Frencine Gia Abdon, and Shirley Joy Giron

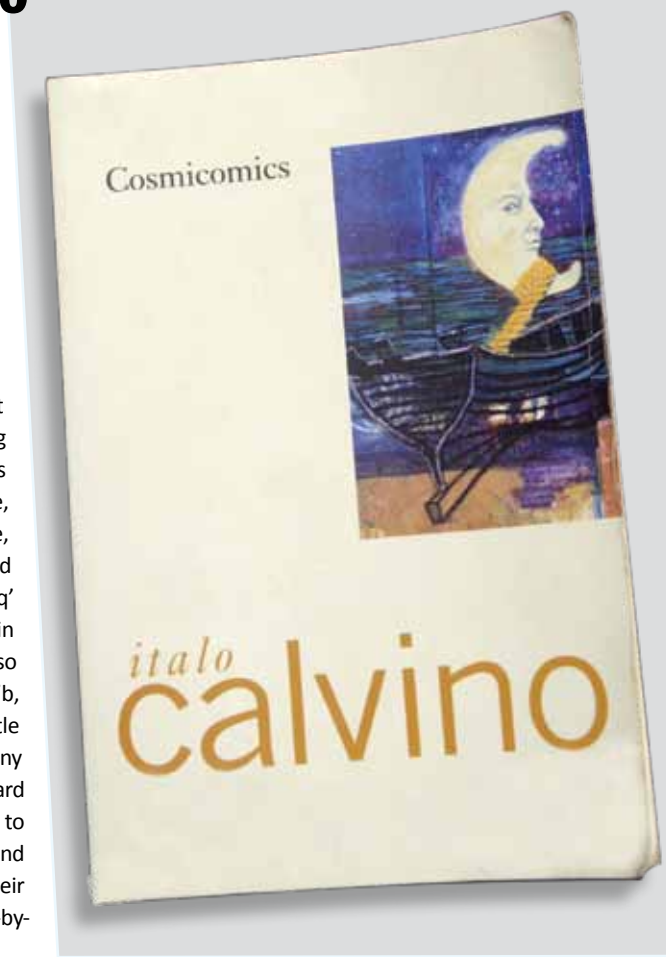
Editor's Note:

Starting this issue, we will be accepting contributions from student writers. Interested students, whether campus journalists, communication students, or those who happen to love writing about science and technology, please email your contributions to dost.digest@gmail.com or send as attachment to private message to the Facebook page of Science and Technology Information Institute (DOST). Please use your complete name and include your course (or name of student publication), school, and location. Attach your profile photo and pictures to accompany your article (please cite the name of article photographer).

BOOK REVIEW:

"Cosmicomics" by Italo Calvino

By ROMELIE JANELLE MARANAN
S&T Media Service, *DOST-STII*



MANY WOULD say that Italo Calvino's imagination may be as vast as the universe for him to be able to write a story that is as ambitious yet exquisite as "Cosmicomics." This postmodernist Italian writer proves that even the most complicated things can be a subject of creativity, taking science into a whole new level.

"Cosmicomics" is a collection of 12 short stories originally written in Italian by Italo Calvino in 1965 and was first translated into English in 1968. As what the title suggests, the book is some kind of a comic about the cosmos or the universe.

Honestly, I have never read any of Calvino's creations, but this one interests me a lot as it is entirely a new concept.

This science-fiction fairytale, the most suitable description for the book, is both astonishing and disconcerting. Most readers, especially the people who are not used to scientific novels might just get lost between every word. Admit it, most people nowadays are not fond of pondering over science, but rest assured that this book will help you realize that science is exhilarating!

His characters are non-human. Instead, they are made of mathematical formulae, scientific terms and simple cellular structures, with settings all across the universe, narrating the story of continuous creation from the beginning of life to present day.

So, how did it all begin?

During the progression of these short stories, Calvino, through his unusually-named narrator Qfwfq, talks about how everything started- the transformation of matter, the expanding and contracting reaches of space and time and the evolution of life.

The 12 short stories are : The Distance of the Moon, At Daybreak, A Sign in Space, All at One Point, Without Colors, Games Without End, The Aquatic Uncle, How Much Shall We Bet?, The Dinosaurs, The Form of Space, The Light-Years and The Spiral.

Each story kicks off with scientific facts stated by different prominent scientists and continues with tales related to it, all of which are narrated by our very own Qfwfq.

One of the most disturbing yet thrilling things about the book is the characters, which are, as what was said before, made of mathematical and scientific formulae. 'Qfwfq' is the least strange name in these stories. There's also Captain VhdVhd, Granny Bb'b, Mr. Hnw, Uncle N'baN'ga, little Xlthlx, Dean (k)yK! and many more names that are very hard to pronounce and very hard to understand. Their hobbies and ways of living are as odd as their names, portraying the step-by-step processes of science.

Calvino also turns scientific concepts into humorous tales, such as when he narrates that people used to go to the moon easily by climbing a ladder and collect moon milk, and how atoms became their toys; or when he explains the love triangle between him, his beloved woman and his uncle, or describing what it's like to be a dinosaur. These absurdities do not only contribute to the funny side of the stories, but they also help make science easy to understand.

Eventually, with so much richness in the stories and every story being completely different, the readers will realize that it is at some point hard to absorb the stories. Calvino may be able to distinguish the profound from the absurd aspect of science, but his stories can also challenge his readers with his surprises and his style of writing. This is indeed a new concept, especially with today's generation, but trying to depict such a different and entertaining combination may also be crucial. There is a need for vast imagination, extensive understanding and slow reading to completely enjoy "Cosmicomis", but reading this will help all of the readers, especially the younger ones, to love and enjoy science. Calvino, through Qfwfq, also reminds everyone that in every beginning, there is hope.

"Cosmicomics" is just a 153-page book, thin enough to enjoy, and immerse yourself in and get lost into. In fact, after reading "Cosmicomics," you will be looking for Calvino's other books out of curiosity and high expectations (if you are a first time reader of Calvino's creation).

S&T Post welcomes contributions for our Book Review section. Please email your contributions to eadeleon.dost@gmail.com. Reviews should tackle the book's science and technology component, subject to the approval of the Executive Editor. For inquiries, call 837-2191 local 107 and look for Gigi de Leon.

MOVIE REVIEW:

kazerad.tumblr.com

Lucy

Less impressive even at 100%

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

THE HUMAN brain is one of the most important parts of the human body, yet the most mysterious. On the average, the brain weighs 1.5 kilograms with a varying volume of 1130 cubic centimeters for women and 1260 cubic centimeters for men. However, weight is not an issue in measuring the cognitive function or IQ of a brain.

As a matter of fact, elephants and whales have bigger brains but when these were subjected to encephalization quotient test, the human brain emerges twice bigger than its gigantic mammal counterparts.

However, even with the greatest milestones that human beings have achieved, some experts dispute that the average human beings do not harness the brain's full potential as the "10% of brain myth" persists even now. In fact, Albert Einstein, the world's greatest physicist, was speculated to have used only 10 percent of his brain during his lifetime.

This theory however, has been debunked by neuroscientists just recently.

But in a recent movie this year titled Lucy, the theory that has been debunked recently has resurfaced. It revived the urban legend's premise.

In the movie, Lucy played by Scarlett Johansson, is just an ordinary free-spirited American woman in Taiwan who was dragged into the Taiwanese drug syndicate by her boyfriend who carries a new, untested and powerful drug. The drug is in blue powder form which is called CPH4 which in the movie is explained as a molecular substance that is present in a pregnant woman which is essential to the development of a child. The drug when induced into the body gives a sudden high feeling which is normally experienced from ilegal substances like cocaine.

However, the result was different for Lucy as when she was forced to be a drug mule together with other foreigners in Taiwan and were dispatched to several countries. Unluckily for Lucy, she was sent to another Taiwanese drug den and was brutally beaten down which caused the drug stitched on her stomach to tear and leak into Lucy's bloodstream.

The drug gave her sudden surge of super-human strength at 20 percent brain capacity. She was able to annihilate all her adversaries.

Her brain capacity reached 40 percent, giving her the ability to manipulate electronic gadgets. At 60 percent brain capacity, Lucy was possessed with a super computer powers in which she was able to find everything that she needed in a snap. With the help of Professor Samuel Norman played by Morgan Freeman, Lucy was able to reach 100 percent

of her brain capacity and ultimately morphed into a flashdrive. Thus Lucy said in her text message, "I am everywhere."

The movie speculates on two important issues which are the film's points of discussion. One is the human capability and physiological behavior once it reaches beyond 10 percent of its brain capacity and the other is the presence of a molecular human substance which stimulates the brain capacity to reach its full potential.

Neuroscientist Barry Beyerstein presented seven evidences that refute the 10 percent of the brain myth.

He says if 90 percent of the brain is normally unused, then damage to these areas should not impair performance. However, he says that there is almost no area in the brain that can be damaged without the loss of abilities which proves that even the slightest damage to a small area of the brain can have profound effects.

Also, brain scans showed that whatever a person is doing, the brain is always active. Some areas are even more active than the others and there is no part of the brain that is absolutely not functioning.

Beyerstein continues that the brain's consumption of oxygen and nutrients are great and costly to the rest of the body as it requires up to 20 percent of the body's energy—more than what the other organ requires—and despite making up only 2 percent of the human body by weight, if 90 percent of the brain is unnecessary, then there would be a large survival advantage to humans with smaller, more efficient brains. And the process of natural selection would have eliminated the inefficient brains.

When the human brain was subjected to the positron emission tomography (PET) and functional magnetic resonance imaging (fMRI) it revealed that even during sleep, that all parts of the brain show some level of activity and only in cases of serious damage that a brain has "silent" areas.

Rather than acting as a single mass, the brain has distinct regions for different kinds of information processing. Decades of research have gone into mapping functions onto areas of the brain, and no function-less areas have been found.

Moreover, if brain cells are not used, they have the tendency to degenerate. Hence if 90 percent of the brain were inactive, autopsy of adult brains would have revealed large-scale degeneration.

And, finally, in the single-unit recording technique, researchers insert a tiny electrode into the brain to monitor the activity of a single cell. If 90 percent of cells were unused, then this technique would have revealed that.

These evidences explain that the human brain exceeds its usage to more than the 10 percent of the brain theory which suggests that the capability presented in the movie are more fictional rather than a fact.

On the other hand, Lucy's film director Luc Besson admits that CPH4 is not a real name for the synthesized drug shown in the film but says that the molecular substance is true. In his interview on CraveOnline, Besson says that "It's totally real. It's not a real name. CPH4 is a name that I invented, but it's a molecule that the pregnant woman is making after six weeks of pregnancy in very, very tiny quantities. But it's totally real, and it's true that the power of this product for a baby is the power of an atomic bomb. It's real. It's totally real. So it's not a drug. In fact, it's a natural molecule that pregnant women produce."

However, a quick online research shows many people who watched the movie grew interest on CPH4. Although this substance in real life does not exist, there is no such thing that triggers mental adroitness. This is a fact although it may be true that there are molecules in the body that supports the fetal growth from four to six weeks of existence.

Alternatively, there is in fact a molecule known as CPH4 in medical science. It is called 6-carboxytetrahydropterin synthase which is actually an enzyme found in the cells of millions of organisms, but primarily in bacteria. This enzyme in cells is used to produce other types of molecules that are necessary for the cell to function but not to make one person smarter or stronger as Lucy. In fact, there are some drugs that are being sold online that carries CPH4, but do not risk your money or health for it as these are placebos riding on the popularity and public's curiosity.

So much of the science part of it. On the movie, I find it intriguing from the get go with so much of cerebral spiels articulated by one of my all time favorite actors, Morgan Freeman. He is in his usual character, the expert who puts sense into what might have been a boring notion. Although there is a significant lull in the middle as the movie tries its very best to explain the idea through the Freeman litany of scientific findings on brain activities, it is like hearing a lecture in class in the middle of the day.

And to compensate, Lucy became more of a possessed mutant killing machine on a mission to annihilate those who wronged her which has always been the mark of all Hollywood movies.

All in all, just like Transcendence, it is a brave attempt to put into the big screen ideas such as these. However, what really pains me is how these movies integrate science and the Hollywood formula which is stale as far as these types of movies are concerned. They may have scratched the surface of science and titillated a new palate, but the mixture of science and action sequences may not form a good solution.

S&T Post welcomes contributions for our Movie Review section. Please email your contributions to eadeleon.dost@gmail.com. Reviews should tackle the movie's science and technology component, subject to the approval of the Executive Editor. For inquiries, call 837-2191 local 107 and look for Gigi de Leon.

Drones with wings, soaring soon....hopefully

PICTURE A drone with bird-like or bat-like wings, zooming in mid-air and then effortlessly folding these wings when a situation requires, and then unfolding them back in their original form once again, in clockwork precision.

The idea is to keep the drone safe and flying when a mid-air collision is about to occur, or when it has to negotiate narrow passageways such as between tree branches.

This scenario is what occupies the minds of scientists from Stanford University who are currently studying and copying the wings of birds and bats to replicate this mechanism in drones.

The team created a miniature robot with wings spanning almost 16 inches. As the robot flapped its wings at both high and low speed during the trials, the researchers would move a steel rod slowly or quickly at the wing. The tests showed that the robot folded its hinged wings during impact, and then unfolded them again – the wings passively returning to their original length in just a few seconds.

While other foldable wings need motors, drones with passive folding do not require motors, power or specific controls.

Stanford University's Amanda Stowers and David Lentink discussed their research in the journal "Bioinspiration and Biomimetics."

Funding for the study was provided by the Office of Naval Research.

Sources: http://www.bbc.com/news/science-environment-3206836
http://www.popsci.com/scientists-test-unfolding-wings-drones

Georgetown, Texas bats for 100% renewable energy in 2 years

IN THE course of 75 days, Costa Rica had managed to run on 100% renewable energy.

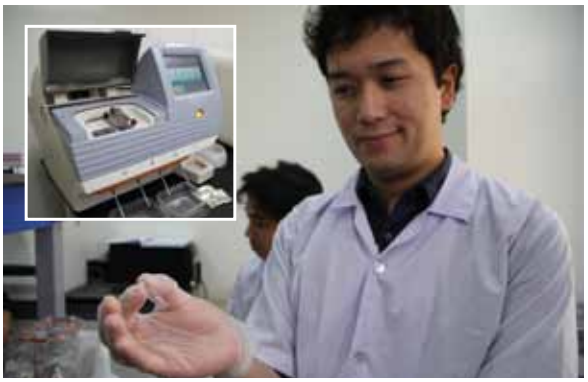
To reach the same goal, the small city of Georgetown, Texas – with a population of 50,000 - is said to be relentless in its pursuit of quitting on fossil fuels, which are non-renewable, by 2017.

The city-run utility of Georgetown declared that it will purchase wind and solar energy from local ventures so that in two years time, the whole city will depend on sunlight and wind for its energy requirements. Texas gets abundant sunlight in the morning until afternoon and becomes breezy at night – thus can amply accommodate all the energy needs of the Georgetown locals. The initiative also saves up on water otherwise used up by coal-burning power plants which also make use of fossil fuels.

In the case of Costa Rica, abundant rain beefed up the nation's hydroelectric power output while its volcanoes aided in the energy production machinery of its geothermal plants.

Source: http://www.popsci.com/soon-texas-town-will-run-100-percent-renewable-energy

MOA SIGNING FOR DOST'S PHIL. HEALTH INFO EXCHANGE | Department of Science and Technology (DOST) Sec. Mario G. Montejo (center) together with Department of Health (DOH) Undersecretary Dr. Vicente Belizario (left) and Philhealth President and CEO Atty. Alexander A. Padilla sign the Memorandum of Agreement (MOA) for the Philippine Health Information Exchange (PHIE) during the 33rd anniversary of DOST's Philippine Council for Health Research and Development (PCHRD) held at the Dusit Thani Manila Hotel last March 17, 2015. A project of PCHRD and DOH, the PHIE is a system that will better manage the country's health and medical information via the harmonization of data records from hospitals and other health systems and institutions across the archipelago. It will ultimately improve access to information, generate better decision making based on real-time health statistics, and upgrade healthcare delivery services from the national down to the barangay level, even in rural areas. **(Text by Espie Angelica A. de Leon/Photo by Ceajay N. Valerio, S&T Media Service, DOST-STII).**



STATE-OF-THE-ART GENE SEQUENCING FACILITY | A researcher at the Philippine Genome Center shows a micro tube containing DNA material of a sample being analyzed. **Inset**: A Next Generation Sequencing machine revolutionized genetic research because of its rapid and more data sequence results. The machine is among the many equipment acquired through DOST's P100M grant for the establishment of the Philippine Genome Center (PGC), a multidisciplinary institution that conducts genomic researches for the improvement of crops and animal varieties, health diagnostics, and forensics, among others. PGC is currently housed at UP Diliman's National Institute of Molecular Biology and Biotechnology but will soon have its own building later this year. The visit to the PGC was held during the Department of Science's Agham na Ramdam media tour recently. Agham na Ramdam is a series of media briefings to showcase DOST's program milestones and updates as part of government's effort to address some of the country's pressing problems today. **(Text by Maria Judith L. Sablan/Photo by Henry A. De Leon, S&T Media Service)**

DOST's Food and Nutrition Research Institute developed this iron-fortified rice (IFR) which is now marketed by Nutridense Food Corporation based in Pangasinan and Nutrition & Beyond Corp. based in Nueva Ecija. The two brands were exhibited during the Food and Nutrition Security Conference at the International Institute of Rural Reconstruction in Silang, Cavite on 03 march 2015. IFR is ready for technology transfer to interested qualified rice millers. Pls contact DOST-FNRI at 837-2934, 837-3164 or email Dr. Mario V. Capanzana, at mvc@fnri.dost.gov.ph and mar_v_c@yahoo.com

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